IOWA STATE UNIVERSITY
FACILITIES PLANNING AND MANAGEMENT

CLASSROOM IMPROVEMENT PLANNING STUDY

February 2014

INVISION
PLANNING | ARCHITECTURE | INTERIORS

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01 | EXECUTIVE SUMMARY

01 EXECUTIVE SUMMARY

Iowa State University is taxed to meet the current general university classroom needs. It is anticipated that demand on scheduling will increase as enrollment grows, classroom technological advancements are made and trend-forward pedagogies are implemented. Larger and additional course sections, scheduling within core time frames and the desire to allow flexibility for traditional and alternative teaching methods have all contributed to pushing the current scheduling matrix to its extreme. The Classroom Improvement Study seeks to provide recommendations to alleviate these scheduling challenges and to provide a sound approach to implementation.

To support an active and evolving pedagogy at Iowa State University, general university classrooms need to be designed and renovated to allow flexibility between traditional lectures, small group work, large group discussion and collaborative problem solving. The ability to ebb and flow between these instructional methods is critical in sustaining a healthy and active pedagogy on campus, to engage the faculty and to provide an exceptional learning opportunity for students. In addition to flexibility, the classrooms require access to adequate and appropriate technology to support a diverse learning community.

Recommendations of this report are based on an assessment of the general university classrooms to identify their current utilization and quality of space. This data is used to outline: increased learning opportunities; strategies for improvements; developmental costs and phasing tools. These strategies and tools will assist the University in planning short-term and long-term programmatic space decisions and allow for advancement of existing and new pedagogies. The key goal of the study is to ensure that resources can be wisely and appropriately deployed to make a meaningful impact on the overall learning environment at Iowa State University.

OBSERVATIONS FROM THE ANALYSIS:

» 1952 is the median year of construction for buildings containing general university classrooms.

» The average classroom capacity is 78.

» The average seat utilization is 67.2%. Room sizes of 75+ are significantly higher in seat utilization and hours/week.

» The average existing square footage per student is 15.8 SF. Modern standards recommend 20 -25 SF/student.

» Nearly 50% of the general university classrooms are recommended for finish and technological upgrades within the next 5 years.

» The University actively pursues and completes classroom improvement projects, and current allocations for general university classroom improvements make a significant impact on the campus learning environment. However, the analysis of the current utilization and quality of space completed in this study produced a list of recommendations that exceeds current annual funding levels.

Additionally, technology and pedagogy continue to rapidly evolve, moving the demands of renovation beyond maintenance and increasing the demand for additional funding. It is anticipated that responding to the most basic requirements of colleges, departments, faculty and students requires an annual allocation of approximately $2,500,000-3,000,000. At this funding level, a sustainable and systematic classroom improvement approach can be developed.

Iowa State is at a critical junction in the planning and maintenance of the general university classrooms. The current problem-solving culture at Iowa State will not be able to continue to meet student and faculty needs for scheduling and flexibility within the classroom given the current scheduling demands and anticipated student growth. There are multiple solutions to alleviate taxing demands and to create at least some of the flexibility desired in the existing classrooms.

Based on the insight gained from observation, assessment and focus group meetings, the following recommendations are provided as a summary of this report:

» Strategically plan to upgrade all general university classrooms on a regular 10-year cycle. A phasing plan has been developed to provide one method of developing this cycle.

» Fund multiple large-scale classroom improvement projects across campus. Prioritize 75-150 capacity classrooms, which are the most utilized and most in demand for scheduling.

» Promote conversation between faculty and the administration on pedagogy. Diversity and flexibility increase the quality of the learning experience on campus.

» Actively plan for general university classrooms in future capital projects.

» Improve information-sharing within the classroom by developing a help-desk for on-call, real-time assistance; develop a system to communicate improvements and classroom design guidelines.

» Implement technological upgrades throughout all of the general university classrooms to allow for flexible student learning opportunities.

» Utilize tools developed through this study to strategically plan future projects to provide the most value to the University.

» Promote collaboration throughout campus by actively programming space outside of the classroom for informal discussion and student/faculty interaction. Create additional work and study nodes outside of the classroom for small group work and conversation.

» Significantly reduce back-to-back scheduling - develop a culture of matching appropriate classrooms with class sizes and instructional methods.

02 | GOALS AND OBJECTIVES

SECTION TWO

02 GOALS AND OBJECTIVES

The Planning Committee commenced work by identifying key project drivers and goals to serve as a guideline to measure the Classroom Improvement Planning Study success. The group developed the following:

PROJECT DRIVERS

PHASE 1 - DESIGN, SUPPORT & CONSTRUCTION

Flexibility and Variety
Increase utilization of classrooms by providing a variety of types and amenities appropriately distributed across campus.

Increased Learning Opportunities
Provide opportunities for informal learning and collaboration, between students and faculty, to take place outside of scheduled classes.

Trend Forward Pedagogy
Look forward to evaluate current and future approaches to teaching and learning.

PHASE 2 - DESIGN TO IMPLEMENT

Building Efficiency
Assess and organize building information so the University can effectively evaluate and plan future projects.

Provide Adaptable Tools
Develop useful and adaptable tools to quickly and accurately gauge needs and feasibility of future projects.

Strategic Plan for Advancement
Create a systematic plan that provides insight for future needs of advanced learning environments at Iowa State University.

GOALS & OBJECTIVES

1. The assessment of the current capabilities of the existing general university classrooms.
2. To quantify the future programmatic space needs.
3. Recommendations for optimizing the classroom resources.
4. To develop strategies for current and future improvements.
5. To develop a tool that identifies cost options.
6. To develop phasing options.

PROCESS

» Focus group discussion-review of current and desired changes to the Iowa State University pedagogy.

» Analysis of utilization data-review of data regularly collected by Facilities Planning and Management.

» Sample classroom assessment-a sample of 48 classrooms representing various sizes, conditions and building ages was selected for a thorough analysis of material conditions, support systems, seat spacing, equipment and other specialties.

» Holistic classroom assessment-review of all 214 general university classroom conditions; not as intense as sample assessment, but on-site review of each classroom.

» Recommendation development-reviewing the above elements to provide strategic recommendations for improvement.

» Phasing-recommendation of which spaces to improve first and plan to improve all general university classrooms on a regular cycle.

» Cost opinion-broad range cost planning to identify scope of recommended improvements.

» Planning tools-development of real-time costing and planning tools for use by Facilities Planning and Management to identify early scopes of potential projects and to aid in programming of these improvement projects.

KEY TERMS

Key terms used throughout this report:

ABBREVIATIONS:

FTE	Full Time Equivalent
FY	Fiscal Year
NASF	Net Assignable Square Feet
F12	Refers to Fall 2012 Semester Utilization Report
S13	Refers to Spring Semester 2013 Utilization Report
SF	Square Foot

CLASSROOM SIZE CATEGORIES

Small Classroom	12-49 Capacity
Medium Classroom	50-99 Capacity
Large Classroom	100-249 Capacity
Auditorium	250+ Capacity

TERMS

Assignable Area: The sum of all floor areas assigned to, or available for, classroom use.

Back-to-back Scheduling: A request, by faculty members, to teach multiple classes in a row in the same room.

Capacity: Maximum number of people that can occupy a room by current code standards.

Classroom: General purpose classrooms used primarily for scheduled non-laboratory instruction.

General University Classroom (GUC): classrooms scheduled by Facilities Planning and Management and held centrally allocated to Senior Vice President and Provost

Prime-Time: Classrooms reach a peak utilization between 9 a.m.–3 p.m daily.

Room Utilization: Percentage of hours a room is in use.
Calculation: (Number of Hours in Use)/(Total Room Hours of Instruction)

Room Utilization Rate: Percentage of total seats in use.
Calculation: (Room Utilization) x (Seat Utilization)

Seat Utilization: Percentage of seats occupied when the room is in use.
Calculation: (Number of Seats in Use)/(Number of Seats Available)

Total Room Hours of Instruction: The total number of hours each week that classrooms are used for regularly scheduled classes. (8 a.m.-5 p.m. Monday-Friday = 45hours)

03 | STUDY CONTEXT

SECTION THREE

03 STUDY CONTEXT

To support the research of this study, conversations with Facilities Planning and Management, as well as faculty and student focus groups, were conducted early in the process. These conversations provide background on trend-forward pedagogy, the current pedagogy at Iowa State, scheduling partnerships and the facilitation of room scheduling.

TREND-FORWARD PEDAGOGY

Trend Forward Pedagogy- look forward to evaluate current and future approaches to teaching and learning.

Trend Forward Pedagogy will include teaching approaches that purposefully engage students in their learning. This will require teaching strategies that are not extensively based on lecture, and learning spaces that can accommodate multiple approaches to teaching. Students will interact with each other and the instructor on a more regular and consistent basis through collaboration and cooperative learning both in and out of the classroom.

To address classroom capacity issues and to leverage new and emerging learning technologies, instructors will modify how they use face-to-face classroom time. As a result classroom spaces will need to be flexible to allow for small group work with access to technology, large group discussion, collaborative problem solving, etc. Spaces will need to be designed to allow faculty to move around and throughout the room to facilitate student learning.

To enable flexibility and broad use of multiple teaching approaches, classrooms will increasingly need a technological approach that includes wireless access at a 20 device/1 access point ratio; a BYOD (bring your own device) approach that allows for multiple possible connection types into a display; multiple displays in a room; and access to AC power and possibly even universal charging stations (the charging stations are debatable, depending on advances in battery technology/life).

Peer institutions that are attempting to offer flexibility across multiple teaching strategies are struggling with the concept of making ALL rooms flexible. Generally, treating all rooms this way isn't an efficient use of funds. Other institutions are arriving at ways of classifying classrooms to handle specific teaching strategies, to set expectations for a room's performance and to utilize funds in the most efficient way (e.g.–Cornell U.). ISU cannot truly realize the full benefit of a tiered structure like this until larger segments of the curriculum can be dedicated to a particular teaching approach. With current active learning occurring in a spotty or ad hoc fashion, it will be difficult to build these categorized rooms and have them used consistently for that intended teaching strategy.

One option would be to work toward rewarding whole programs that make a commitment to modifying teaching strategies by providing funding for specialized classrooms for the program, while allowing close design input from the faculty.

Existing classrooms, especially those with a higher seat capacity, are being heavily subscribed due to ISU's rapidly growing enrollment. While some existing classrooms have been modified to support a more collaborative learning environment, this type of pedagogical approach requires more space, which means classroom capacity is reduced.

Many existing classrooms cannot be effectively renovated for this learning style due to the size of room, room configuration, etc. At the same time, ISU needs to be preparing for demands on classroom flexibility that incoming faculty and students are growing to expect. To support the flexibility needed in the future, strategic modifications to existing classrooms can be implemented, but additional space will also be required.

PARTNERSHIPS

Iowa State University has managed to successfully accommodate a large influx of students through working with departments and faculty, and some creative scheduling efforts. There have also been many challenges along the way. Specifically, the following are identified strengths and challenges of ISU classroom scheduling and classroom management as identified by Facilities Planning and Management.

ROOM SCHEDULING PARTNERSHIPS

Partnerships are crucial to the services Room Scheduling provides to the students, staff and faculty at Iowa State University. Key partnerships with Information Technology Services – Academic Technologies (ITS), the Center for Excellence in Teaching and Learning (CELT) and the Academic Division have provided guidance, fostered innovation and contributed critical resources for upgrades and renovation of existing facilities.

For over 20 years, Room Scheduling and Information Technology Services have worked together to add and upgrade technology in the 214 general university classrooms. This partnership has been used in planning upgrades, sharing concerns and finding solutions, which have resulted in creating classrooms that enhance both the learning and teaching environment of these spaces.

CELT is another partner in supporting the efforts of Room Scheduling. During the past few years, CELT has been more involved in the design of new classrooms that meet the needs of those using team-based learning as their teaching style. Their insight to seek out funding, but also assisting with the design of new classrooms, was very important in getting more flexible classrooms into the general pool.

The Provost's office has been involved with the financial support of renovation projects over the years, and is also very supportive of the process of scheduling classes into the general university classrooms.

Over the last several semesters, Room Scheduling has been working with colleges and departments regarding the enrollment pressures at Iowa State. Course and space needs have been identified; solutions have been developed and implemented.

For many years, room utilization information for general university classrooms, as well as teaching labs, has been gathered and evaluated. There has also been an effort in the more recent past to gather information regarding classroom availability based upon the day/time across the week and room capacities. This helps identify trends, analyze usage patterns and guide decision-making regarding classroom capacity and capabilities.

There is an increased need for technology, ranging from capture capabilities to more active, team-based learning environments. Additional space, flexible furniture and potentially greater connectivity, display and writing surface capabilities are required to support this learning style. Continuing partnerships with ITS, CELT, the Provost and Colleges will help to determine and address these needs.

SCHEDULING

Room Scheduling partners closely with the Office of the Registrar, colleges and departments to find creative solutions to course offering needs. Higher enrollment has resulted in additional and larger course sections. There are more sections to schedule and review – up to 7,600 records, which requires more time for scheduling and adds to the complexity of matching classroom resources with available classrooms. This has created the need to follow existing policies and guidelines more closely than previously required. The following are guidelines to facilitate effective scheduling practices:

- » Follow standard day/time – MWF 50 min. courses; TR 75-90 min. courses.
- » Set limits closer to the course enrollment.
- » Establish limits that do not exceed a classroom's capacity.
- » Spread department course offerings across the entire day – outside of prime-time.
- » Encourage fewer back-to-back courses.

Additional factors that complicate scheduling are:

- » Accommodating special needs students' schedules.
- » Increased pressure for large lectures during prime-time.
- » Departments requesting more courses during prime-time.
- » Changes in pedagogical methods.

There is a limited number of general university classrooms; general university classrooms make up only 4% of the total space on campus. Room Scheduling is aware of the pressures facing Iowa State to accommodate students and does their best to accommodate course offerings with the resources available.

Additional information may be found on the Room Scheduling web page at: www.fpm.iastate.edu/roomscheduling/ under Course Scheduling.

FOCUS GROUP SUMMARY

There are many people with a vested interest in the development of campus learning environments at Iowa State. It was an important component to this study that students and faculty be involved in discussions where they were able to freely voice opinions, frustrations and successes they are having while using the general university classrooms, and to discuss the pedagogies in place and desired at Iowa State University.

Informal discussions were held between committee members and many faculty and students across campus. This informal discussion time was used to gain an overall picture of space usability and learning experiences on campus. The Planning Committee set the parameters for the discussion with several basic questions designed to keep focus on the physical characteristics of campus learning environments, their personal experiences and how course curriculum has been delivered. An open forum allowed a free flow of communication and fostered great discussion and ideas for both faculty and students. Discussions were based upon the following questions:

1. What is your favorite classroom on campus? Why?
2. Describe your experiences at Iowa State University:
    i. What are the most common teaching and learning styles you have experienced on campus (i.e. lecture, discussion, team-based learning, laboratories, studios)
    ii. How do you learn best?
3. Where are we [ISU] going?
    i. What will the best "face-to-face" education look like in the future?
    ii. Have you noticed a difference as the enrollment has increased (class/ section sizes, curriculum delivery methods)?
4. What are the most common challenges both faculty and students face in the classroom today?
5. What resources do you need to be successful in the classroom?

FOCUS GROUP SUMMARY

Overall, the feedback from both the student and faculty groups confirmed the direction Iowa State has been headed in the level of technology and flexibility in classrooms is in the right direction. Basic needs, such as good sound for playing videos, operable shades to darken rooms, flexible lighting scenes and moveable tables and chairs were attributes both groups desired and felt enhanced their learning and teaching experiences.

» Inconsistent technology capabilities in classrooms were a prominent frustration among students. As "Bring your own device" requests increase, so must the broadband to support them. Students agreed they want the ability to customize the tools they use based on their learning styles. Students agreed they retain information best when a hybrid of both hand-written and technology-based note taking was used.

» A recurring theme among faculty was a desire for the University to provide a streamlined process for obtaining assistance in the classroom. From replacing light bulbs and broken seats to internet connectivity and projector issues, faculty would like an easy way to notify the right group to assist. Inconsistent location of information in each room, multiple phone numbers, etc. make it confusing for faculty to access the right help when needed.

» Discussion-based teaching methods were most popular for both students and faculty. Students felt the interaction between themselves and faculty helped them retain information, stay alert and focused on the class topic and were more apt to use a "broad scope of thinking and problem solving skills."

» Lecture-based delivery is still prominent. All of the general university auditoriums are highly utilized, averaging around 29 hours/week of utilization for lecture halls that accommodate 250+ seats (target utilization for hours per week used is 30).

» The majority of the faculty agreed that the physical set up of the room provided is a strong influence on how curriculum is delivered.

» A common complaint among both groups was "technology is great when it works, but frustrating when it doesn't." One faculty member noted the importance of avoiding being completely reliant on technology for that very reason.

Full minutes from the meetings with the students and faculty are included in the appendix.

04 | CLASSROOM UTILIZATION

04 CLASSROOM UTILIZATION

Higher enrollment has resulted in additional course sections, the need for more classrooms with a capacity of between 75 and 150 and the increased use of classrooms for special events. Due to the expanded use, there has been additional wear and tear on materials, furniture and equipment.   In addition, there is an increased need for technology and capture capabilities to meet both current and future pedagogical methodologies.

The Classroom Improvement Planning Study reviewed existing conditions, location on campus and utilization to provide a framework for prioritization of planning for future improvements.

UTILIZATION [CAPACITY]

Current classroom utilization is a key part of this study to determine the baseline for recommendations. Research has indicated Iowa State's utilization goals for rooms and seats are consistent with other peer institutions. The benchmarks used in this study are based on the 8 am-5 pm, 45-hour week. Iowa State University guidelines establish the goals for classroom utilization as follows:
- 30 hrs/week room utilization (hours per week a particular classroom is scheduled)
- 67% seat utilization (what % of seats are filled in a given classroom)

HOURS PER WEEK USAGE BASED UPON ROOM SIZE

Room Capacity	Usage in hours per week
0-30	21
31-49	21
50-99	23
100-249	27
250+	29

SEAT UTILIZATION BASED UPON SIZE OF ROOMS

Room Capacity	Seat Utilization
0-30	72%
31-49	65%
50-99	68%
100-249	76%
250+	71%
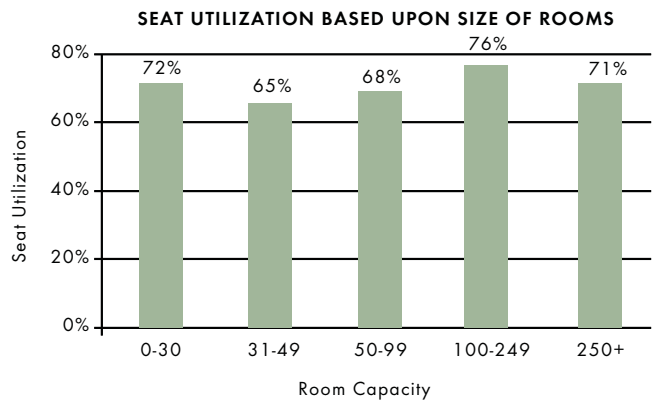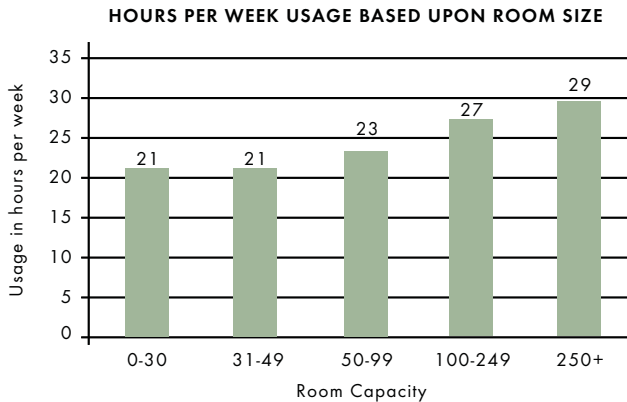
FIGURES 1 & 2. HOURS PER WEEK USAGE & SEAT UTILIZATION BASED UPON ROOM SIZE: FIGURES BASED ON ANALYSIS OF 214 GENERAL UNIVERSITY CLASSROOMS.

Figures 1 and 2 demonstrate the effect room size has on utilization performance. As the graphics indicate, the larger the room size, the greater seat utilization. These findings are reflective of increasing section sizes and the need for Room Scheduling staff to find rooms with 75-150 capacity to meet demands from the steady increase in enrollment.

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SQUARE FEET PER STUDENT BASED UPON SIZE OF ROOMS
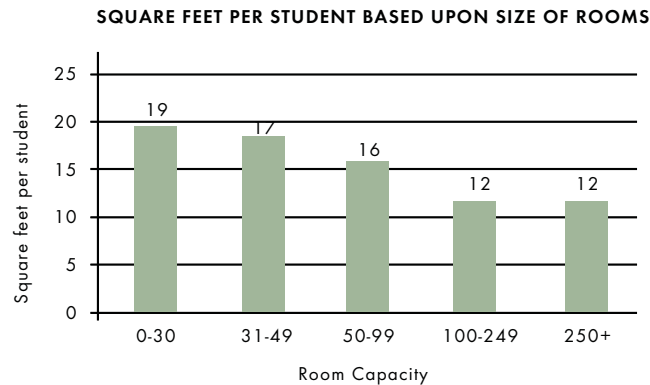
FIGURE 3. ALLOCATED SQUARE FEET PER STUDENT BASED ON ROOM SIZE: FIGURE BASED ON ANALYSIS OF 214 GENERAL UNIVERSITY CLASSROOMS.

The amount of square footage available in existing classrooms can start to dictate the seating capacity and influence the pedagogy styles chosen to deliver the curriculum. Maximizing utilization while maintaining flexibility for multiple pedagogical styles is the key to classroom success at Iowa State University. As classes become more collaborative, the need for additional square footage is necessary to accommodate a balance of furniture, technology and student work areas. Additionally, classrooms must be of an adequate size to address movement and circulation, exiting and accessibility considerations. If the size of the classroom is too small, the full educational value of the classroom may not be realized.

The more passive pedagogical styles require less square footage than active learning styles. Current education trends recommend increased square foot allowances per student than in the past. In smaller general classrooms, 12-15 SF/student has been historically used for planning purposes. That number is now 18-20 SF/student for passive pedagogical styles. More flexible learning environments require 20-25 SF/student. Of the 214 general university classrooms, approximately 185 classrooms are small-medium in size (0-99 capacity). These rooms have an average SF/student of 17.2. A quick study to determine the effects of right-sizing classrooms with a capacity of (0-99) to modern standards equates to a reduction of 1977 seats for these 185 rooms or approximately 24%. With this kind of impact, classroom planning will inform what pedagogical opportunities will be available in existing spaces/ These numbers also indicate a decreased capability for existing spaces to meet the needs of faculty and students now and is exacerbated as the student population increases.

Agronomy — 3
Atanasoff — 1
Bessey — 2
Beyer — 4
Black — 5
Carver — 31
Coover — 5
Curtiss — 7
Design — 1
Durham — 1
East Hall — 1
Food Science — 4
Forker — 4
Gerdin — 8
Gilman — 18
Hamilton — 4
Heady — 4
Hoover — 5
Horticulture — 2
Howe — 5
IED2 — 2
Kildee — 4
Lagomarcino — 9
LeBaron — 4
MacKay — 5
Marston — 2
Mol-Bio — 4
Morrill — 3
NSRIC — 1
Pearson — 21
Physics — 9
Ross — 15
Science 2 — 4
Science — 2
Sweeney — 6
Town — 6

0   5   10   15   20   25   30   35

Number of General University Classrooms per Building
*Based on all 214 general university classrooms

FIGURE 4. NUMBER OF GENERAL UNIVERSITY CLASSROOMS PER BUILDING. BASED ON ANALYSIS OF 214 GENERAL UNIVERSITY CLASSROOMS. NOTE:TROXEL HALL WAS NOT ONLINE AT THE TIME OF DATA COLLECTION PERIOD OF FALL 2012/SPRING 2013.

This chart indicates that there are only a few buildings with a significant concentration of general university classrooms, the largest number of rooms being in Carver, Pearson, Gilman and Ross Halls. Based on analysis, utilization does not seem to be impacted by the number of classrooms in a particular building.

CLASSROOM DISTRIBUTION
Refer to Figure 5. This map of campus indicates the existing locations and sizes of the current general university classrooms. Large classrooms (100-249) and auditorium spaces (250+) are distributed evenly across campus. The current distribution would appear to pose little challenge for quick access from anywhere on campus, based on the 10-minute break between class periods. These spaces are typically among the top performing rooms for utilization according to F12/S13 utilization reports. Small classrooms (12-49) are heavily populated in the southwest and southeast quadrants of campus. In general, these classrooms are not well utilized due to the increasing need for more space to accommodate larger section sizes.

CEMETERY

PAMMEL DRIVE

MORRILL ROAD

WINLOCK ROAD

STANGE ROAD

PAMMEL DRIVE

UNIVERSITY BOULEVARD

A1
F1
T2
Mol-Bio

T1
C1
Ed 2

M2
Science 2

A2
M3
T3
Lagomarcino

A1
NSRIC

F1
M2
A1
Kildee

T4
T2
Town Eng.

F1
M4
S2
A1
A1

F1 F6
T4 M3
A2 T1
A1
Gilman Osborn Drive Physics

M1
M1 F2
Science

OSBORN DRIVE

A1
Design

WOI ROAD

BISSELL ROAD

T3 M1
A1
Coover

M1
Atanasoff

M1
M2
M1
A1
LeBaron

M1 T3
A1
MacKay

A1
Palmer

A1
T1
Bessey

F1 S1
M1 F1
S1
Agronomy

FARMHOUSE LANE

WALLACE ROAD

C1 T3 F2
Sweeney

M1
Durham

Plaza of Heroines

M1 A1
Horticulture

A1
Troxel

M1 T1
M2
Hamilton

AGRICULTURAL AND BIOSYSTEMS ENGINEERING CONSTRUCTION SITE

M1
T1
F1
Morrill

T3
T2
Howe

A1
M1 F3
Hoover

C1
A1
Marston

MORRILL ROAD

A1
C2 T1
T4 M7
Ross

A1
T1
M2
Food Sciences

T2
M2
Forker

M1
T2
T1
Beyer
UNION DRIVE

T3
M1
C1
Black Eng.

M19
F1
A1
Pearson

George Washington Carver Plaza

S1
A1
F1
Curtiss

T2
M2

M3 C1
T1
M2
East
Heady

WALLACE ROAD

T4
A1

F2 T1
Gerdin

F1 T2
T9 T3 A2
M14
Carver

UNION DRIVE

UNION DRIVE

COLLEGE

CREEK

CLASSROOM SIZE
*based on F12/S13 utilization

Small   12 - 49 Occupants
Medium 50 - 99 Occupants
Large   100 - 249 Occupants
Aud.   250 + Occupants

SEATING TYPE

A   Auditorium
C   Strip Table & Chairs
F   Fixed Tablet Arm
M   Movable Tablet Arms
S   Tables w/ Chairs Attached
T   Tables & Chairs

LEGEND

T1 ──── # of similar rooms in bldg
   └──── indicates seating type

CLASSROOM DISTRIBUTION MAP

FIGURE 5

Number behind graph bar indicates number of classrooms in building
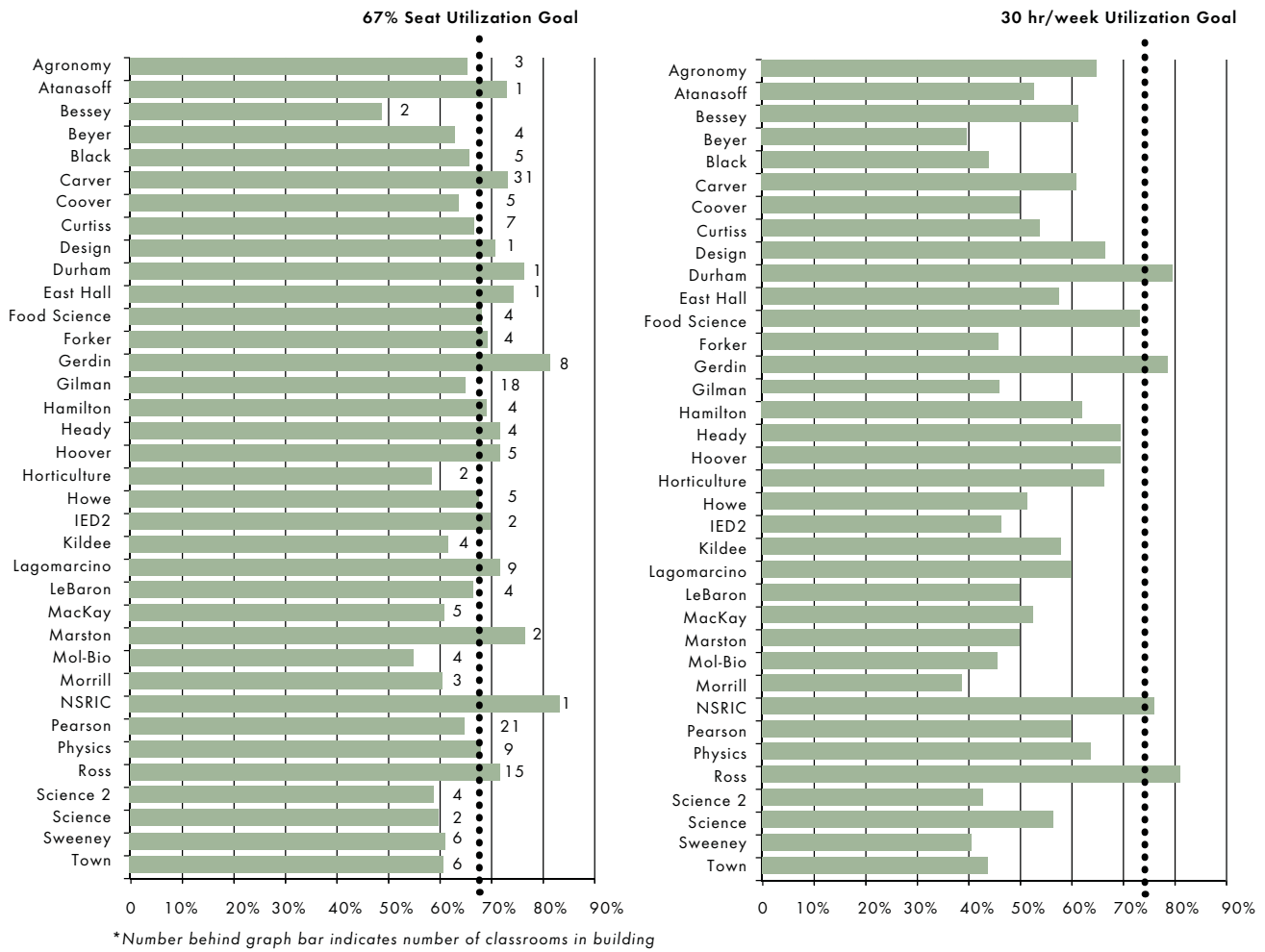
FIGURE 6. AVERAGE SEAT & ROOM UTILIZATION PERCENTAGE BY BUILDING. FIGURES BASED ON ANALYSIS OF 214 GENERAL UNIVERSITY CLASSROOMS.

Figure 6 illustrates utilization performance by building based on the University goals of 30 hours per week room utilization and 67% seat utilization. Percentages indicate the average of all rooms within a building. Individual rooms may perform at higher and lower levels than the average.

It should be noted that some buildings only have 1 or 2 classrooms, which affects the overall "per building" statistics. These graphs indicate that approximately 50% of buildings meet the University seat utilization goal, while only 11% of buildings meet the room utilization rate. A review of individual rooms within each building indicates much higher room and seat utilization rates for larger sized classrooms.

CLASSROOM UTILIZATION SUMMARY
Iowa State has historically gathered and evaluated utilization data for general university classrooms. For this study, this data was analyzed to determine trends, similarities and idiosyncrasies in room and seat utilization for Fall 2012/Spring 2013.

HIGHLIGHTS FROM UTILIZATION ANALYSIS

» Buildings with the highest hours per week of usage are fairly evenly distributed across campus.

» Seat utilization varies widely between buildings. Approximately 50% of general university classrooms meet the University seat utilization goal of 67%. We found better utilization in larger capacity classrooms of 75-150.

» The top 10 most utilized classrooms are located mainly in the southeast quadrant of campus.

» The average hours per week general university classrooms are scheduled for are: small classrooms: 21 hours; medium: 23 hours; large: 27 hours and auditoriums: 29 hours. The larger the capacity of a room, the more often it is scheduled and used during the normal week hours.

When utilization results were reviewed with Room Scheduling, the results were unexpected. It was determined that the physical condition, equipment within the room and size of classrooms were not necessarily directly related to the how sought after rooms were. In fact, location of classrooms in relationship to a department's home base appears to be the top factor for requests for classrooms. This data will continue to change as more pressure is put on Room Scheduling to meet the demands of increased enrollment levels within the current mix of classrooms available.

AVAILABILITY
Facilities Planning and Management has recently completed a report on classroom availability based on data collected from 2005-2013. There are 7,600 course sections scheduled each semester, with increases in every semester of recent history. As noted in other areas of this study, higher enrollment has resulted in additional and larger course sections. It is a great challenge for Room Scheduling to balance course offerings, available classroom resources and special requests from departments. During recent years, scheduling of large lectures for Monday-Wednesday-Friday offerings has become especially difficult, and in some cases impossible as demand exceeds availability.
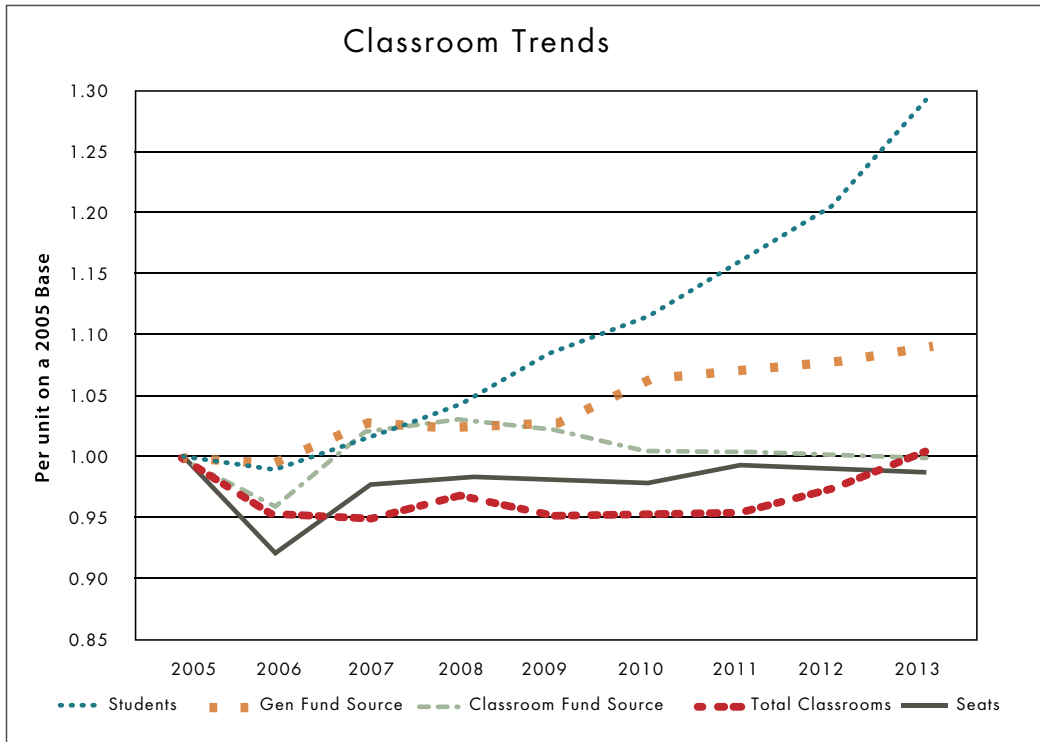
FIGURE 7. CLASSROOM AVAILABILITY TRENDS. FIGURES BASED ON ANALYSIS OF 214 GENERAL UNIVERSITY CLASSROOMS FROM 2005-2013.

Figure 7 is a graphic summary of classroom availability from 2005-2013 and confirms that with increased enrollment, classroom availability has decreased.

Figure 8 demonstrates the availability of rooms based on classroom capacity. It is easy to see that rooms with capacities between 100 and 431 have lower availability at all hours of the day, on each day of the week. For all classrooms of all sizes, the prime time periods of 9 a.m. to 3 p.m. have the lowest availability on each day of the week. Availability of classrooms on Tuesdays and Thursdays is notably less than those on Monday-Wednesday-Friday.
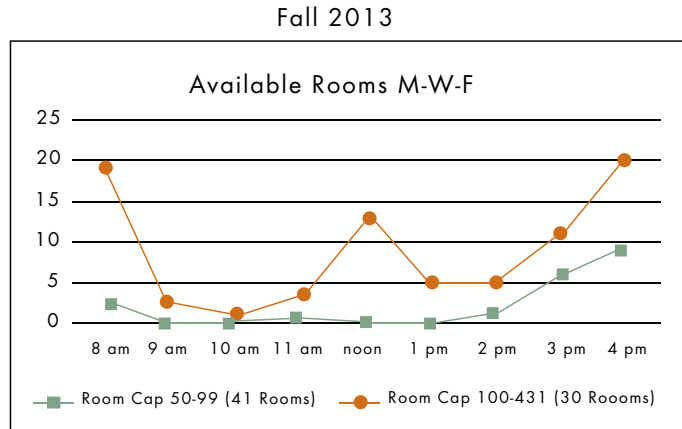
Fall 2013

Graph 2: Fall 2013 M-W-F Available Rooms
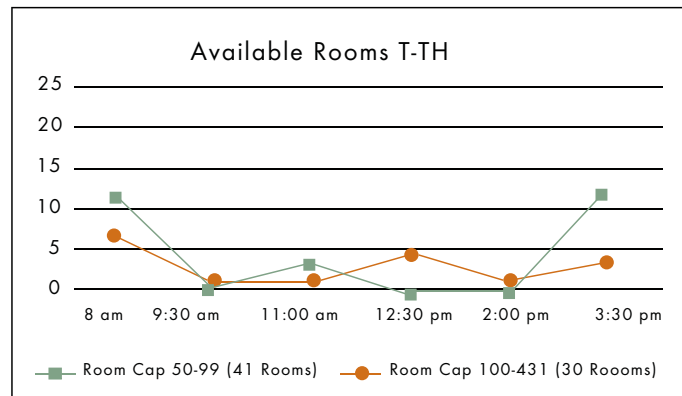
Graph 3: Fall 2013 T-TH Available Rooms

FIGURE 8. CLASSROOM AVAILABILITY BASED ON DAY/TIME. FIGURES BASED ON ANALYSIS OF A POOL OF GENERAL UNIVERSITY CLASSROOMS FOR FALL 2013.

CONCLUSIONS

Room Scheduling is actively working with colleges and departments on the disparity of prime-time and non-prime time availability. Departments are being encouraged to be creative with their course offerings and consider making changes such as moving course offerings to the beginning and end of the day, or on alternative days of the week.

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05 | SAMPLE CLASSROOM ASSESSMENT

05 SAMPLE CLASSROOM ASSESSMENT

During the fall of 2013, a field survey was conducted to determine the physical attributes of the existing general university classrooms. With University input, 48 representative classrooms were selected as a sample group to provide an overview of conditions present on campus. The sample included newly renovated to very old classrooms in buildings that also offered a variety of age and amenities to allow the most accurate representation of the current state of the classrooms on campus. Physical characteristics that were assessed:

» Quality Finishes (floors, walls, ceilings, lighting)

» Lighting Systems (lighting scenes and controls)

» Systems Details (mechanical systems, fire suppressant, electrical, roof

» Technology (projectors, capturing capabilities, internet capabilities, smart boards and displays)

» Furnishings (seating types, writing surfaces, podia, coat racks, spacing)

LIST OF ASSESSED CLASSROOMS

No.	Building/Room Number	Year Built	No.	Building/Room Number	Year Built
1	Agron 2020	1952	25	Gilman 2104	1914
2	Agron 2026	1952	26	Gilman 2205	1914
3	Agron 2050	1952	27	Gilman 2354	1914
4	Carver 0001	1969	28	Lago E0164	1912
5	Carver 0004	1969	29	Lago N0102	1912
6	Carver 0018	1969	30	Lago W0142	1912
7	Carver 0150	1969	31	Lago W0272	1912
8	Carver 0174	1969	32	MacKay 0135	1911
9	Carver 0205	1969	33	Mol-Bio 1414	1992
10	Carver 0268	1969	34	Mol-Bio 1420	1992
11	Carver 0290	1969	35	Mol-Bio 1424	1992
12	Coover 1012	1950	36	Pearson 1105	1962
13	Coover 1219	1950	37	Pearson 1115	1962
14	Coover 2245	1950	38	Pearson 2115	1962
15	Food Sc 2432	1928	39	Pearson 2143	1962
16	Gerdin 0119	2003	40	Ross H 0022	1973
17	Gerdin 1148	2003	41	Ross H 0028	1973
18	Gerdin 2133	2003	42	Ross H 0031	1973
19	Gilman 0312	1914	43	Ross H 0124	1973
20	Gilman 0611	1914	44	Ross H 0131	1973
21	Gilman 1002	1914	45	Sweeney 1116	1927
22	Gilman 1104	1914	46	Sweeney 1120	1927
23	Gilman 1312	1914	47	Sweeney 1126	1927
24	Gilman 1805	1914	48	Sweeney 1157	1927

REFER TO THE APPENDIX FOR A COMPLETE LIST OF ALL **214** GENERAL UNIVERSITY CLASSROOMS.

ASSESSMENT CRITERIA

The sample classroom assessment was based on physical characteristics only: whether the product is in need of repair or replacement. This does not address visual qualities, or whether or not it is an appropriate design aesthetic.

1 | Excellent: Product appears new or nearly new in nature.
2 | Good: Product appears to be in reasonable working condition. Natural wear and tear is visible, but creates no hazards.
3| Fair: Product appears to be in need of repair or replacement.   Product is near the end of its manufacturer's recommended useful life*.
4| Poor: Product is in need of immediate repair or replacement.

*Recommended Useful Life: Each specific product is different and based on manufacturer's recommendations, use, wear and tear and quality of materials.

TYPICAL MATERIAL FINISH LIFE CYCLE:

FLOORS (EXCLUDES SUBSTRATE MATERIAL)
Carpet ....5-7 years
Poured Epoxy...10+ years
Polished Concrete...25 years
Porcelain Tile ....30+ years
Solid Composite Tile (SCT)......................................15 years
Vinyl Composite Tile (VCT)......................................10 years

WALLS
Paint (standard interior latex)....................................6 years
Gypsum Board (Gyp Bd) ....20+ years
Stained Wood Panel...10 years

CEILING
Acoustic Ceiling Tile (ACT) ....5 years
Gypsum Board (Gyp Bd) ....20+ years
Paint (standard interior latex)....................................10 years
Suspended Cloud...25+ years
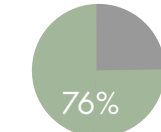Stained Wood Cloud..25+ years

Condition ratings were applied to each of the 48 classrooms based on site observation and documentation. The compiled physical assessment of the 48 classrooms is provided in Figures 9a.-9c   After compilation, this data was analyzed to provide a basis for improvement recommendations found in Section 6 of this report.
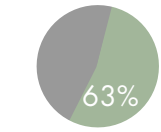
Sample General University Classroom Assessment
Fall 2012 / Spring 2013 Utilization
INVISION Assessment: Fall 2013

Physical Assessment

Key Findings:

Systems Characteristics:

Mechanical — 76% — In need of moderate to complete rework.

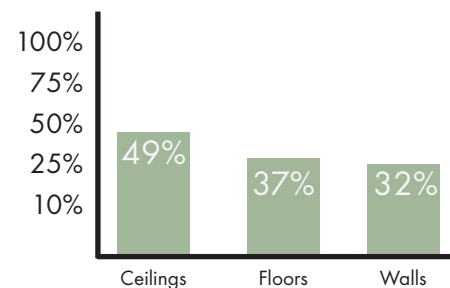**Roof Condition** — 63% — In good working condition.

Fire Suppression — 47% — In need of moderate to complete rework or is not present.

76% of mechanical systems assessed are in need of repair, moderate to complete rework. Roofs and electrical systems are perceived to be in good condition. In general, rooms felt comfortable temperature-wise. 47% of rooms needed fire suppression upgrades or did not have them at all. Note: The University currently has a plan in place for modification to fire suppression systems on campus.

Bldg/Room	Capacity	SF	SF/Occ	F12 Class Hours	Seat Utilization	S13 Class Hours	Seat Utilization	Floors	Walls	Ceiling	Ceiling Height	Windows	Blinds/ Shades	Mech	Elect	Fire Supp	Roof	Strategic Switch	Dim Lights	Light Controls
AGRON 2020	70	859	12.3	20.17	58.4	24.67	52.2	poor	fair	fair	123	yes	curtains	2	2	3	1	yes	yes	no
AGRON 2026	44	578	13.1	22	60.8	18.5	57.1	poor	poor	fair	122	yes	black out	2	2	3	1	yes	yes	no
AGRON 2050	117	1750	15.0	32.83	77.3	28.5	79	poor	fair	fair	122	no	na	2	2	3	1	yes	yes	no
CARVER 0001	200	2241	11.2	26.83	70.5	32.17	68.8	good	good	poor	146	no	na	4	2	5	1	yes	yes	no
CARVER 0004	39	551	14.1	22.5	82.8	21.67	77.6	excellent	excellent	excellent	111	no	na	4	2	5	1	yes	no	no
CARVER 0018	62	791	12.8	14.33	50.4	11.83	84.7	excellent	excellent	excellent	113	no	na	4	2	5	1	yes	no	yes
CARVER 0150	49	635	13.0	16.33	60.6	16.33	82.3	good	excellent	fair	120	no	na	4	2	5	1	yes	yes	no
CARVER 0174	36	545	15.1	24.67	78	29.17	76.5	excellent	excellent	excellent	96	no	na	4	2	5	1	yes	no	no
CARVER 0205	112	1884	16.8	30.08	64.2	27.17	69.4	excellent	excellent	excellent	104	no	na	4	2	5	1	yes	no	no
CARVER 0268	84	1622	19.3	32.5	78.6	23.83	83.6	excellent	excellent	excellent	104	yes	curtains	4	2	5	1	yes	no	no
CARVER 0290	39	717	18.4	29.67	78.6	22.67	60.4	good	excellent	fair	104	yes	curtains	4	2	5	1	yes	yes	no
COOVER 1012	48	1073	22.4	19.67	60.7	17.67	61.9	excellent	excellent	excellent	108	yes	blinds	5	2	4	1	yes	no	no
COOVER 1219	36	498	13.8	18.5	48.3	3.33	77.8	poor	good	good	112	yes	black out	5	2	4	1	yes	yes	yes
COOVER 2245	252	2874	11.4	21	70.4	28.5	71.9	poor	fair	poor	na	no	no	5	2	4	1	yes	yes	yes
FOOD SC 2432	146	1803	12.3	26.7	75.4	26.2	80.9	poor	poor	poor	216	no	na	2	2	1	3	yes	yes	no
GERDIN 0119	60	1242	20.7	30.2	82.2	33.3	86.3	good	excellent	excellent	120	no	na	2	2	1	1	yes	yes	no
GERDIN 1148	299	3986	13.3	26.2	72.0	29.3	78.3	good	good	excellent	120	no	na	2	1	1	1	yes	yes	no
GERDIN 2133	48	885	18.4	26.5	85.0	29.5	84.9	good	excellent	excellent	120	no	na	2	1	1	1	yes	yes	no
GILMAN 0312	40	635	15.9	17.8	55.0	16.2	59.5	poor	poor	poor	120	yes	blinds	4	3	5	3	yes	no	no
GILMAN 0611	40	633	15.8	16.0	54.6	16.5	40.0	poor	poor	poor	120	yes	blinds	4	3	5	3	no	no	no
GILMAN 1002	283	2848	10.1	28.8	76.5	26.0	61.4	poor	fair	fair	na	no	na	4	3	5	3	yes	no	no
GILMAN 1104	81	959	11.8	16.8	56.9	18.7	49.6	fair	fair	good	120	yes	blinds	4	3	5	3	yes	no	no
GILMAN 1312	40	621	15.5	11.3	65.0	5.2	60.0	good	fair	poor	112	yes	blinds	4	3	5	3	yes	no	no
GILMAN 1805	24	397	16.5	27.5	90.2	11.7	90.8	poor	poor	poor	108	yes	blinds	4	3	5	3	yes	yes	no
GILMAN 2104	48	813	16.9	0.0	0.0	19.0	68.0	excellent	excellent	excellent	120	yes	black out	4	3	5	3	no	no	no
GILMAN 2205	54	978	18.1	13.3	73.8	6.0	61.7	excellent	excellent	excellent	108	yes	curtains	4	3	5	3	yes	yes	no
GILMAN 2354	48	900	18.8	12.3	53.8	2.5	38.5	excellent	excellent	excellent	108	no	na	4	3	5	3	no	no	no
LAGOMARE0164	100	1248	12.5	29.0	75.6	25.3	65.2	good	good	good	104	yes	black out	4	3	5	1	yes	no	no
LAGOMARN0102	32	721	22.5	23.8	77.0	33.2	71.9	fair	good	good	105	yes	blinds	4	3	5	1	no	yes	no
LAGOMARW0142	150	1986	13.2	30.3	79.1	29.8	69.1	fair	excellent	good	150	yes	black out	4	3	5	1	yes	yes	no
LAGOMARW0272	60	1010	16.8	23.2	65.5	14.7	71.4	excellent	excellent	excellent	96	no	na	4	3	5	1	yes	no	no
MACKAY 0135	48	770	16.0	18.5	56.2	11.8	40.4	excellent	excellent	excellent	112	yes	shades	2	1	1	1	yes	no	yes
MOL-BIO 1414	196	2248	11.5	27.3	72.4	28.3	66.5	poor	fair	good	139	no	na	2	2	2	2	yes	yes	no
MOL-BIO 1420	48	823	17.1	12.5	59.0	16.2	54.2	poor	poor	poor	100	no	na	2	2	2	2	yes	no	no
MOL-BIO 1424	30	592	19.7	18.7	40.7	18.8	54.8	poor	poor	fair	100	no	na	2	2	2	2	yes	yes	no
PEARSON 1105	45	661	14.7	22.7	52.2	12.2	80.6	excellent	excellent	fair	114	yes	black out	4	3	3	1	yes	no	no
PEARSON 1115	94	1287	13.7	26.0	57.6	28.0	69.2	good	excellent	excellent	114	yes	black out	4	3	3	1	yes	no	no
PEARSON 2115	102	1292	12.7	21.8	82.4	21.3	62.6	fair	good	fair	114	yes	black out	4	3	3	1	yes	yes	no
PEARSON 2143	35	634	18.1	25.3	66.8	27.0	64.7	excellent	poor	fair	113	yes	curtains	4	3	3	1	yes	yes	no
ROSS H 0022	28	528	18.9	36.3	89.1	36.0	88.8	poor	fair	fair	108	no	na	4	3	3	3	yes	no	no
ROSS H 0028	40	626	15.7	24.3	51.1	29.2	64.6	poor	fair	poor	108	no	na	4	3	3	3	yes	no	no
ROSS H 0031	38	540	14.2	31.7	57.7	30.8	64.5	poor	fair	poor	108	no	na	4	3	3	3	yes	yes	no
ROSS H 0124	112	1573	14.0	35.8	63.9	28.2	76.7	good	excellent	good	121	no	na	4	3	3	3	yes	yes	no
ROSS H 0131	28	543	19.4	35.2	86.3	34.8	77.9	poor	fair	poor	108	no	na	4	3	3	3	yes	yes	no
SWEENEY 1116	42	797	19.0	17.2	62.7	10.7	50.0	poor	poor	poor	104	yes	blinds	4	2	1	1	yes	no	yes
SWEENEY 1120	28	596	21.3	10.5	58.3	24.0	55.5	good	good	poor	118	yes	blinds	4	2	1	1	yes	yes	no
SWEENEY 1126	59	797	13.5	25.2	58.6	30.7	59.3	good	good	fair	116	yes	blinds	4	2	1	1	yes	yes	no
SWEENEY 1157	12	262	21.8	3.8	66.7	2.7	100.0	good	excellent	good	94	no	na	4	2	1	1	no	no	no

Systems Factors:

EXCELLENT	1-no work
GOOD	2-low work
FAIR	3-low to moderate work
POOR	4-moderate to high work
	5-complete rework

Key Findings:

Physical Room Conditions:

Ceilings 49% — Floors 37% — Walls 32%

The median age of buildings that house Gene University Classrooms is 62 years. The median age for significant renovations of these buildin 1985. Functionality and accessibility of rooms in poor to fair condition. Materials and finishe are worn and in need of update. In general, 47% of ceiling systems (lights and material need to be updated). 37% of floors need replacement and 32% of walls need to be repaired and repainted. It is recommended these be addressed within the next few years.

ASSESSMENT OF SAMPLE
GENERAL UNIVERSITY
CLASSROOMS

FIGURE 9a

Furnishings Assessment

| Bldg/Room	Capacity	SF	SF/Occ	F12 Class Hours	Seat Utilization	S13 Class Hours	Seat Utilization	Seating Type	Podium	Distance to Front Row of Seats	Main Aisle	Second'y Aisle	Row Spacing	Seat Spacing	Marker Board	MB Multiple Walls	Black Board	BB Multiple Walls	Tack Board	Coat Rack
AGRON 2020	70	859	12.3	20.17	58.4	24.67	52.2	FTA	fixed	88	46	na	40	25	no	no	yes	no	no	yes
AGRON 2026	44	578	13.1	22	60.8	18.5	57.1	FTA	fixed	96	48	na	39	25	no	no	yes	no	no	yes
AGRON 2050	117	1750	15.0	32.83	77.3	28.5	79	SATELLITE	fixed	121	42	na	40	30	no	no	yes	no	no	yes
CARVER 0001	200	2241	11.2	26.83	70.5	32.17	68.8	AUD	fixed	156	46	na	39	30	na	no	yes	no	no	no
CARVER 0004	39	551	14.1	22.5	82.8	21.67	77.6	MTA	no	108	na	na	na	na	no	no	yes	yes	no	no
CARVER 0018	62	791	12.8	14.33	50.4	11.83	84.7	FTA	desk	90	60	na	na	na	no	no	yes	yes	no	no
CARVER 0150	49	635	13.0	16.33	60.6	16.33	82.3	MTA	desk	84	na	na	30	na	no	no	yes	yes	no	no
CARVER 0174	36	545	15.1	24.67	78	29.17	76.5	TC	desk	na	na	na	na	na	yes	yes	yes	yes	no	no
CARVER 0205	112	1884	16.8	30.08	64.2	27.17	69.4	TC	fixed	120	42	42	60	30	yes	no	no	no	no	no
CARVER 0268	84	1622	19.3	32.5	78.6	23.83	83.6	TC	desk	93	64	na	43	30	no	no	yes	no	no	no
CARVER 0290	39	717	18.4	29.67	78.6	22.67	60.4	TC	desk	84	48	na	60	30	no	no	yes	no	no	no
COOVER 1012	48	1073	22.4	19.67	60.7	17.67	61.9	TC	fixed	108	48	48	48	30	yes	yes	no	no	no	no
COOVER 1219	36	498	13.8	18.5	48.3	3.33	77.8	MTA	desk	102	na	na	na	na	no	no	yes	yes	no	no
COOVER 2245	252	2874	11.4	21	70.4	28.5	71.9	AUD	mobile	120	48	na	42	28	no	no	yes	no	no	no
FOOD SC 2432	146	1803	12.3	26.7	75.4	26.2	80.9	AUD	desk	108	42	na	38	25	yes	no	no	no	no	no
GERDIN 0119	60	1242	20.7	30.2	82.2	33.3	86.3	TC	smart	162	60	na	57	30	yes	no	no	no	no	no
GERDIN 1148	299	3986	13.3	26.2	72.0	29.3	78.3	AUD	smart	204	60	na	44	27	yes	no	no	no	no	no
GERDIN 2133	48	885	18.4	26.5	85.0	29.5	84.9	FTA	smart	84	60	na	48	36	yes	no	no	no	no	no
GILMAN 0312	40	635	15.9	17.8	55.0	16.2	59.5	FTA	desk	96	60	na	44	36	no	no	yes	yes	no	no
GILMAN 0611	40	633	15.8	16.0	54.6	16.5	40.0	FTA	desk	96	na	36	38	36	no	no	yes	yes	no	no
GILMAN 1002	283	2848	10.1	28.8	76.5	26.0	61.4	AUD	table	127	36	36	38	26	no	no	yes	no	no	no
GILMAN 1104	81	959	11.8	16.8	56.9	18.7	49.6	FTA	desk	108	42	na	42	26	yes	no	no	no	no	no
GILMAN 1312	40	621	15.5	11.3	65.0	5.2	60.0	FTA	AV podium	96	na	na	38	36	no	no	yes	yes	no	no
GILMAN 1805	24	397	16.5	27.5	90.2	11.7	90.8	FTA	desk	72	na	na	38	30	no	no	yes	no	no	no
GILMAN 2104	48	813	16.9	0.0	0.0	19.0	68.0	MTA	mobile	na	na	na	na	na	yes	yes	no	no	no	no
GILMAN 2205	54	978	18.1	13.3	73.8	6.0	61.7	TC	Podium	96	42	na	42	50	yes	no	no	no	no	no
GILMAN 2354	48	900	18.8	12.3	53.8	2.5	38.5	MTA	AV podium	na	na	na	na	na	yes	yes	no	no	no	no
LAGOMARE0164	100	1248	12.5	29.0	75.6	25.3	65.2	AUD	desk	113	60	na	39	26	no	no	yes	no	yes	yes
LAGOMARN0102	32	721	22.5	23.8	77.0	33.2	71.9	TC	movable	104	na	na	na	na	no	no	yes	no	yes	yes
LAGOMARW0142	150	1986	13.2	30.3	79.1	29.8	69.1	AUD	desk	169	52	na	37	25	no	no	yes	no	no	no
LAGOMARW0272	60	1010	16.8	23.2	65.5	14.7	71.4	MTA	desk	96	na	na	na	na	no	no	yes	no	no	no
MACKAY 0135	48	770	16.0	18.5	56.2	11.8	40.4	TC	fixed	76	na	na	44	na	yes	no	no	no	no	no
MOL-BIO 1414	196	2248	11.5	27.3	72.4	28.3	66.5	AUD	fixed	168	46	na	42	22	no	no	yes			no	no
MOL-BIO 1420	48	823	17.1	12.5	59.0	16.2	54.2	FTA	desk	126	na	48	48	26	no	no	yes	no	no	yes
MOL-BIO 1424	30	592	19.7	18.7	40.7	18.8	54.8	TC	desk	96	78	na	60	na	no	no	yes	no	yes	yes
PEARSON 1105	45	661	14.7	22.7	52.2	12.2	80.6	MTA	desk/pod	96	na	na	36	na	no	no	yes	no	no	no
PEARSON 1115	94	1287	13.7	26.0	57.6	28.0	69.2	FTA	desk	108	46	44	36	26	yes	no	no	no	no	no
PEARSON 2115	102	1292	12.7	21.8	82.4	21.3	62.6	AUD	desk	108	52	48	39	26	no	no	yes	no	no	yes
PEARSON 2143	35	634	18.1	25.3	66.8	27.0	64.7	MTA	desk	108	99	na	36	na	yes	no	yes	no	no	no
ROSS H 0022	28	528	18.9	36.3	89.1	36.0	88.8	TC	desk	48	60	na	48	na	no	no	yes	no	no	no
ROSS H 0028	40	626	15.7	24.3	51.1	29.2	64.6	STC	desk	72	36	na	56	36	no	no	yes	no	no	no
ROSS H 0031	38	540	14.2	31.7	57.7	30.8	64.5	MTA	desk	54	na	na	36	na	no	no	yes	no	no	yes
ROSS H 0124	112	1573	14.0	35.8	63.9	28.2	76.7	AUD	desk	96	57	43	40	26	no	no	yes	no	no	no
ROSS H 0131	28	543	19.4	35.2	86.3	34.8	77.9	TC	desk	78	54	na	54	36	no	no	yes	no	no	no
SWEENEY 1116	42	797	19.0	17.2	62.7	10.7	50.0	TC	desk	96	42	24	48	30	no	no	yes	yes	yes	yes
SWEENEY 1120	28	596	21.3	10.5	58.3	24.0	55.5	STC	desk	115	44	na	35	30	no	no	yes	no	no	yes
SWEENEY 1126	59	797	13.5	25.2	58.6	30.7	59.3	FTA	desk	101	47	na	41	26	no	no	yes	no	no	yes
SWEENEY 1157	12	262	21.8	3.8	66.7	2.7	100.0	TC	desk	53	na	32	47	30	no	no	yes	no	no	yes

Key Findings:

>> **Total Seats Assessed - 3,627**
(out of approx. 14,200 across all general university classrooms)

>> **Total Square Feet Assessed- 52,850 SF**
(out of approx. 221,800 SF across all general university classrooms)

>> **Average Seat Capacity per Room - 78**
(similar to peer institution capacities)

>> **Average Seat Utilization - 67.2**
(meets university goal of 67%)

>> **Average Square Foot per Occupant - 15.8 SF**
(does not meet industry guidelines. Recommend 20 SF for more flexible teaching styles)

>> **Average Distance from front wall to first row of seats - 96"**
(meets industry standard and is recommended to continue this guideline)

Seating Type Key:
AUD - Auditorium
FTA - Fixed Tablet Arm
MTA - Moveable Tablet Arm
Satellite - Tables with chairs attached
STC - Strip Tables (fixed to floor) and
    Chairs (moveable)
TC - Tables and Chairs

Key Findings:

Furnishings Characteristics:
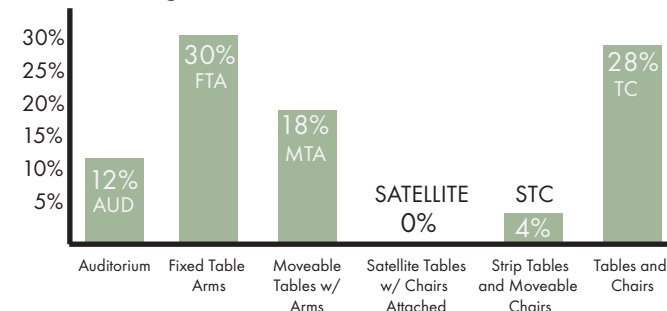
The blend of seating types across the assessed classrooms is a balanced mix that offers flexibility for curriculum delivery methods. It is recommended that a balanced mix of seating types be maintained. As learning becomes more collaborative moveable furniture is increasingly more desired. This requires additional square feet to accommodate. However, in order to meet enrollment numbers, a balanced blend of fixed and moveable seating is needed.

ASSESSMENT OF SAMPLE
GENERAL UNIVERSITY
CLASSROOMS

FIGURE 9b

Technology Assessment

Bldg/Room	Capacity	SF	SF/Occ	F12 Class Hours	Seat Utilization	S13 Class Hours	Seat Utilization	Proj	Dual Proj	Dual Screen	Doc Cam	Capture	35mm	Wireless	Hubs	Small Group Display
AGRON 2020	70	859	12.3	20.17	58.4	24.67	52.2	yes	no	yes	yes	no	yes	yes	2	no
AGRON 2026	44	578	13.1	22	60.8	18.5	57.1	yes	no	no	yes	no	yes	yes	2	no
AGRON 2050	117	1750	15.0	32.83	77.3	28.5	79	yes	no	yes	yes	no	yes	yes	2	no
CARVER 0001	200	2241	11.2	26.83	70.5	32.17	68.8	yes	no	no	yes	no	yes	yes	3	no
CARVER 0004	39	551	14.1	22.5	82.8	21.67	77.6	yes	no	no	yes	no	no	yes	1	no
CARVER 0018	62	791	12.8	14.33	50.4	11.83	84.7	yes	no	no	yes	no	no	yes	2	no
CARVER 0150	49	635	13.0	16.33	60.6	16.33	82.3	yes	no	yes	yes	no	no	yes	2	no
CARVER 0174	36	545	15.1	24.67	78	29.17	76.5	yes	no	no	yes	no	no	yes	2	no
CARVER 0205	112	1884	16.8	30.08	64.2	27.17	69.4	yes	yes	yes	yes	no	no	yes	2	no
CARVER 0268	84	1622	19.3	32.5	78.6	23.83	83.6	yes	no	yes	yes	yes	no	yes	2	no
CARVER 0290	39	717	18.4	29.67	78.6	22.67	60.4	yes	no	yes	yes	no	no	yes	1	no
COOVER 1012	48	1073	22.4	19.67	60.7	17.67	61.9	no	no	no	no	no	no	yes	2	no
COOVER 1219	36	498	13.8	18.5	48.3	3.33	77.8	yes	no	no	yes	no	no	no	1	no
COOVER 2245	252	2874	11.4	21	70.4	28.5	71.9	yes	no	no	yes	no	yes	yes	2	no
FOOD SC 2432	146	1803	12.3	26.7	75.4	26.2	80.9	yes	no	yes	yes	no	no	yes	2	no
GERDIN 0119	60	1242	20.7	30.2	82.2	33.3	86.3	yes	no	yes	yes	no	no	yes	2	no
GERDIN 1148	299	3986	13.3	26.2	72.0	29.3	78.3	yes	yes	yes	yes	no	no	yes	6	no
GERDIN 2133	48	885	18.4	26.5	85.0	29.5	84.9	yes	no	yes	yes	no	no	yes	2	no
GILMAN 0312	40	635	15.9	17.8	55.0	16.2	59.5	yes	no	yes	yes	no	no	yes	1	no
GILMAN 0611	40	633	15.8	16.0	54.6	16.5	40.0	yes	no	yes	yes	yes	no	yes	1	no
GILMAN 1002	283	2848	10.1	28.8	76.5	26.0	61.4	yes	yes	yes	yes	no	no	yes	8	no
GILMAN 1104	81	959	11.8	16.8	56.9	18.7	49.6	yes	no	yes	yes	no	no	yes	2	no
GILMAN 1312	40	621	15.5	11.3	65.0	5.2	60.0	yes	no	no	yes	no	no	yes	1	no
GILMAN 1805	24	397	16.5	27.5	90.2	11.7	90.8	no	no	no	no	no	no	no	1	no
GILMAN 2104	48	813	16.9	0.0	0.0	19.0	68.0	yes	no	no	yes	no	no	yes	2	yes
GILMAN 2205	54	978	18.1	13.3	73.8	6.0	61.7	yes	no	no	yes	no	no	yes	2	no
GILMAN 2354	48	900	18.8	12.3	53.8	2.5	38.5	yes	no	no	yes	yes	no	yes	2	no
LAGOMARE0164	100	1248	12.5	29.0	75.6	25.3	65.2	yes	no	no	yes	no	no	yes	2	no
LAGOMARN0102	32	721	22.5	23.8	77.0	33.2	71.9	yes	no	yes	yes	no	no	yes	2	no
LAGOMARW0142	150	1986	13.2	30.3	79.1	29.8	69.1	yes	no	yes	yes	no	yes	yes	2	no
LAGOMARW0272	60	1010	16.8	23.2	65.5	14.7	71.4	yes	no	no	yes	no	no	yes	1	no
MACKAY 0135	48	770	16.0	18.5	56.2	11.8	40.4	yes	no	yes	yes	no	no	yes	1	no
MOL-BIO 1414	196	2248	11.5	27.3	72.4	28.3	66.5	yes	no	yes	yes	no	no	yes	6	no
MOL-BIO 1420	48	823	17.1	12.5	59.0	16.2	54.2	yes	no	yes	yes	no	no	yes	1	no
MOL-BIO 1424	30	592	19.7	18.7	40.7	18.8	54.8	yes	no	yes	yes	no	no	yes	1	no
PEARSON 1105	45	661	14.7	22.7	52.2	12.2	80.6	yes	no	yes	yes	no	no	yes	1	no
PEARSON 1115	94	1287	13.7	26.0	57.6	28.0	69.2	yes	no	no	yes	yes	no	yes	2	no
PEARSON 2115	102	1292	12.7	21.8	82.4	21.3	62.6	yes	no	yes	yes	no	yes	yes	2	no
PEARSON 2143	35	634	18.1	25.3	66.8	27.0	64.7	yes	no	yes	yes	no	no	yes	1	no
ROSS H 0022	28	528	18.9	36.3	89.1	36.0	88.8	yes	no	yes	yes	no	no	yes	1	no
ROSS H 0028	40	626	15.7	24.3	51.1	29.2	64.6	yes	no	yes	no	no	no	yes	1	no
ROSS H 0031	38	540	14.2	31.7	57.7	30.8	64.5	yes	no	yes	yes	no	no	yes	1	no
ROSS H 0124	112	1573	14.0	35.8	63.9	28.2	76.7	yes	yes	yes	yes	yes	no	yes	2	no
ROSS H 0131	28	543	19.4	35.2	86.3	34.8	77.9	yes	no	yes	yes	no	no	yes	1	no
SWEENEY 1116	42	797	19.0	17.2	62.7	10.7	50.0	yes	no	yes	yes	no	no	yes	1	no
SWEENEY 1120	28	596	21.3	10.5	58.3	24.0	55.5	yes	no	yes	yes	no	yes	yes	1	no
SWEENEY 1126	59	797	13.5	25.2	58.6	30.7	59.3	yes	no	yes	yes	no	no	yes	1	no
SWEENEY 1157	12	262	21.8	3.8	66.7	2.7	100.0	yes	no	no	yes	no	no	yes	1	no

Key Findings:

Technology Characteristics:
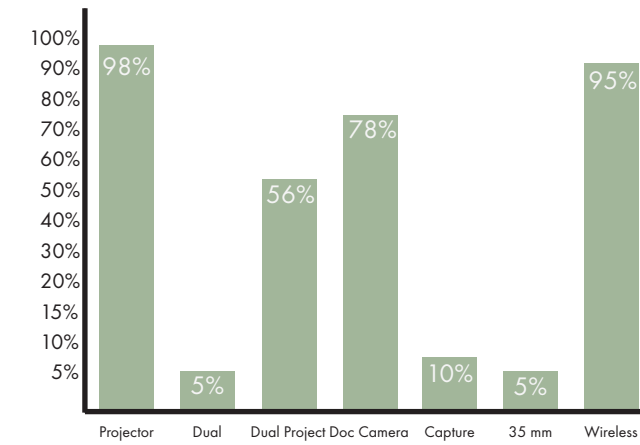
The University has diligently worked to upgrade and anticipate technology needs within the classroom. A very high percentage of classrooms are equipped with projectors, projection screens and wireless internet access. The technology component is one of quickest to change and become outdated. While we cannot predict the future, providing a flexible foundation for adding and changing technology is the most cost effective plan.

ASSESSMENT OF SAMPLE
GENERAL UNIVERSITY
CLASSROOMS

FIGURE 9c

SAMPLE CLASSROOM VISUAL ASSESSMENT
The following photographs provide a visual survey of the current conditions of the 48 sample general university classrooms. Note the variety of seating types, marker boards, chalk boards, floor finishes, etc.

Agronomy 2020

Agronomy 2026

Agronomy 2050

Carver 0001

Carver 0004

Carver 0018

Carver 0150

Carver 0174

SAMPLE CLASSROOM VISUAL ASSESSMENT

CARVER 0205

CARVER 0268

CARVER 0290

COOVER 1012

COOVER 1219

COOVER 2245

FOOD SCIENCE 2432

GERDIN 0119

GERDIN 1148

GERDIN 2133

SAMPLE CLASSROOM VISUAL ASSESSMENT

GILMAN 0312

GILMAN 0611

GILMAN 1002

GILMAN 1104

GILMAN 1312
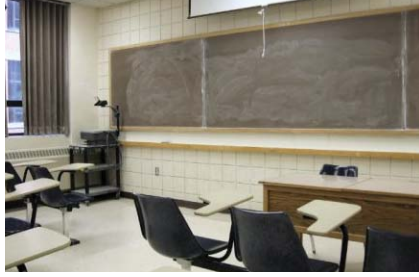
GILMAN 1805

GILMAN 2104

GILMAN 2205

GILMAN 2354

LAGO E0164

SAMPLE CLASSROOM VISUAL ASSESSMENT

Lago N0102

Lago W0142

Lago W0272

MacKay 0135

Mol-Bio 1414

Mol-Bio 1420

Mol-Bio 1424

Pearson 1105

Pearson 1115

Pearson 2115

SAMPLE CLASSROOM VISUAL ASSESSMENT

Pearson 2143

Ross 0022

Ross 0028

Ross 0031

Ross 0124

Ross 0131

Sweeney 1116

Sweeney 1120

Sweeney 1126

Sweeney 1157

BUILDING SYSTEMS ASSESSMENT

To supplement the field observations of existing classrooms, INVISION participated in focus meetings to discuss building systems such as mechanical, electrical and plumbing. Roofing conditions were also discussed. A meeting was also conducted to specifically address technology infrastructure with IT Services and Academic Technologies. Both discussions were broad-based to provide a bird's eye view of the state of the general university classrooms, and were not intended to provide specific direction on action items or requirements. Any future improvements will require in-depth study of actual building systems and infrastructure items.

Facilities Planning and Maintenance and the University Engineer provided the current state of the building systems (mechanical, electrical, plumbing, etc.) of the 48 representative classroom documented in this report. The intent of reviewing this data was to better understand what underlying upgrades are needed to fully renovate classrooms, and what, if any, limitations or implications these upgrades might have.

BUILDING SYSTEMS WERE CATEGORIZED AS FOLLOWS:

1 | *no work:* system in sound working condition
2 | *low work:* minimal upgrades required for another 10+ years
3 | *low to moderate work:* upgrades needed to maintain for 10+ years
4 | *moderate to high work:* major components require replacement
5 | *complete rework:* little of existing system is salvagable

Over 75% of buildings had a ranking of 4 or 5. An additional 20% are evaluated to need significant upgrades within the next 10 years.

CONCLUSIONS:

Most general university classroom improvement projects do not include significant building system upgrades-costs for the required holistic upgrades exceed what typical classroom improvement budgets can support. Minor system improvements, such as lighting and diffuser upgrades are included within typical improvements budgets.   Recommendations and estimates in this report do not include significant re-work of building systems outside of the classroom walls.

IT/AV ASSESSMENT OF ALL CLASSROOMS

Technological equipment provided in a typical classroom includes: video projector(s) and mount(s), audio-visual input/output controls, projection screen(s), audio amplifier with speakers, wireless microphones, document cameras, and a media cabinet. Select classrooms have also been enhanced with recording equipment, which most often includes cameras for recording both instructor and students, as well as specialized hardware and software. Depending on the purpose of the recording (face-to-face class material reinforcement vs. online course delivery), the recording equipment varies significantly. While the technology available for classrooms changes at an incredible speed, the equipment used to support it remains somewhat static due to limited available funding for replacement.

IT/AV ESTIMATED START-UP & MAINTENANCE COSTS

Items	Initial Cost	Replacement Cycle (yrs)	Replacement Cost	4 years	6 years	10 years	Annually (214 rooms)
Video Projector	2,500.00	4	2,500.00	535,000.00			133,750.00
Video Projector Lamp	350.00	4	350.00	74,900.00			18,725.00
Ceiling Mount	250.00	6	250.00	53,500.00			8,916.67
AV Control System	2,800.00	6	2,800.00		599,200.00		99,866.67
Document Camera*	1,700.00	4	900.00	192,600.00			48,150.00
Projection Screen	1,000.00	10	1,000.00			214,000.00	21,400.00
Audio Amplifier	400.00	4	400.00	85,600.00			21,400.00
Speakers	400.00	10	400.00			85,600.00	8,560.00
Wireless Microphones*	500.00	4	250.00	53,500.00			13,375.00
AV Wiring*	1,000.00	6	500.00		107,000.00		17,833.33
AV Patch Cables **	50.00	0.5	50.00				10,700.00
Media Cabinet/Lectern*	1,000.00	10	500.00			107,000.00	10,700.00
New Room Cost	$11,950.00						$413,376.67
New AV Budget Estimated Inventory (nodepreciation)	$2,557,300						$250,000.00

NOTES:
1) FY 14 actual number of AV equipped rooms is 205, the balance of the rooms have some portable equipment in them.
2) The annual projected cost for an item is its total replacement divided by its replacement cycle.
3) * Document cameras and wireless microphones are only installed in about 50% of the classroom, so their replacement cost is 50%.
  AV wiring and media cabinets/lecterns usually only need an upgrade in their cycle, hence 50% replacement.
4) ** AV Patch Cables are essentially consumables, they are replaced when they are damaged.
5) Wireless and networking infrastructure costs are handled via separate projects and funding sources.

FIGURE 10. IT/AV EQUIPMENT BUDGET PER CLASSROOM. THIS INCLUDES COSTS FOR ALL GENERAL UNIVERSITY CLASSROOMS.

Emerging trends in technology include these additional equipment items: touch panel controllers, wireless tablets for sharing and annotation, flat panels (in some cases to replace projections systems, in other cases to also enable team-based, active learning), mobile marker boards, and the accommodation of student mobile devices; including the greatly increased wireless bandwidth availability demanded in just the last year. These emerging technologies should be considered for future classroom planning.

SAMPLE CLASSROOM IT/AV ASSESSMENT

The first significant technological upgrades were made in 2003, when there was a state appropriation for $14M for classroom renovation. A portion of this funding went to support IT/AV in select classrooms. After several ad hoc allocations, a 2nd wave of significant funding came in 2009-10 under the American Recovery and Reinvestment Act (ARRA). Other than these large appropriations, AV equipment dollars were typically derived through capital projects, and did not provide installed technology reach to all general assignment classrooms. It should also be noted that both allocation waves came prior to the rapid demand for mobile technology bandwidth in ISU classrooms.

Beginning in fiscal year 2014, there is a set classroom technology budget of $250,000 to maintain classroom technology in all 214 classrooms. As noted in Figure 11 within four years, approximately $1,005,800 worth of equipment will require replacement. Within ten years, the number rises to $2,118,600. As the chart indicates, the current allocation allows for only partial maintenance and does not take into account any emerging technology or new classroom needs.

Furthermore, the current allocation does not address the overwhelming technology infrastructure needs. The University is currently working on a campus-wide wireless upgrade, to increase service and speed.

As more individual devices draw from the current bandwidth, the more the need becomes exacerbated. According to Information Technology Services staff, some classrooms are seeing such a high draw from within, and now including adjacent to, classroom spaces that not all laptops within a classroom can maintain a high speed connection at one time. The current infrastructure also limits the ability to connect classrooms inter-institutionally, a desired amenity in this technological age.

When asked, Information Technology Services staff noted that their most frequent calls from faculty and staff are related to not knowing where to go or who to call when there is an issue in the classroom. Items noted often extend beyond services provided by the group. During the classroom assessment, it was noted that signage was not consistently provided in all classrooms and that the only phone numbers noted were those of Information Technology Services.

SAMPLE CLASSROOM IT/AV ASSESSMENT CONCLUSIONS

New FY14 funding is greatly welcomed and does provide some support and advanced planning for general assignment classrooms. However, as Figure 10 shows, this funding level is insufficient to address maintenance needs over time. Further, it does not support the infusion of new technology or new classrooms. Also, wireless infrastructure demands are on the rise, and extensive upgrades are required campus-wide.

The instructors at Iowa State make the most of the technology tools currently available to deliver a high quality product. According to the learning needs assessment (conducted Fall 2013), they are more concerned with maintenance and reliability, but secondarily point toward the need for keeping up to date with emerging teaching and learning trends. The instructors increasingly need assistance both in course preparation and in the classroom, particularly with integrating and operating new technologies that support online delivery, and need clear direction on where to go for help.

SAMPLE CLASSROOM ASSESSMENT CONCLUSIONS

» There is a broad spectrum of physical conditions of both individual classrooms and buildings. ISU has worked diligently to maintain and stay current as funds are available, but current funding is inadequate to address holistic updates.

» Overall, the state of the mechanical systems are aging and in need of replacement/upgrades. This creates a challenge with how much renovation makes sense in a building if the mechanical systems are in poor condition.

» Technology/equipment is aging in conjunction with the demands of rapidly evolving technological needs. Per ITS, the average classroom costs $12,000-20,000 to equip a room.

» The life cycle of this equipment is 5-7 years. This infers a need for an effectively funded budget for technology replacement in existing classrooms.

» The physical state of the classroom currently has limited impact on the utilization, based on review of the utilization rate of spaces with outdated finishes and features. The faculty at Iowa State have made the most of, and will continue to make the most of, the amenities and spaces available to them.

Surprisingly, there seems to be little evidence suggesting that the physical quality of the space is the primary factor affecting use. Some of the 10 most utilized general university classrooms on campus are outdated, while some of the least utilized spaces are newly renovated classrooms. This is due to the complex nature of variables affecting the use of a particular space including location, relation to departmental offices, section numbers and sizes, availability, back-to-back classroom requests, day and time requests, and other special needs.

Aging infrastructure and the ability to keep over 215,977 SF of space updated on campus is a continuing challenge that is not unique to Iowa State. Annual allocations are strategically used to improve classrooms determined to be most in need by Facilities Planning and Management and Room Scheduling. Classrooms are renovated on an annual basis, with approximately 6-12 classrooms renovated per year. These are primarily smaller scale projects that are scheduled during the summer months to avoid taking valuable space offline in the fall and spring semesters. The number of classrooms renovated is dependant on the funding available. Focused renovation can be based on conditions and utilization to maximize the benefit across the institution. Funding can range from $200,000 to $500,000. At this funding level, it will take up to 65 years to renovate all existing classrooms at an average cost of $150/SF. A trajectory where a 65 year life-cyle on an individual classroom is clearly not desirable or sustainable.

While these allocations make a significant difference on campus, the amount of classrooms recommended by this report to be renovated exceeds current funding levels. Technology and pedagogy continue to rapidly evolve, moving the demands of renovation beyond mere maintenance. It is anticipated that responding beyond the most basic requirements of colleges, faculty and students, approximately $2,500,000-3,000,000 is needed on an annual basis to create a sustainable and systematic classroom improvement approach.

06 | IMPROVEMENT RECOMMENDATIONS

⁰⁶ IMPROVEMENT RECOMMENDATIONS

The following recommendations are based on data collection, analysis and supplemental information received through the duration of this study. These recommendations represent a variety of paths to increase utilization and to provide flexibility within the general university classroom system. They allow for exploration and support of new teaching styles and learning opportunities in the classroom in addition to creating capacity for an increasing student population.

CAPACITY

» Increase capacity to allow for more flexible scheduling options. 35,000 students can be accommodated by increasing room utilization 2-3%, or seat utilization 4-5%, or building 6% more space, or a combination of these. Current classrooms and availability are maxed out and will not continue to accommodate enrollment growth and flexible learning options. Modifications to room utilization, seat utilization and building space will require capital investment into general university classroom improvements.

» Continue discussions with departments and colleges on the need to schedule out of the prime time zone. Encourage scheduling early morning and late afternoon time slots.

» Increase SF allowance for classrooms in future planning to allow for more flexible classroom spaces.

CLASSROOM IMPROVEMENTS

» Implement phased improvement projects.

» While finishes were not found to significantly affect classroom utilization in this study, it is imperative that the University maintain up to date facilities to retain students and faculty. High expectations for condition of facilities surround high-achieving institutes.

» Consider remodeling small, under-utilized classrooms into larger, higher-demand classrooms that would more closely match the medium to large classrooms. A 75-150 capacity target range is ideal. Additional target zone classrooms would also help improve utilization and flexibility in scheduling.

» Create and utilize design standards for general university classrooms to create consistency across campus.

» Include a general university classroom building in future master planning discussions. Ideally, a general university classroom building would be in a central campus location to be utilized by all departments and colleges. Prioritize 150 capacity classrooms with flexible walls allowing for larger and smaller classrooms to be accommodated. This size of room cannot easily be renovated out of existing classroom stock and will provide the most flexibility to the general classroom system.

» Optionally, pro-actively and strategically plan for larger, more flexible general university classrooms as a component to new building projects. Larger, more open classroom space would allow for swing space during significant renovations of existing classrooms and buildings.

» Tight scheduling and transitions between classes limits the opportunity for one-on-one conversations between faculty and students. Add interaction space outside the classroom for the beginning and continuation of conversations before and after class. These informal learning areas also allow students to interact with each other outside of class time for small group work and personal study.

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BUILDING SYSTEMS

Consultations with Facilities Planning & Management will guide early planning for any required improvements in classroom upgrade projects. Logging conditions of building systems in a central location will aid in long-term planning. Required MEP system upgrades should be noted on planning tools. It is advisable to be master planning a campus-wide improvement to buildings requiring holistic system upgrades.

IT/AV

Information Technology Services is conducting a separate study on specific campus-wide IT/AV needs, and findings should be reviewed in conjunction with this report.

CLASSROOM ASSISTANCE

Explore options of creating a university-wide help desk, bringing together maintenance, ITS and faculty support staff to provide live answers and assistance to classrooms. Support for staff may include answers on supplies, classroom furnishing set up, connection to equipment, etc. This may include expansion to the current services offered by dialing the 5100 Facilities Help Desk.

INCREASE ROOM CAPACITY

Projections indicate potential growth from 33,000 to 35,000 students in the near future. Combining the data observations collected in this report, an assessment of the numbers indicates that a combination of improvements in seat utilization, room utilization and usage hours per week can all have significant impacts to accommodate the increase in enrollment and the demand for more space within the classroom to allow for flexibility of learning styles.

The Capacity Improvements Graph in figure 11 outlines multiple scenarios to allow capacity growth to happen within the University's existing utilization goals. 35,000 students can be accommodated by increasing room utilization 2-3%, or seat utilization 4-5%, or building 6% more space, or a combination of the above. Using a variety of these scenarios will lead to the greatest success for the University in capacity increase, utilization and student/faculty satisfaction.

	General University Classroom Seats on Campus	x	Average rooms used at one time	x	Average seats/clrm used at one time	=	Average # seats used at one time	OR	% of available seats used at one time	Total Student Population	% of student population in seats at one time
Existing	14,165	x	58.0%	x	68.0%	=	5,587	OR	39%	33,000	17%
Increase Room Utilization	14,165	x	61.5%	x	68.0%	=	5,925	OR	42%	35,000	17%
Increase Seat Utilization	14,165	x	58.0%	x	72.1%	=	5,925	OR	42%	35,000	17%
Build More Seats	15,023	x	58.0%	x	68.0%	=	5,925	OR	39%	35,000	17%
Combination of the Above	14,165	x	59.8%	x	70.0%	=	5,925	OR	42%	35,000	17%

FIGURE 11. CAPACITY IMPROVEMENTS GRAPH- FIGURES BASED ON ANALYSIS OF 214 GENERAL UNIVERSITY CLASSROOMS.

PHASED IMPROVEMENTS

Based on the assessment of existing spaces, it is recommended the University embark on a holistic classroom renovation plan. Existing spaces, with the exception of those recently renovated, have tired finishes, out of date and non-ergonomic furnishings, energy consuming light fixtures and other dated finishes. Some classrooms observed appear to not have been improved within the last 20-25 years. The assumption is that this is largely due to funding available for classroom improvements, and the strategic planning by Facilities Planning and Management to address rooms most in need and those that will provide the most improvement in utilization first.

Based on the average life span of materials observed and noted, it is recommended that all 214 classrooms be renovated/refreshed within the next 10 years. Renovation of a building or even multiple classrooms grouped in the same proximity is more cost effective than renovating individual classrooms one at a time. Challenges with funding and room availability for renovation will require careful phasing to achieve this.

The general logic of the proposed phasing is: identify rooms in most immediate need of attention that are in the 75-150 capacity range, as they are likely to provide the most immediate benefit to the University. Divide remaining spaces equally between years, prioritizing construction projects that can be completed in the summer break. Then group multiple classrooms within one building together to provide the most cost-effective renovation. Finally, distribute auditorium renovations over several years to avoid taking larger, highly utilized space off-line at one time. Auditoriums and other significant projects will span longer than the summer break due to scale.

In addition to these regular annual improvements, a plan for larger major projects is necessary. These projects will require careful coordination with Room Scheduling to accommodate classrooms being taken off-line.

This is one of many approaches that could be successful for Iowa State University for phasing this large scope of work. As projects are completed and more holistic projects are brought on-line by colleges and departments, phasing will require re-assessment and updating. This phasing plan is based on cyclical 15-year improvements to individual spaces.

The proposed phasing plan breaks down the recommended improvements based on condition, location and capacity. Each of the 214 general university classrooms was first evaluated for existing conditions:

» Those in most need of immediate attention are indicated in Phase 1: 1-5 Years.

» Those that are in adequate condition but foreseen to need improvements in about five years are indicated in Phase 2: 6-10 Years.

» Classrooms that have been recently constructed or renovated, unless otherwise noted, are indicated in Phase 3: 11+ Years.

RECOMMENDED PHASING PLAN

PHASE 1: 1-5 years		
Bldg/Room	Capacity	Sq. Ft.
Gilman 1002	283	2,848
Coover 2245	252	2,874
Mol-Bio 1414	196	2,248
Agron 2020	70	859
Agron 2026	44	578
Beyer 1310	67	809
Black 1071	30	751
Black 1026	32	708
Black 1028	48	852
Carver 0018	62	791
Carver 0032	30	577
Carver 0150	49	635
Carver 0160	49	635
Carver 0196	40	545
Carver 0290	33	717
Carver 0298	44	802
Coover1219	36	498
Curtiss 0208	36	755
Forker 0227	36	509
Forker 0278	36	739
Forker 0289	45	741
Forker 0291	45	586
Gilman 0312	40	635
Gilman 0611	40	633
Gilman 1104	81	959
Gilman 1114	30	415
Gilman 1312	40	621
Gilman 1652	100	1,211
Gilman 1801	24	418
Gilman 1805	24	397
Gilman 1810	54	769
Gilman 1811	24	397
Gilman 1813	24	436
Heady 0160	49	858
Heady 0272	33	563
Heady 0274	33	563
Hort 0118	103	1,498
Hort 0138	54	851
Lagomar N0102	30	721
LeBaron 0059	30	542
Marston 0209	65	969
Mol-Bio 1420	48	823
Mol-Bio 1424	30	592
Mol-Bio 1428	30	589
Pearson 1105	45	661
Pearson 1106	44	724
Pearson 1115	94	1,287
Pearson 2106	40	724
Pearson 2114	36	629
Pearson 2115	102	1,292
Pearson 2120	36	560
Pearson 2125	35	644
Pearson 2131	35	643
Pearson 2137	35	643
Pearson 2143	35	634
Pearson 2149	35	643
Pearson 2157	36	655
Pearson 2158	34	581
Pearson 3119	102	1,292
Pearson 3125	36	560
Pearson 3131	35	644
Pearson 3137	35	643
Pearson 3143	35	643
Pearson 3149	35	634
Pearson 3157	35	643
Physics 0038	36	655
Ross H 0020	30	626
Ross H 0022	28	528
Ross H 0024	30	520
Ross H 0025	34	540
Ross H 0026	40	528
Ross H 0028	40	626
Ross H 0029	36	540
Ross H 0031	38	540
Ross H 0124	112	1,573
Ross H 0125	38	543
Ross H 0127	36	543
Ross H 0129	36	543
Sweeney 1116	42	797
Sweeney 1120	28	596
Sweeney 1126	59	797
PHASE 1 TOTAL	**4,326**	**64,516** SF

PHASE 2: 6-10 years		
Bldg/Room	Capacity	Sq. Ft.
Hoover 2055	431	5,078
Kildee 0125	382	5,206
Carver 0001	200	2,241
Gilman 1352	182	2,427
Agron 2050	117	1,750
Beyer 1306	46	717
Beyer 1308	36	833
Beyer 2308	40	770
Food Sc 2432	146	1,803
Black 1034	32	869
Black 1077	26	448
Carver 0174	36	545
Carver 0202	58	1,064
Carver 0204	58	1,070
Carver 0232	49	853
Carver 0274	40	717
Curtiss 0225	32	666
Durham 0171	92	1,738
E Hall 0119	48	801
E Hall 0211	40	828
Food Sc 2311	35	741
Food Sc 2315	35	616
Food Sc 2319	44	681
Gerdin 2128	45	1,121
Gerdin 2133	48	885
Gerdin 2134	47	885
Gilman 2109	48	834
Hamilton 0005	30	514
Hamilton 0006	38	546
Hamilton 0169	89	1,286
Hamilton 0210	36	665
Heady 0162	40	563
Hoover 1213	117	1,394
Hoover 1227	99	1,227
Hoover 1312	80	1,033
Hoover 1322	35	673
Howe 1220	32	754
Howe 1226	32	783
Howe 1246	32	722
Howe 1252	56	1,248
Howe 1304	56	1,232
Kildee 0105	58	1,041
Kildee 0107	56	1,032
Kildee 0108	60	829
Lagomar E0164	100	1,248
Lagomar W0142	150	1,986
Lagomar W0162	54	886
LeBaron 0067	45	601
LeBaron 02069	70	571
MacKay 0116	30	571
MacKay 0119	30	571
Morrill 2019	74	1,882
NSRIC 1131	108	1,565
Ross H 0027	28	540
Ross H 0120	73	1,280
Ross H 0131	28	543
Sci 2 0115	36	547
Sci 2 0119	36	554
Science 0102	94	1,197
Science 0152	93	1,197
Science 0175	44	556
Science 0277	57	806
Sweeney 1134	72	1,098
Sweeney 1157	12	292
Sweeney 1160	42	797
Town 0206	47	1,029
Town 0230	49	1,029
Town 0250	49	1,029
Town 0270	54	1,103
Town 0280	76	1,029
Town 0290	47	1,029
PHASE 2 TOTAL	**5,300**	**82,554** SF

PHASE 3: 11+ years		
Bldg/Room	Capacity	Sq. Ft.
Curtiss 0127	393	5,441
MacKay 0117	370	3,910
Gerdin 1148	229	3,986
Physics 0005	270	2,837
Design 0101	248	2,910
Carver 0101	202	2,286
Atansff B0029	73	1,032
Carver 0002	39	551
Carver 0004	39	551
Carver 0008	39	537
Carver 0068	33	537
Carver 0074	48	794
Carver 0098	39	537
Carver 0118	35	543
Carver 0124	36	541
Carver 0128	36	541
Carver 0132	36	545
Carver 0184	36	541
Carver 0190	38	541
Carver 0205	112	1,884
Carver 0268	84	1,622
Carver 0282	39	691
Carver 0294	49	807
Carver 0305	112	2,308
Coover 1011	48	1,076
Coover 1012	48	1,073
Coover 1016	48	1,048
Curtiss 0105	73	1,022
Curtiss 0108	47	755
Curtiss 0307	48	755
Curtiss 0308	47	755
E Hall 0111	40	631
Gerdin 0119	60	1,242
Gerdin 0129	60	1,237
Gerdin 0330	76	1,243
Gerdin 2127	50	1,137
Gilman 1051	48	701
Gilman 2104	48	813
Gilman 2205	54	978
Gilman 2345	48	900
Lagomar E0165	30	665
Lagomar W0262	60	904
Lagomar W0272	60	1,010
Lagomar W0282	46	930
MacKay 0135	48	770
MacKay 0213	70	739
Morrill 1030	36	613
Morrill 2015	20	572
Physics 0003	117	2,048
Physics 0039	34	506
Physics 0043	34	506
Physics 0045	30	495
Physics 0052	28	490
Physics 0056	28	492
Physics 0058	42	790
PHASE 3 TOTAL	**4,326**	**64,516** SF

Recommended Major Projects

FIGURE 12. PROJECT RECOMMENDED PHASING PLAN

This detailed phasing plan further breaks down improvements based on:

» Rooms in most need of functional improvement to aid in accessibility and more active learning and teaching environments.

» Rooms in the desired 75-150 capacity range.

» Rooms distributed as equally as possible over a five year period due to constraints on number of classrooms that can be taken off-line at one time and work that can be completed between spring and fall semester.

» Large auditorium spaces are evenly distributed across years of renovation to avoid having more than one auditorium down at one time.

HIGHEST PRIORITY IMPROVEMENT PHASING OUTLINE

Duration: estimated construction duration are indicated below. Major projects are assumed to take 18-24 months for planning, design and construction. Phase project improvements are assumed to take 6-9 months for planning, design and construction.

Year 1

Bldg/Rm				Phase/Sequence	
Gilman 1002	283	2,848	1	Major Project	12
Food Sc 2432	146	1,803	1	Major Project	12
Black 1026	32	708	1	Major Project	3
Black 1028	48	852	1	Major Project	3
Agron 2020	70	859	1	Phased Project Improvement	3
Pearson 1115	94	1,287	1	Phased Project Improvement	3
Bessey 0210	101	1,476	1	Phased Project Improvement	3
Hort 0118	103	1,498	1	Phased Project Improvement	3
Ross H 0124	112	1,573	1	Phased Project Improvement	3
Total:	926	10,056			

Year 2

Bldg/Rm				Phase/Sequence	
Gilman 0312	40	635	2	Major Project	8
Gilman 0611	40	633	2	Major Project	8
Gilman 1104	81	959	2	Major Project	8
Gilman 1114	30	415	2	Major Project	8
Gilman 1312	40	621	2	Major Project	8
Gilman 1652	100	1,211	2	Major Project	8
Gilman 1801	24	418	2	Major Project	8
Gilman 1805	24	397	2	Major Project	8
Gilman 1810	54	769	2	Major Project	8
Gilman 1811	24	397	2	Major Project	8
Gilman 1813	24	436	2	Major Project	8
Carver 0018	62	791	2	Phased Project Improvement	3
Carver 0032	30	577	2	Phased Project Improvement	3
Carver 0150	49	635	2	Phased Project Improvement	3
Carver 0160	49	635	2	Phased Project Improvement	3
Carver 0196	10	545	2	Phased Project Improvement	3
Carver 0290	30	717	2	Phased Project Improvement	3
Carver 0298	44	802	2	Phased Project Improvement	3
Total:	1,071	14,441			

FIGURE 13A. PROJECT RECOMMENDED PHASE 1 PLAN -YEARS 1-2

Phased project improvement: projects completed during summer break in regular cycles.

Year 3

Bldg/Rm				Phase/Sequence	
Pearson 1105	45	661	3	Major Project	10
Pearson 1106	44	724	3	Major Project	10
Pearson 3119	30	641	3	Major Project	10
Pearson 3125	30	644	3	Major Project	10
Pearson 3131	36	644	3	Major Project	10
Pearson 3137	36	644	3	Major Project	10
Pearson 3143	36	644	3	Major Project	10
Pearson 3149	36	644	3	Major Project	10
Pearson 3157	36	664	3	Major Project	10
Coover 2245	252	2,874	3	Phased Project Improvement	4
Agron 2026	44	578	3	Phased Project Improvement	3
Black 1071	30	751	3	Phased Project Improvement	3
Coover 1219	36	498	3	Phased Project Improvement	3
Curtiss 0208	36	755	3	Phased Project Improvement	3
Hort 0138	54	851	3	Phased Project Improvement	3
Lagomar N0102	30	721	3	Phased Project Improvement	3
LeBaron 0059	30	542	3	Phased Project Improvement	3
Physics 0038	48	790	3	Phased Project Improvement	3
Sweeney 1116	42	797	3	Phased Project Improvement	3
Sweeney 1120	28	596	3	Phased Project Improvement	3
Sweeney 1126	59	797	3	Phased Project Improvement	3
Total:	1,080	16,460			

FIGURE 13B. PROJECT RECOMMENDED PHASE 1 PLAN -YEAR 3

PHASING DETAIL:
The proposed phasing for years 1-5 includes several major projects: Black Engineering, Food Science, Gilman Hall, Pearson Hall and Science 2. Food Science is in need of updating to meet University quality standards. Black Engineering was paired with this project due to the limited scale of proposed work. Gilman Hall, Pearson Hall and Food Science were selected due to condition and utilization assessments. Anticipated durations for constructon are noted.

In additon to these major projects, a group of standard general university classrooms has been identified for renovation, with work to be completed during summer break. An auditorium is included for each year of improvements to evenly distribute renovations over the phasing period. The major project identified in year 1 is Black Engineering; year 2: Gilman Hall; year 3: Pearson Hall Level 3; year 4: Pearson Hall Level 2; and year 5:Science 2 and completing the remainder of the highest priority rooms in terms of finish upgrades required.

Year 4

Bldg/Rm				Phase/Sequence	
Pearson 2106	40	724	4	Major Project	10
Pearson 2114	36	629	4	Major Project	10
Pearson 2115	102	1,292	4	Major Project	10
Pearson 2120	36	560	4	Major Project	10
Pearson 2125	35	644	4	Major Project	10
Pearson 2131	35	643	4	Major Project	10
Pearson 2137	35	643	4	Major Project	10
Pearson 2143	35	634	4	Major Project	10
Pearson 2149	35	643	4	Major Project	10
Pearson 2157	36	655	4	Major Project	10
Pearson 2158	34	581	4	Major Project	10
Mol-Bio 1414	196	2,248	4	Phased Project Improvement	4
Mol-Bio 1420	48	823	4	Phased Project Improvement	3
Mol-Bio 1424	30	592	4	Phased Project Improvement	3
Mol-Bio 1428	30	589	4	Phased Project Improvement	3
Forker 0227	36	509	4	Phased Project Improvement	3
Forker 0278	36	739	4	Phased Project Improvement	3
Forker 0289	45	741	4	Phased Project Improvement	3
Forker 0291	45	586	4	Phased Project Improvement	3
Heady 0160	49	858	4	Phased Project Improvement	3
Heady 0272	33	563	4	Phased Project Improvement	3
Heady 0274	33	563	4	Phased Project Improvement	3
Total:	1,040	16,459			

Year 5

Bldg/Rm				Phase/Sequence	
SCI 2 0115	36	547	5	Major Project	6
SCI 2 0119	36	554	5	Major Project	6
ROSS H 0020	30	626	5	Phased Project Improvement	3
ROSS H 0022	28	528	5	Phased Project Improvement	3
ROSS H 0024	30	520	5	Phased Project Improvement	3
ROSS H 0025	34	540	5	Phased Project Improvement	3
ROSS H 0026	40	528	5	Phased Project Improvement	3
ROSS H 0028	40	626	5	Phased Project Improvement	3
ROSS H 0029	36	540	5	Phased Project Improvement	3
ROSS H 0031	38	540	5	Phased Project Improvement	3
ROSS H 0125	38	543	5	Phased Project Improvement	3
ROSS H 0127	36	543	5	Phased Project Improvement	3
ROSS H 0129	36	543	5	Phased Project Improvement	3
Total:	458	7,178			

FIGURE 13C. PROJECT RECOMMENDED PHASE 1 PLAN -YEARS 4-5

Years 6-10 would begin with reassessment of existing conditions and re-prioritization. Years 11-15 would repeat this process, and the 15 year cycle is established.

The details of this report are based on the current 214 general university classrooms. In future planning, departmental classrooms combined with general university classrooms should be assessed. There are significant benefits to completing more holistic projects within buildings in terms of budget, utilization and quality of space.

Additionally, the construction of a centrally-located classroom building with large capacity (150+) and flexible walls allowing for a variety of configurations and ultimately learning styles should be part of all phasing discussions. This space would meet a current need for this size of classroom, provide the flex/surge space needed while major classroom renovation projects are occurring and provide an ideal location to promote future shifts in pedagogy on campus. These opportunities are limited within the current structural bays and infrastructure of the existing system. A new building was not phased as part of this study due to the scale and need for further investigation on location, size and amenities.

PHASING COSTS

To help establish broad guidelines for estimating, the following cost per square foot for typical renovations has been developed and applied to the proposed general university classroom phasing for projects completed by ISU and managed by Facilities Planning & Management. Estimated costs are primarily based on finish upgrades and do not take into account significant updating of building systems.

Cost Per Square Foot Breakdown

Minor Improvements

Work Items	Unit	Project Cost*
Demolition - Furniture	SF	$150.00
Demolition - Finishes		
Demolition - Bldg systems (minor)		
Flooring upgrades		
Wall finishes		
Ceiling finishes		
Blinds/Shades		
Electrical upgrades (minor)[1]		
Mechanical upgrades (minor)[1]		
Furnishings		
AV/IT items		
Design and Management fees		

Major Improvements

Work Items	Unit	Project Cost*
Demolition - Furniture	SF	$225.00
Demolition - Finishes		
Demolition - Bldg systems (major)		
Flooring upgrades		
Wall finishes		
Ceiling finishes		
Blinds/Shades		
Electrical upgrades (major)[2]		
Mechanical upgrades (major)[2]		
Furnishings		
AV/IT items		
Design and Management fees		
Minimal structural modifications		
Contractor general conditions and mark up's		

1. Examples of minor electrical updates may include upgrading devises or switches within room. Minor mechancial upgrade examples may include new louvers or grills withint room.
2. Examples of major electrical updates may include upgrading wiring back to main panel. Major mechancial upgrade examples may include replacing mechanical distribution units within the room and minimal upgrades to building system, but not a complete building rework.
* Dollar amounts are based on today's dollars (2014). Escalation is not included.

Applying these estimate costs to the total SF included in the proposed phasing, Iowa State could anticipate the following costs for the implementation of the proposed recommendations:

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Major Project(s)	$760,000	$2,200,000	$1,330,000	$1,720,000	$450,000	$6,460,000
General University Classrooms	$1,000,000	$700,000	$1,582,500	$980,000	$910,000	$6,460,000
						$11,632,500

	Years 6-10	Years 11+
General University Classrooms	$11,950,000	$8,700,000

*Estimates are based on today's dollars (2014). Escalation is not included in cost estimate.

GENERAL UNIVERSITY CLASSROOM RENOVATION RECOMMENDATIONS
One of the largest challenges has been locating areas large enough to meet the needed 75-150 capacity range. Several key reasons for this exist: general university classrooms are spread across buildings and are typically not grouped together in such a manner that combining spaces creates a proportionally usable space. At locations where 2-3 smaller classrooms are adjacent to one another, combining them creates a room size ratio (width:length) of 1:3 or greater. A 1:1.5 to 1:2 is desirable. The incompatibility of existing building room sizes and locations creates challenges for room configuration as well as viewing angles for projection screens. While they could start to meet the need for increased capacity, the usability and satisfaction of the room's functionality is greatly sacrificed.

Another contributing factor is current utilization. In buildings where there are a higher concentration of General University Classrooms such as Carver, Ross and Pearson Halls, the classroom utilization is high. Taking these classrooms off-line for re-configuring and renovation creates scheduling conflicts that would need to be addressed. Moreover, it is our recommendation that to help off-set these changes, the University consider expanding class offering times outside of prime-time hours (9 a.m.–3 p.m.). Expanding into 8 a.m. and 4 p.m. time slots and better utilizing Friday afternoon times will assist in balancing the disparities that exist in utilizations and help off-set costs for building new classrooms. However, the addition of new classrooms in the medium to large sizes will also effectively contribute to the solution by acting as surge space when existing rooms are taken off-line for renovation. Building new classrooms also addresses the steady increase in enrollment. A combination of all these is ideal as a balances is found with funding, scheduling and department needs.
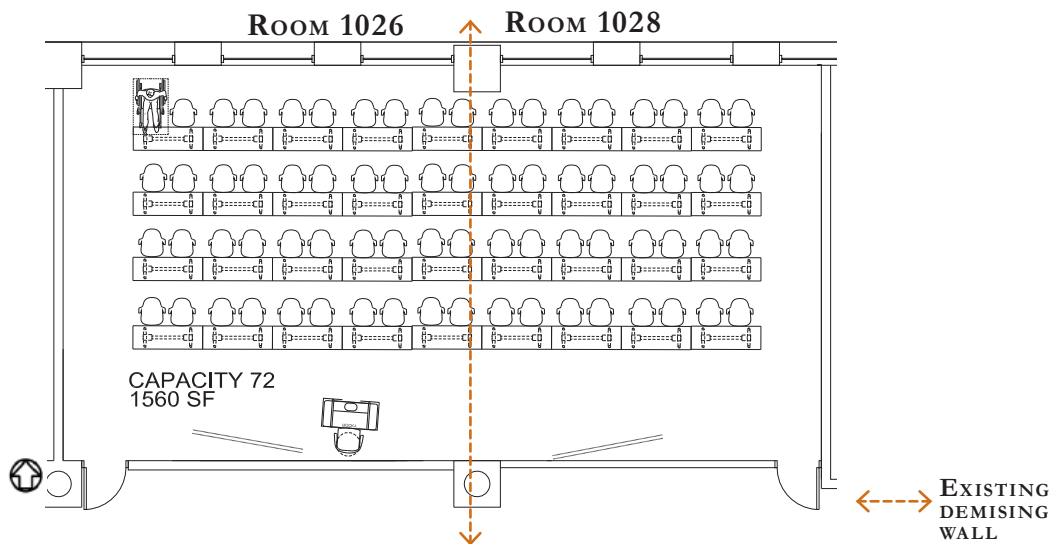
The following pages illustrate design opportunities within existing spaces that focus primarily on Phase 1-5 renovations.

49

BLACK 1026

BLACK 1028

ROOM 1026   ROOM 1028

CAPACITY 72
1560 SF

EXISTING DEMISING WALL

BLACK ENGINEERING 1ST FLOOR PLAN - NOT TO SCALE

*THESE LAYOUTS REPRESENT PRELIMINARY CONCEPTS ONLY.

Room	F12/S13 Class Hours	Existing Square Feet	Existing Capacity
1026	20 /15	708 SF	32
1028	16 /13	852 SF	48

BLACK ENGINEERING

Black Engineering 1026 and 1028 both have low utilization rates and have an existing capacity of 80 people. Combined square footage is approximately 1,560, or 19.5 SF/student.

The low existing utilization and proportions of Rooms 1026 and 1028 provide an opportunity to create one, larger classroom that would be close to meeting a targeted 75 occupant classroom as discussed earlier in this report. Combined square footage of these two spaces would remain roughly 1560 SF with a 72 person capacity. This allows for just over 21.5 SF/student and will improve the overall flexibility of the space as well as projected increased utilization due the the higher occupancy. Several components in these rooms can be reused. Marker boards, existing furniture, lighting, etc. can all be re-used. The seating style selected can be added to or the other furniture can be used in another space. Further study of building structure and options should be done to maximize re-configuring options and better understand scope.
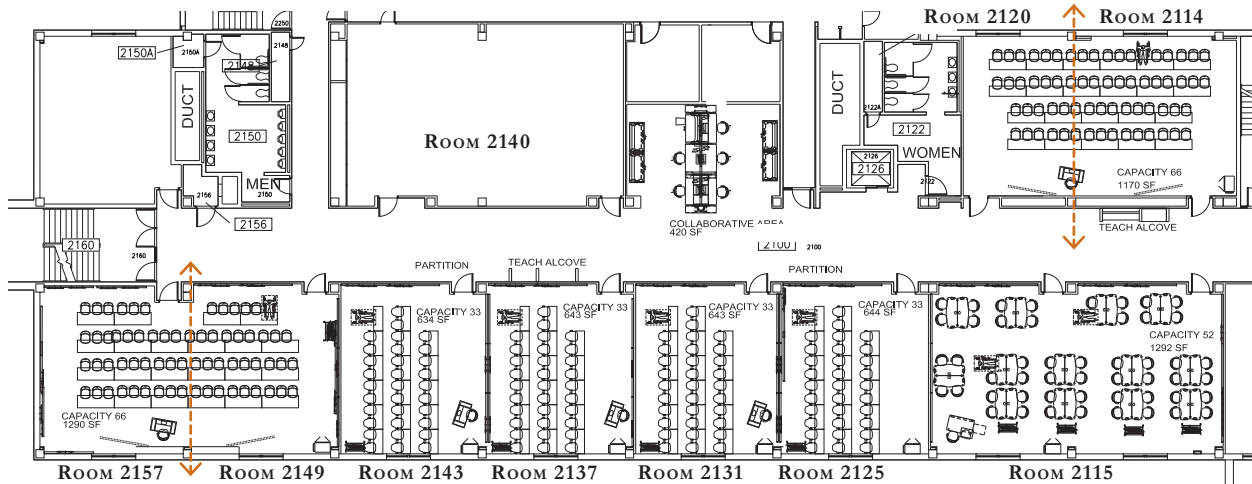
50

PEARSON 2157 - TYPICAL CLASSROOM ON 2ND

CURRENT PEARSON STATISTICS

Room	F12/S13 Class Hours	Existing Square Feet	Existing Capacity
2125	29.8/21	644 SF	35
2131	29/24	643 SF	35
2137	27/30.8	643 SF	35
2143	25/27	634 SF	35
2149	23/27.5	643 SF	35
2157	19/16	655 SF	35

PEARSON 2ND FLOOR PLAN - NOT TO SCALE
*THESE LAYOUTS REPRESENT PRELIMINARY CONCEPTS ONLY.

EXISTING DEMISING WALL

PEARSON HALL-2ND FLOOR

Utilization in Pearson is generally high but the configuration of the building does not easily lend itself to meeting the larger classrooms needed. Despite having a high utilization in the smaller classrooms, a balance of capacity and layout opportunities lead to this recommendation. Improved flexibility and added break out space (teach alcove as noted on plan) are two identified opportunities in Pearson Hall. This concept represents opportunities to increase typical 35 capacity classrooms into larger capacity rooms, or keep them as current size depending on scheduling needs per semester. We recommend using partitions as dividers in these rooms so the space can flex between sizes. Also, as shown in 2115, a more team-based room is indicated and would provide opportunity for team-based learning and enhanced technology.

Adding movable furniture, flexible lighting scenes and updated finishes greatly improves the functionality and desirability of these rooms. Partitions may be used to allow the rooms to break down to smaller capacity rooms when needed. Identified opportunities: combine rooms 2157 and 2149; combine rooms 2143 and 2137; combine rooms 2131 and 2125. A key driver in the study was to identify and increase collaborative spaces; an area has been identified on the plan and can be added at a later date.

51

PEARSON 3143 - TYPICAL CLASSROOM ON 3RD

CURRENT PEARSON STATISTICS

Room	F12/S13 Class Hours	Existing Square Feet	Existing Capacity
3119	25/27.6	641 SF	30
3125	24/26	644 SF	30
3131	23/19	644 SF	36
3137	20.6/17	644 SF	36
3143	18/14	644 SF	36
3149	16/20	644 SF	36
3157	18.6/20	664 SF	36
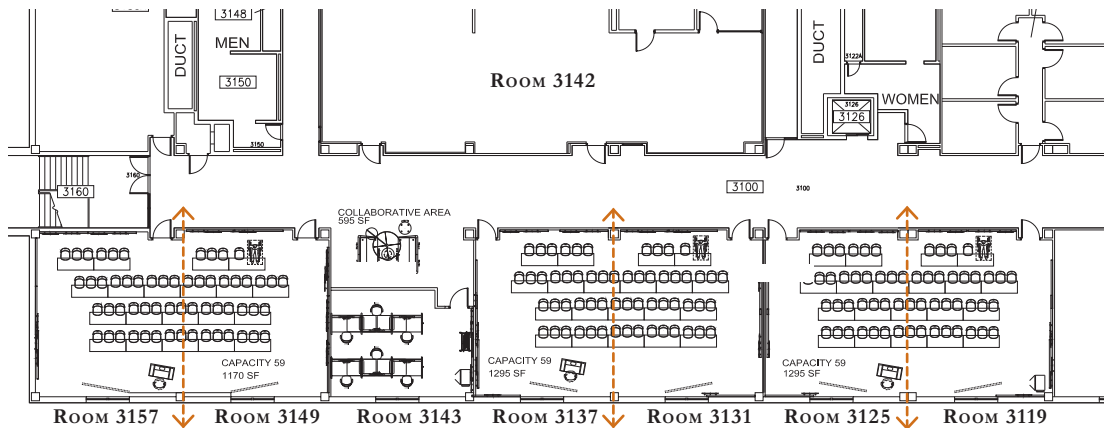
PEARSON 3RD FLOOR PLAN - NOT TO SCALE
*THESE LAYOUTS REPRESENT PRELIMINARY CONCEPTS ONLY.

EXISTING DEMISING WALL

PEARSON HALL-3RD FLOOR
Similar to 2nd floor, utilization on 3rd is generally high, but lacks larger sized classrooms. This concept represents opportunities to increase typical 35 capacity classrooms into larger rooms to meet the growing section sizes. A simple collaborative space has been centrally located for a break-out space to continue class discussion without interrupting classes getting in and out of the same room. Since Pearson has very narrow, long corridors, this also serves as an area for students to wait in between classes.

Identified opportunities: combine rooms 3157 and 3149; room 3143 transforms into a collaboration area; combine rooms 3131 and 3137; combine rooms 3125 and 3119
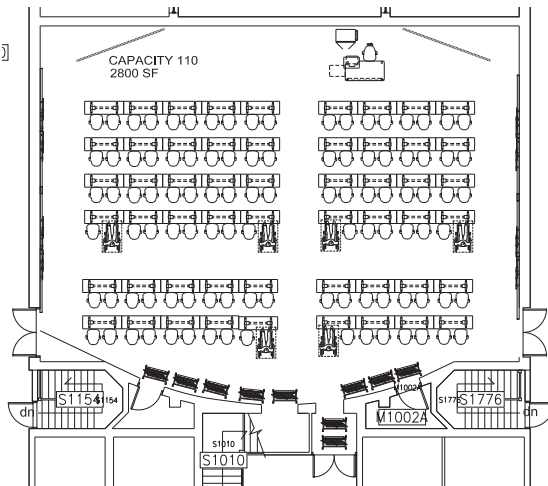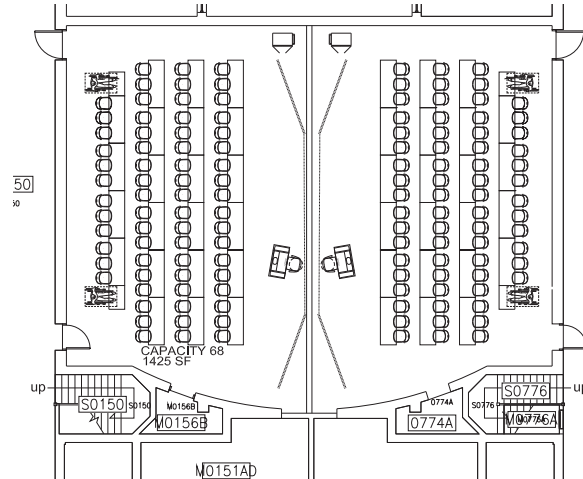
GILMAN 1002

CURRENT GILMAN STATISTICS

Room	F12/S13 Class Hours	Existing Square Feet	Existing Capacity
1002	28.8/26	2,848 SF	283

ROOM 1002 (1ST FLOOR)

CAPACITY 110
2800 SF

ROOM 1002 (BASEMENT)

CAPACITY 68
1425 SF

FLOOR PLAN - SOUTH - NOT TO SCALE
*THESE LAYOUTS REPRESENT PRELIMINARY CONCEPTS ONLY.

GILMAN HALL-BASEMENT & 1ST FLOOR

Gilman Hall represents many challenges with infrastructure and current building conditions (mainly structure and mechanical systems) and is part of a larger understanding of long-term goals and funding available to make necessary modifications. There are several key areas where general university classrooms can be modified to significantly improve use in this building and create surge space for larger classrooms. In addition to these phased renovations, larger items like way-finding, accessibility and general ambiance in corridors were identified as key factors to be addressed in Gilman Hall. It is challenging to navigate through this building with confusing signage and little organizing factors in hallways. All of these recommendations should be balanced with available funding and an over arching goal of how to improve Gilman Hall in its entirety. Further study of building structure and options should be done to maximize re-configuring options and better understand scope.

Identified opportunities: renovate room 1002 by splitting the basement into two rooms. The first floor would be one large classroom space with ample flexibility. All three rooms meet the desired capacity currently needed. The first floor configuration is shown on the following page.

GILMAN 1801

GILMAN 1805

CURRENT GILMAN STATISTICS

Room	F12/S13 Class Hours	Existing Square Feet	Existing Capacity
1801	27.5/17.5	418 SF	24
1805	27.5/11.6	397 SF	24

ROOM 1801   ROOM 1805

CAPACITY 30
840 SF

C1800   C18

← - - - → EXISTING DEMISING WALL
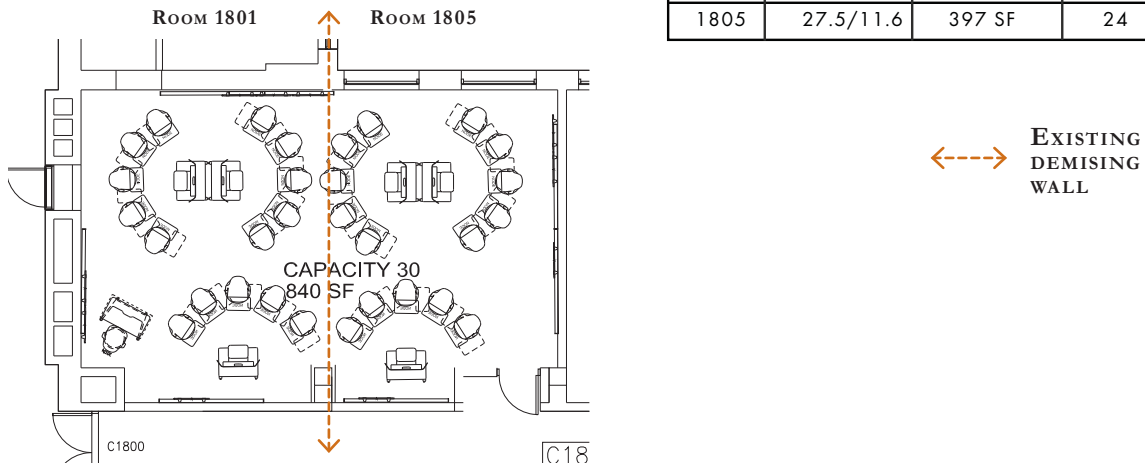
GILMAN FIRST FLOOR PLAN - SOUTH - NOT TO SCALE
*THESE LAYOUTS REPRESENT PRELIMINARY CONCEPTS ONLY.

GILMAN HALL-1ST FLOOR
A current trend that many institutions are experiencing is a cross pollination of ideas and curriculum with multiple departments on campus and, in some cases, even institutions. Rooms that are equipped to have such flexibility and connectivity are expensive but needed for this type of communication. This room goes beyond basic capture capabilities and provides opportunities for teleconferencing. Combining rooms 1801 and 1805 may provide opportunities for departments to collaborate without distance being an obstacle.

IOWA STATE UNIVERSITY
CLASSROOM IMPROVEMENT PLANNING STUDY

PLANNING TOOLS

This spreadsheet is designed to assist planning efforts and quickly provide a preliminary budget for a potential project based on key factors such as conditions of existing building systems, finishes, square footage, furniture and current construction costs. A quick synopsis of basic project information will assist in a proactive approach to updating classroom spaces.

COST PLANNING TOOL EXAMPLE

[Project Name]	Project NO.	[100]
[Buliding]	DATE	August 2, 2013
[Phone] [Fax]		
[Contact]		

Building/Room: CARVER 0274

Room Data:
Existing Capacity: 40
Existing Square Feet: 717
Desired Capacity: xxx
Proposed Budget: xxxx
Planning Estimate: $ 39,098.75

Seating Style: MTA - Moveable Tablet Arm
Seating Arrangement: Rote Learning
Environmental Factors: Noise with activities / Temperature Cool / Dimming Capabilities

Desired Upgrades	Quantity	Unit	Unit Price	LINE TOTAL
Flooring				
Carpet-Tile	25.00	SF	$5.50	$137.50
Concrete-Polished	0.00	SF	$3.50	$0.00
Ceiling				
Gypsum Board	25.00	SF	$7.50	$187.50
--	0.00	SF	$0.00	$0.00
Walls				
Gypsum Board	25.00	SF	$3.50	$87.50
Paint Existing	25.00	SF	$3.00	$75.00
--	0.00	SF	$0.00	$0.00
Lighting				
Gypsum Board	25.00	SF	$3.50	$87.50
--	0.00	SF	$0.00	$0.00
Mechanical/Electrical				
Replace Diffusers	25.00	EA	$100.00	$2,500.00
Replace 2x2 Light Fixture	5.00	EA	$350.00	$1,750.00
Add power outlet	2.00	EA	$500.00	$1,000.00
--	0.00	EA	$0.00	$0.00
Furnishings				
Movable Podium	1.00	EA	$750.00	$750.00
Stacking Chair	25.00	EA	$250.00	$6,250.00
Team Table	2.00	EA	$800.00	$1,600.00
Hanging Marker Boards	10.00	EA	$300.00	$3,000.00
--	0.00	EA	$0.00	$0.00
--	0.00	EA	$0.00	$0.00
IT/AV				
Add Data Outlet	2.00	EA	$500.00	$1,000.00
Add Monitor-Wall	4.00	EA	$1,200.00	$4,800.00
Add Wireless HUB	4.00	EA	$500.00	$2,000.00
Specialty Items				
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00

Construction Sub-Total	$25,225.00
Contractor OH&P (15%)	$ 3,783.75
Fees-FP&M/Design (30%)	$ 7,567.50
Contingency (10%)	2,522.50
TOTAL	$39,098.75

FIGURE 12. COST PLANNING TOOL - THIS EXCEL SPREADSHEET CAN BE UPDATED REGULARLY WITH CURRENT CONSTRUCTION COSTS BASED ON RECENT PROJECTS.

FACILITIES PLANNING AND MANAGEMENT | INVISION PLANNING ARCHITECTURE INTERIORS

DESIGN GUIDELINES FOR FUTURE PLANNING

A well-designed classroom can boost learning, encourage collaboration and engagement, reinforce morale and facilitate the physical well-being of both students and instructors. Below are guidelines for establishing new general university classrooms. The classroom environment involves many elements. The core elements that will be addressed in the recommendations are acoustics, lighting, heating/ventilation/air-conditioning (HVAC), furnishings and audio/visual (AV) systems.

As pedagogy has evolved, the desire for more collaborative or active learning classrooms has increased. These spaces have special design requirements due to the level of technology employed as well as the flexible environment they require. These include proportioning the room to allow sufficient wall space for the necessary monitors and white boards. Mobile furniture that can be easily rearranged without a lot of hassle or noise is critical to the success of these collaborative spaces. It is also important to plan for appropriate viewing distances and sight lines so everyone has equal opportunity to see and be seen. Circulation is also a key consideration in a collaborative environment to allow instructors the ability to interact freely.

Ideally, classrooms should be designed from the inside out, rather than by forcing classroom functions into spaces determined by the building. Although this is not always feasible it is important to strive for adequate square footage to support a variety of learning styles. As we know, crowded classrooms are not conducive to successful learning. Our guidelines for square footage per student based on seating type are listed in the following table:

» Traditional Learning (i.e. Auditorium)	18 SF/person
» Dynamic Learning Classrooms (Strip Tables & Chairs)	18-20 SF/person
» Highly Collaborative Classrooms (with Moveable Tablet Arms)	20-25 SF/person

FRONT OF CLASSROOM

The distance from the front wall to the first row of seats should be 1-2 times the height of the projection screen. A typical screen height in a flat-floor classroom is 8', so the first row of seats must be a minimum of 8' from the front wall.

PROJECTION RATIO

The ability to project material in class is paramount, so projection requirements are major factors in a successful classroom. All seats must be located within a 90 degree viewing angle from the center of the projection screen. That is, within 45 degree horizontal angles from the perpendicular to the center of screens. Classrooms should be narrow enough to permit all seats to be within the 90 degree viewing angle from the front wall, but no narrower. Rooms that are too narrow and deep make it hard for students and instructors to interact.

DESIGN GUIDELINES
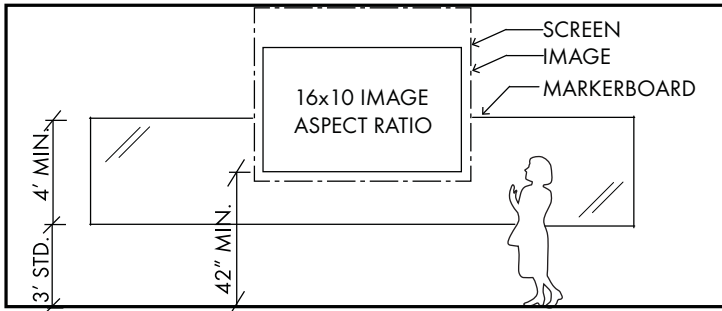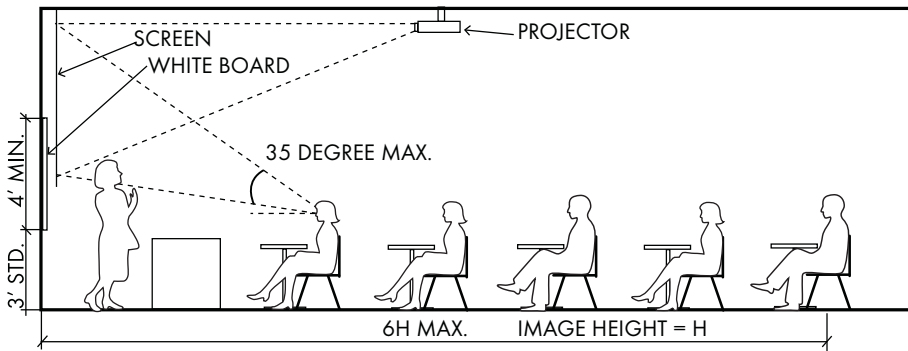

FIGURE A: FRONT WALL ELEVATION
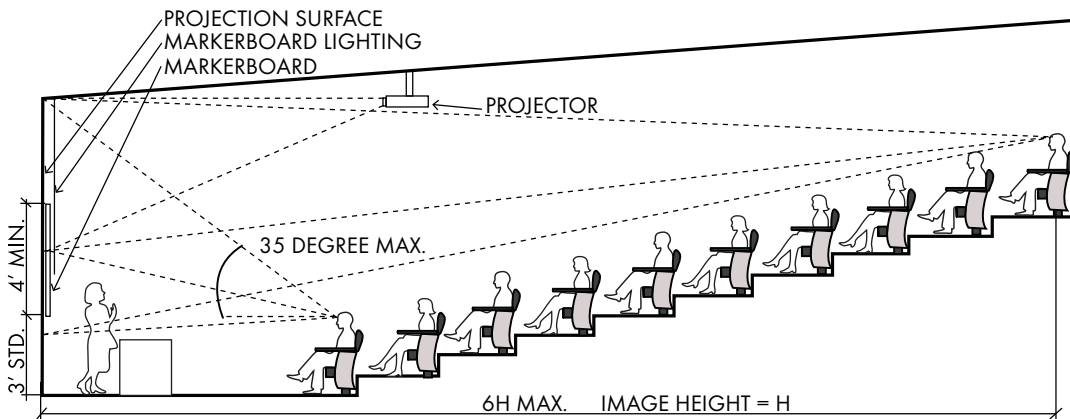

FIGURE B: FLAT FLOOR ELEVATION

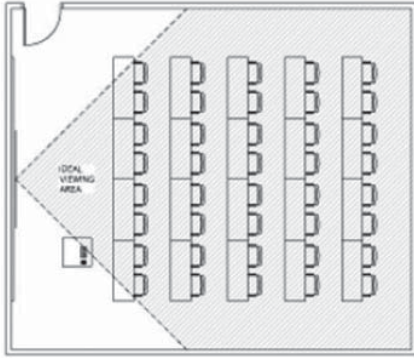FIGURE C: TIERED FLOOR ROOM WITH WALL PROJECTION KEY MEASUREMENTS

DESIGN GUIDELINES

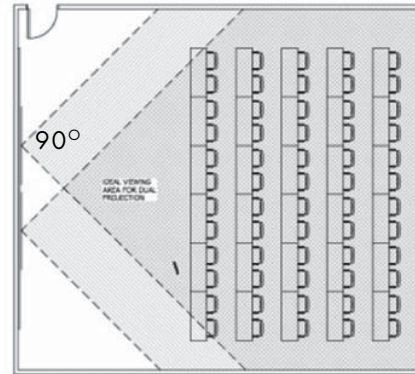**FIGURE D: IDEAL PROJECTION VIEWING AREA FOR SINGLE PROJECTION**

FIGURE E: IDEAL PROJECTION VIEWING AREA FOR DUAL PROJECTION.

CORRIDORS AND INTERSTITIAL SPACE

Corridors should be double-loading and should include seating, whenever possible, to accommodate students waiting for classes or meeting informally. Corridors should also be considered as potential learning spaces, possibly including marker boards, study alcoves, or other amenities as seen in Troxel Hall. This allows the process of changing classes to be more fluid without disrupting learning opportunities.

ACOUSTICS

The room must be designed to foster effective sound transmission not only from someone at the front of the room to an audience, but also from the audience. The following are guidelines for acoustic design from the Acoustical Society of America (ASA).
Figures given below reflect the 2012 ASA standards.

> » All walls must extend to the floor above and not stop at ceiling.

> » Walls between classrooms should have a Sound Transmission Class (STC) rating of at least 50.

> » Walls separating classrooms from common spaces or restrooms must have an STC of at least 53.

> » Walls separating classrooms from mechanical spaces or other areas with high noise levels must have at least an STC of 60.

> » Materials at room front should be reflective to project sound to the back of the room

CEILINGS

Ceiling height is based on the classroom size and building requirements. Also keep in mind the projector height requirements based on the individual room dimensions. In particular, the ceiling must be high enough to accommodate the projection screen when the bottom of the screen is no lower than 40" from the floor and screen height is 1/5 the distance from the front wall to the last row of seats. Ceiling height requirements may differ based on seating type or classroom style. Whenever possible provide flexible, sound absorbing ceiling material so mechanical systems and lighting are easily accessible.

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DESIGN GUIDELINES

LIGHTING

The lighting system must provide a comfortable level for reading and writing. Lighting should use indirect lay-in fixtures and avoid suspending fixtures from the ceiling, to prevent conflict with ceiling-mounted projectors. Flexible lighting scenes that provide the ability to light the writing surface and screen at the instruction area independently of the rest of the classroom are important. Lighting scenes should provide a level of room darkening to view projections on the front screen, but also provide ample light for note taking in the rest of the room. It is also recommended that lighting controls be simple and straight-forward; consistent across all general university classrooms.

FLOORING

All flooring should be resistant to stains and spills. There are a variety of options, but it is recommended to use products that are environmentally responsible. Carpet tile is flexible, sound absorbing and comfortable. Where carpet is used, it should be multicolored or patterned to mask dirt and traffic patterns. Tile can be easily removed and cleaned when needed. Resilient flooring, such as linoleum, is a suitable option for more durable spaces that are environmentally appropriate. In tiered classrooms, a non-slip surface should be used in corridors, aisles and rows. The edge of stair risers must be easily seen to prevent tripping. In new construction, aisle lighting is required.

AV/TECHNOLOGY

Provide an audio/visual storage cart within each classroom for media equipment. If multimedia equipment is rack-mounted in the multimedia lectern, the lectern must be properly ventilated. The top surface will include an 18" space for writing and a document camera. Provide a task light. Place a phone number on each storage cart with the number for ITS clearly marked in case it is needed. All classrooms will have either a ceiling mounted or wall mounted projector and eventually TV's. Mounting height is based on the projection ratio discussed earlier in Projection Ratio. A microphone should be used in rooms exceeding 75 person capacity.

FURNISHINGS

Select furniture for durability, ease of maintenance and comfort. Tablet arms should be large enough to accommodate both a text book and laptop. Any furniture item should be comfortable for use by people ranging in size from the 5th percentile female (4' 11" tall, 113 pounds) to the 95th percentile male (6'2" tall, 246 pounds). Preferred width for auditorium seats is 23"–24." Strip tables are preferred and should be at least 18" deep. Moveable tables should have lockable casters. 10-15% of all seating must be suitable for left-handed use. Fabrics must have heavy-duty stain repellent. It is recommended that a moveable instructor table/lectern with modesty panel and instructor chair be provided.

IN-ROOM GUIDELINES

The purpose of this document is to define a set of Room Layouts to facilitate the implementation of classroom furniture and technology in each classroom. These layout descriptions are thought-starters for instructors on how each classroom can be individualized to fit specific needs. A description and key components are called out in each layout. These guidelines should be clearly posted in view of instructor in each general university classroom. See the samples below:
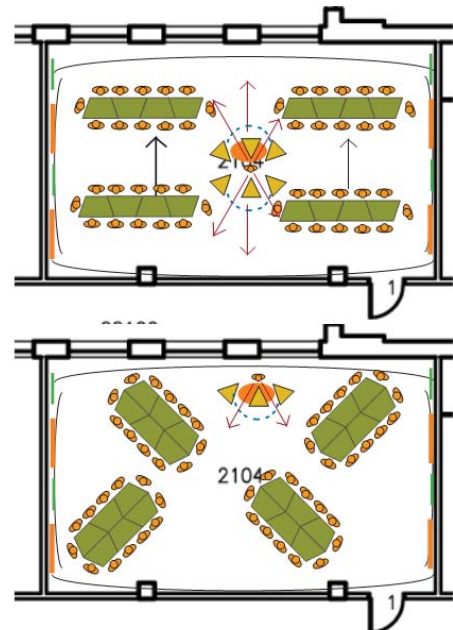
"Dynamic Learning" Layout

Description:
Designed for small to medium learning environments that accommodate as many as 75+ students. This environment supports multiple teaching modes and engagement levels. Enables facilitator freedom to change teaching styles quickly and easily. This layout optimizes both vertical and horizontal surfaces for interaction and projection.

Key Components:
>> Flip-top, nesting tables for ease of mobility in collaboration modes. Easily gang-able for lecture/discussion modes.

>> Small scale, mobile seating

>> Flexible lighting scenes for a variety of classroom activities, easily accessible at podium and intuitive for facilitator

>> Combination of fixed and mobile marker boards and projection screens for added flexibility. Advantageous to easy projection and interactive surfaces

>> Circulation around and in front of the podium. Access to presentation equipment and controls is necessary, mobile podiums provide increased flexibility for presentation styles

"Dynamic + Learning" Layout

Description:
Designed for small to medium learning environments that accommodate as many as 75+ students. This environment maximizes fluid transitions between teaching modes within a short period: lecture, team, discussion, test taking etc. Quickly adjusts from passive to active engagment with minimal effort. Designed for physical and visual access for both facilitator and students.

Key Components:
>> Ergonomic chairs that are height adjustable and have storage for personal items encourage movement and engagement.

>> Open sightlines throughout entire room

>> Flexible lighting scenes for a variety of classroom activities, easily accessible at podium and intuitive for facilitator

>> Combination of fixed and mobile marker boards and projection screens for added flexibility. Advantageous to easy projection and interactive surfaces

>> Mobile podium and presentation equipment/controls are necessary and provide increased flexibility for presentation styles. Presenter can easily transition to different modes.

*CLASSROOM LAYOUT IDEA PROVIDED BY STEELCASE

"Collaboration Studio" Layout

Description:
Designed for smaller learning environments that accommodate as many as 30 students. This environment emphasizes interconnectedness and democratic structured learning. It takes advantage of technological advancements and offers equal access to both facilitator and students. Designed for physical and visual access for both facilitator and students, making obstructed sightlines almost non-existant.

Key Components:
>> Ergonomic chairs that are height adjustable encourage movement and engagement.

>> Interactive technology to allow information to be accessed and shared on and off-site. Components are non-propriatary and intuitive. Does not require training to use.

>> Flexible lighting scenes for a variety of classroom activities, easily accessible at podium and intuitive for facilitator. Indirect lighting to assist with visibility with cameras/screens

>> Combination of fixed and mobile marker boards and projection screens for added flexibility. Advantageous to easy projection and interactive surfaces

>> Mobile podium and presentation equipment/controls are necessary and provide increased flexibility for presentation styles. Presenter can easily transition to different modes.

*CLASSROOM LAYOUT IDEA PROVIDED BY STEELCASE

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07 | APPENDIX

SECTION SEVEN

General University Classroom List
as of 6/17/2013

Bldg/Room	Cap.	Sq. Ft.	Seating Type
AGRON 2020	70	859	FTA
AGRON 2026	44	578	FTA
AGRON 2050	117	1750	SATELLITE
ATANSFF B0029	73	1032	MTA
BESSEY 0205	44	864	TC
BESSEY 0210	101	1476	FTA/AUD
BEYER 1306	46	717	MTA
BEYER 1308	36	833	TC
BEYER 1310	67	809	AUD
BEYER 2308	40	770	TC
BLACK 1026	32	708	TC
BLACK 1028	48	852	MTA
BLACK 1034	32	869	TC
BLACK 1071	30	751	TC
BLACK 1077	26	448	STC
CARVER 0001	200	2241	AUD
CARVER 0002	39	551	MTA
CARVER 0004	39	551	MTA
CARVER 0008	39	537	MTA
CARVER 0018	62	791	FTA
CARVER 0032	30	577	TC
CARVER 0068	33	537	MTA
CARVER 0074	48	794	MTA
CARVER 0098	39	537	MTA
CARVER 0101	202	2286	AUD
CARVER 0118	35	543	MTA
CARVER 0124	36	541	MTA
CARVER 0128	36	541	MTA
CARVER 0132	36	545	MTA
CARVER 0150	49	635	MTA
CARVER 0160	49	635	MTA
CARVER 0174	36	545	TC
CARVER 0184	36	541	TC
CARVER 0190	38	541	MTA
CARVER 0196	40	545	MTA
CARVER 0202	58	1064	TC
CARVER 0204	58	1070	TC
CARVER 0205	112	1884	TC
CARVER 0232	49	853	TC
CARVER 0268	84	1622	TC
CARVER 0274	40	717	TC
CARVER 0282	39	691	TC
CARVER 0290	39	717	TC
CARVER 0294	49	807	TC

Bldg/Room	Cap.	Sq. Ft.	Seating Type
CARVER 0298	44	802	TC
CARVER 0305	112	2308	TC
COOVER 1011	48	1076	TC
COOVER 1012	48	1073	TC
COOVER 1016	48	1048	TC
COOVER 1219	36	498	MTA
COOVER 2245	252	2874	AUD
CURTISS 0105	73	1002	FTA
CURTISS 0108	47	755	MTA
CURTISS 0127	393	5441	AUD
CURTISS 0208	36	755	SATELLITE
CURTISS 0225	32	666	TC
CURTISS 0307	48	755	TC
CURTISS 0308	47	755	MTA
DESIGN 0101	248	2910	AUD
DURHAM 0171	92	1738	MTA
E HALL 0111	40	631	MTA
E HALL 0119	48	801	MTA
E HALL 0211	40	828	TC
FOOD SC 2311	35	741	TC
FOOD SC 2315	35	616	MTA
FOOD SC 2319	44	681	MTA
FOOD SC 2432	146	1803	FTA/AUD
FORKER 0227	36	509	MTA
FORKER 0278	36	739	TC
FORKER 0289	45	741	TC
FORKER 0291	45	586	MTA
GERDIN 0119	60	1242	TC
GERDIN 0129	60	1237	TC
GERDIN 0330	76	1243	TC
GERDIN 1148	299	3986	AUD
GERDIN 2127	50	1137	TC
GERDIN 2128	45	1121	TC
GERDIN 2133	48	885	FTA
GERDIN 2134	47	885	FTA
GILMAN 0312	40	635	FTA
GILMAN 0611	40	633	FTA
GILMAN 1002	283	2848	FTA/AUD
GILMAN 1051	48	701	TC
GILMAN 1104	81	959	FTA
GILMAN 1114	30	415	MTA
GILMAN 1312	40	621	FTA
GILMAN 1352	182	2427	FTA/AUD
GILMAN 1652	100	1211	FTA/AUD
GILMAN 1801	24	418	SATELLITE
GILMAN 1805	24	397	FTA
GILMAN 1810	54	769	FTA
GILMAN 1811	24	397	FTA

Bldg/Room	Cap.	Sq. Ft.	Seating Type

Bldg/Room	Cap.	Sq. Ft.	Seating Type
GILMAN 1813	24	436	FTA
GILMAN 2104	48	813	MTA
GILMAN 2109	48	834	TC
GILMAN 2205	54	978	TC
GILMAN 2354	48	900	MTA
HAMILTN 0005	30	514	MTA
HAMILTN 0006	38	546	MTA
HAMILTN 0169	89	1286	MTA
HAMILTN 0210	36	665	TC
HEADY 0160	48	858	STC
HEADY 0162	40	563	MTA
HEADY 0272	33	563	MTA
HEADY 0274	33	563	MTA
HOOVER 1213	117	1394	FTA
HOOVER 1227	99	1227	FTA
HOOVER 1312	80	1033	FTA
HOOVER 1322	35	673	MTA
HOOVER 2055	431	5078	AUD
HORT 0118	103	1498	FTA/AUD
HORT 0138	54	851	MTA
HOWE 1220	32	754	TC
HOWE 1226	32	783	TC
HOWE 1246	32	722	TC
HOWE 1252	56	1248	TC
HOWE 1304	56	1232	TC
I ED 2 0101	80	1236	SATELLITE
I ED 2 0224	48	1000	TC
KILDEE 0105	58	1041	MTA
KILDEE 0107	56	1032	MTA
KILDEE 0108	60	829	FTA
KILDEE 0125	382	5206	FTA/AUD
LAGOMARE0164	100	1248	AUD
LAGOMARE0165	30	665	TC
LAGOMARN0102	32	721	TC
LAGOMARW0142	150	1986	FTA/AUD
LAGOMARW0162	54	886	MTA
LAGOMARW0262	60	904	MTA
LAGOMARW0272	60	1010	MTA
LAGOMARW0282	46	930	TC
LEBARON 0059	30	542	MTA
LEBARON 0067	45	601	MTA
LEBARON 1210	363	4731	AUD
LEBARON 2069	70	1075	MTA
MACKAY 0116	30	571	TC
MACKAY 0117	370	3910	AUD
MACKAY 0119	30	571	TC
MACKAY 0135	48	770	TC
MACKAY 0213	70	739	MTA

Bldg/Room	Cap.	Sq. Ft.	Seating Type
MARSTON 0207	220	2524	AUD
MARSTON 0209	65	969	STC
MOL-BIO 1414	196	2248	AUD
MOL-BIO 1420	48	823	FTA
MOL-BIO 1424	30	592	TC
MOL-BIO 1428	30	589	TC
MORRILL 1030	36	613	MTA
MORRILL 2015	20	572	TC
MORRILL 2019	74	1882	FTA
NSRIC 1131	108	1565	AUD
PEARSON 1105	45	661	MTA
PEARSON 1106	44	724	MTA
PEARSON 1115	94	1287	FTA
PEARSON 2106	40	724	MTA
PEARSON 2114	36	629	MTA
PEARSON 2115	102	1292	FTA/AUD
PEARSON 2120	36	560	MTA
PEARSON 2125	35	644	MTA
PEARSON 2131	35	643	MTA
PEARSON 2137	35	643	MTA
PEARSON 2143	35	634	MTA
PEARSON 2149	35	643	MTA
PEARSON 2157	36	655	MTA
PEARSON 2158	34	581	MTA
PEARSON 3119	30	641	MTA
PEARSON 3125	30	644	MTA
PEARSON 3131	36	644	MTA
PEARSON 3137	36	644	MTA
PEARSON 3143	36	644	MTA
PEARSON 3149	36	644	MTA
PEARSON 3157	36	664	MTA
PHYSICS 0003	117	2048	AUD
PHYSICS 0005	270	2837	AUD
PHYSICS 0038	48	790	FTA
PHYSICS 0039	34	506	MTA
PHYSICS 0043	34	506	MTA
PHYSICS 0045	30	495	MTA
PHYSICS 0052	28	490	SATELLITE
PHYSICS 0056	28	492	SATELLITE
PHYSICS 0058	42	790	MTA
ROSS H 0020	30	626	TC
ROSS H 0022	28	528	TC
ROSS H 0024	30	520	MTA
ROSS H 0025	34	540	STC
ROSS H 0026	40	528	MTA
ROSS H 0027	28	540	TC
ROSS H 0028	40	626	STC
ROSS H 0029	36	540	MTA
ROSS H 0031	38	540	MTA

Bldg/Room	Cap.	Sq. Ft.	Seating Type
ROSS H 0120	73	1280	TC
ROSS H 0124	112	1573	FTA/AUD
ROSS H 0125	38	543	MTA
ROSS H 0127	36	543	MTA
ROSS H 0129	36	543	MTA
ROSS H 0131	28	543	TC
SCI 2 0115	36	547	MTA
SCI 2 0119	36	554	MTA
SCIENCE 0102	94	1197	FTA
SCIENCE 0152	93	1197	FTA
SCIENCE 0175	44	566	MTA
SCIENCE 0277	57	806	MTA
SWEENEY 1116	42	797	TC
SWEENEY 1120	28	596	STC
SWEENEY 1126	59	797	FTA
SWEENEY 1134	72	1098	FTA
SWEENEY 1157	12	262	TC
SWEENEY 1160	42	797	TC
TOWN 0206	47	1029	TC
TOWN 0230	49	1029	TC
TOWN 0250	49	1029	TC
TOWN 0270	54	1103	TC
TOWN 0280	76	1103	TC
TOWN 0290	47	1029	TC
TROXEL 1001	400	6828	AUD

Total Rooms 214

Totals   **14537 Seats   221823 SF**

Seating Type Key:
AUD - Auditorium
FTA/AUD - Fixed Tablet Arm in Auditorium
FTA - Fixed Tablet Arm
MTA - Moveable Tablet Arm
SATELLITE - Tables with chairs attached
STC - Strip Tables (fixed to floor) & Chairs (moveable)
TC - Tables & Chairs

FOCUS GROUP DISCUSSIONS - STUDENTS

HOW DO YOU LEARN BEST?

» Groups

» Definitely thinking about all my classes -- lecture is so hard to sit through and by the end I am not able to sit through - when I get to engage - I have to know what I am talking about and I am able to engage.

» Team-Based Learning -- the first day I got to sit with the students - the majority of them were on their phones/devices -- after we put them in their teams - they put their phones/devices away -- the abuse of devices was minimal - the students like knowing that they have something to do -its pretty powerful turnaround.

» If you just go to class to listen to your instructor -- there is no point to going to class -- when I teach - I have projects to work through - and they can work together -- as soon as you walk in - you know what to expect in that class. As an instructor - you have to engage in more projects -- the setting itself helps to create the engagement -- if students wanted to watch basketball -- they can watch it in the back row - there was very little that I could do if they were in the back -- because the setting did not allow it.

» In terms of enjoyment of different styles -- PHYS is a good example of animated instructors - in terms of retention of different formats -- now that I am on the other side -- I hope that they work like they are supposed to - Lectures can be enjoyable.

» I think that the rooms that I learn best in - are multi-functional -- if the instructor has to do a lecture = they can do that... or that they can get into groups - that works too... I can easily go from one thing to the next without a gap.

WHERE ARE WE GOING? WHAT WILL THE BEST "FACE-TO-FACE" EDUCATION LOOK LIKE IN THE FUTURE?

» ISU is so big - you have to have big lecture halls -- having classes with over 60 people is difficult. But, I love technology -- so - what I like is having a smaller more adaptable space for smaller classes -- too big of the risk.

» It depends on your major. A lot of gen eds will be in the larger classroom - or if it is a smaller major -- you will have smaller classrooms. I think of it a lot this way - I think about what would work for the students I will teach -- the multifunctional spaces would work for everything - and depending on scheduling -- the space can not only do lecture it can do projects, discussions, etc. If I cannot do something in the setting - it has to have an overhaul of the syllabus or activities.

» I think that... coincidently -- for classes 40 or smaller you might have table surfaces -- instructors can be sending out content -- that there is room/freedom on those tables - rich content delivery right to the space - right to the students at their table space. Instead of pens and paper - it would have richer content.

» To make decent table sizes -- the table space on the chairs that have the table that comes up - does not fit what I have - for my binder or laptop size -- it would be before surface technology. I think another thing that is important is the space -- that the instructor can move around -- it is definitely an issue in the Gerdin -- Openness is important.

FOCUS GROUP DISCUSSIONS - STUDENTS

HAVE YOU NOTICED A DIFFERENCE AS THE ENROLLMENT HAS INCREASED? HAVE YOU NOTICED THAT THEY ARE MORE PACKED?

» Some of the classrooms in Lago - used to be ½ - ¾ full - now we have to pull in extra seats -- there is no space in our classroom.

» MSE has seen some of that -- the classrooms are in Black, Town, etc. So, we are now having to go to the older buildings. They have really optimized that.

WHEN YOU TALK ABOUT THE TABLES -- DO YOU HAVE BOTH TEXTBOOKS AND TECHNOLOGY - ARE YOU ADDING TO WHAT YOU ARE BRINGING TO CLASS? IS TECHNOLOGY CHANGING THAT?

» I feel like for me - I learn better if I have more than one thing there -- I can write something on the PPT slides that make it easier - or maybe I did not print it off - and the laptop is there so I can look it up -- I take my laptop with me everyday now. With learning styles -- for me - e-books are cheaper... I can also... or... the textbooks can be bought from other textbooks - it is easier to highlight in the paper textbook - then the e-textbook. I do not see myself using the e-textbook.

» I think one of the issues I am still running into - is that there are instructors who do not let me use technology. I like being able to switch between - and I cannot. I still have to bring my print out. That is what we have to do. They do not want to see the use of laptops. It is both young to old professors -- it is across the board. They see it as a distraction -- at the college level it isn't my issue if people choose to not be in the class to learn.

» Where do you learn to draw the line between a distraction and education. I was right on the cusp on technology... 1 of 500 you cannot use the calculator -- you cannot use a calculator... and now you have to have them - they are all in it. In the real world - do we start to implement technology in the classrooms or do we wait?

DID YOU ALL HAVE TEXTBOOKS WHEN YOU WERE GROWING UP?

» It varies as far as curriculum. Textbooks are not using them anymore -- you are limited on what you are able to do... it is big chunk of money. I grew up with textbooks, and not having textbooks -- so, now, I see kids bringing from textbooks... their Chromebooks -- we are in-between.

AS A STUDENT - AND YOU CANNOT ACCESS TECHNOLOGY IN THE CLASSROOM - WHAT DO YOU DO?

» I have had to tell professors in the classroom-I bought the electronic book but I cannot bring up the textbook because it is on my tablet.

» There is a change in how students learn and how instructors teach. Now we have all this clash of pedagogy style on how I learn and how they teach. I do not know where it will go, but hopefully professors can tell students what to do.

» All of the articles are online but I still have to print them off to bring them.

FOCUS GROUP DISCUSSIONS - STUDENTS

IS EVERYTHING POSTED ON BLACKBOARD LEARN?

» One student said they have one class that is not posted online

WHAT ARE WE DOING OR COULD WE DO DIFFERENTLY WITH OUR ACADEMIC CLASSROOMS TO RECRUIT THE BEST STUDENTS TO IOWA STATE? (WHAT WOULD APPEAL TO YOU?)

» Being on the leading edge over other universities.

» Wireless classrooms, boards, projectors, it is a big thing -- there are still issues with technology whether or not it works properly - but if you have the control - it makes the learning experience more seamless -- have one classroom that has a projector that goes to sleep -- the settings make it error - and you have to wake it up -- it defeats the purpose -- use an overhead slide -because it does not go to sleep.

» Elmos are awesome - and they should be in every classroom.

» Fresh, updated classroom.

» When I walked into Gilman auditorium - there is a bank of chairs with buckets for rain.

» When the remodeling happened it was really nice.

» I know when things are renovated it is helpful - it gets into acoustics stuff to help use hear in Lago lecture hall if one person moves the chairs squeak... and you cannot hear.

» Multiple whiteboards.

» Aspect ratio needs to be correct.

» Kildee Hall Lush Auditorium - there is an odd mural on the wall.

» Having different lighting settings in the room -- I do not learn best when the lighting is too bright -- zoned lighting.

» When something is put up - having the lights go down is helpful.

» Having the window shades go down -- some light is helpful.

» Is the room in Howe well received? Yes and no - it depends -- getting NASA students in a non-traditional classroom - they will learn better.

» Round rooms are really interesting.

FOCUS GROUP DISCUSSIONS - STUDENTS

WHAT ARE THE MOST COMMON CHALLENGES THAT HAPPEN TO FACULTY AND STUDENTS IN A CLASSROOM?

» Fixed rows.

» Nothing more awkward to have a discussion and there is fixed seating.

» Students to be more responsible what they do.

» Stress more that faculty need to implement new technology - and CELT is there to help. There are tons of free tools that faculty can use -- one of the tools that I was surprised to exist -- when the professor lectures - I do not understand what you just said -- the instructor can repeat what just happened - automatic feedback tool.

» Did not see clickers to be beneficial - maybe it was the way it was implemented - Poll everywhere is on a phone -- and I do not have to buy a clicker -- one less thing. The biggest problem is the program can freeze all the time. It is not an efficient technology. I have spent time in classes - instead of taking the quiz - I was with the instructor trying to get it working.

» I liked to use Clickers - and the feedback feature was useful - it gives you an idea of a concept. It makes them evaluate what they want to within the TBL environment.

RESOURCES | WHAT DO YOU NEED TO BE SUCCESSFUL IN THE CLASSROOM? WHAT INFRASTRUCTURE IS NEEDED TO MAKE SOME OF THESE CHANGES (I.E. STAFFING, TECHNOLOGIES, EQUIPMENT, OTHER RESOURCES)

» Getting everyone on board - getting professors on board for the new technologies. That is the biggest thing.

» From a teaching standpoint you want the students to be engaged - we need to get over the boundary -- if they are not engaged - it is their choice. If I am coming to class prepared and ready to go - I want to use my technology. Quit worrying about what the student is doing -- if the student fails out - they fail out - it is a choice they are making - they are not invested. It comes down to let the students make the choice -- and if they have technology - is there enough space to have it out. You cannot force them into one way or another.

» Flexible space is better -- sitting in the back is good - structured - unstructured - different types of sections set-up so you know what kind of classroom.

» You have to come in mind that many students learn differently - International students learn differently.

FOCUS GROUP DISCUSSIONS - FACULTY

FAVORITE CLASSROOM AND WHY?

» 1210 LeBaron Hall (Elmo, etc.) seats turn around, lights can be controlled.

» Outdoors.

» Small recitation with flexible rolling seats.

» 1210 LeBaron, seats rotate, Bb and laptop - flexible space is great.

» small ones with 20 students - when seats are chained the floors - it is awful.

» COB - I have taught larger classrooms - pleasant to teach in - fixed seats with tablet armchairs, technology is great - biggest problem is new tech is not working correctly and continues to crash.

» New faculty orientation or round table meetings - Brenton Center has all the technology for presentations online.

» Troxel Hall - is really nice - I like the fact that the chairs swivel - and when the technology works it is good - you can set it up to do automatic capture -- all I have to know is how to turn on a mic -- I get to teach every spring - class of 15 - 18 in Bessey Hall - it is small - it has all the microscopes.

» CoD - 20 students - studio - 330 CoD - HD projector - 530 has a good projector. The rest of the facilities are "fine" but I love the projector -- when you can see the details and color balance was awesome.

» I feel embarrassed to complain - I think we should make do with whatever we are given.

»   - Large 1st year - the auditorium - crammed in seats - economy class in a 747 plane - it is hard to get to an empty seat.

»   - 416 CoD -- 40-50 smaller classes -- many chairs from different parts of pedagogical history -- the space is always different every time I go in - and it is flexible - small tables would be nice... sitting knee to knee.

»   - Any room with a table and a projector -- 6-12 students as well -- 3 different rooms.

» Black Engineering and Ross Hall - small class/med class. Technology is good and different modalities to do it. Tables that move would be helpful. Tables with rollers.

» Any room in Hoover Hall -- design classes - the tables are moveable - and nice technology.

ATTENDED AND FAVORITE CLASSROOM AND WHY? CONTINUED...

» Any room works for Learning Communities; there is a special room in Town Engineering - 60 stations dual screen monitors, big screen TVs around the room - what is cool is that if there is a team of 6-7 students - they can project their own work up on that computer - moveable chairs and moveable tables - we made due with what we have.

» Lush Auditorium - love the space -- 1002 the fish bowl room in Gilman Hall -- Pork Palace in the National Swine Research Center - it is always hot - and the colors are off -- the space is 150 - 200 seat classrooms -- extremely frustrating to split a lecture into sections.

FOCUS GROUP DISCUSSIONS - FACULTY

WHAT ARE THE MOST PREVALENT TEACHING AND LEARNING MODES AT ISU?

» Lecture (many faculty answered to this)

» Larger ones are almost all lecture 150 - 400+ students

» 40 - 50 seat is upon the faculty - lecture/discussion based - some classrooms are Team Based Learning - lots are discussion based learning

» You can extrapolate the discussion into a 50+ minute time slot

» The constraints of the class space impact how you can teach

» The classroom dictates what the space allows

» Share/pair activities are not as easy in a fixed space

» We combat lots of classes with lots of labs -- it may not be the most efficient use of faculty time... all of our large classes have the lab space

» Team-Based Learning Faculty Learning Community - does have people teaching 200+ students with a Team Based Learning

» I think that the entry level classes - there is less flexibility - it is the space that dictates the style - depending on how you slice it - there is not one mode of teaching -- faculty have different ideas of what can assist students in learning. When you have 400+ students in a class - you think you have to deliver the information

WHAT BARRIERS EXIST (ACTUAL OR PERCEIVED) IN ADVANCING THE STATUS OF ISU'S PEDAGOGY?

» Physical space impacts it

» I am teaching 400+ students at a time - I spend the majority presenting - but there are still lectures, etc. I give the students a bit of information and then have the students get additional information on their smartphone or tablets... but, when I was in Design 101 - the wireless did not work no bandwidth, etc. That was a barrier - until we moved to Troxel Hall. That would be the greatest barrier on campus... it has been fun when the wireless technology works.

» Kildee 125 used to have the same issue - it has worked better this semester

» One of the barriers we have in some cases - is we do not have the resources to do more things -- a lot of it is out of the hide of the person - because of time resources... a lot of them are using "cold calling" in the classroom... we need to not always rely on technology... students are using some of it because they have to be able to answer things on the spot... rather than looking it up... but, I get worried -- because we are at the limit capacity in the classrooms... and if we only use technology to make up that -- it concerns me.... that whole class size concerns me.

» Simple maintenance things... there are dimmable lights in Beyer and the bulbs are incorrect

» There is a blind down in a room - that I have had to duct tape and it has not been fixed

FOCUS GROUP DISCUSSIONS - FACULTY

WHAT BARRIERS EXIST (ACTUAL OR PERCEIVED) IN ADVANCING THE STATUS OF ISU'S PEDAGOGY?

» 10 minutes between classes - 80 people out and 80 people in.

» Comes to online teaching or recording -- it cuts 5-10 minutes off the next class.

» Troxel does help address it - but in a lot of other classes - back to back to back -- it screws up the traffic patterns.

» The gathering outside of the room is the roar.

» The time to get from one end to the other end of campus for class.

» There is a n aversion to a risk factor and we need to be willing to try something different... 50 minutes constitutes - 15 x 3x a week == a semester long course -- maybe we need to look at the time required for the course... are there other ways for us to accomplish it? Can we look at the times for the courses?

CHANGE

» Clickers the first time -- If I could have had someone come to my class with me - it would have been nice to have someone there to help me when I try something new... it is a staff resource issues.

» Lots of requests for blended or flipped classrooms - and how do we have the resources to do that... who do the faculty turn to for real help?

» The risk factor... there is a big time commitment to do some change -- I am working with curriculum... Faculty need to know that there is going to be a reward... that there will be release time or technological reward... event helps create a change -- pre and post help with us looking at the needs.

» Are you looking at some sort of support for faculty to do it better -yes.

» If we had more spaces - that have high technology and project spaces and huddling around laptops just to work on a document and to collaborate is ridiculous - it would be great to have those for our students - I know from my perspective that there are only 2 or 3 spaces like this on campus.

» That capstone space was only created/imagined because of private donations -- there could be an opportunity to have other collaborative spaces.

» We should look at finding more ways to have these types of classrooms.

» I wish I could switch up my classes - it is a time issue - that is not in the picture because of everything else I am trying to do -- the learning centers for the library -- it is the space where people are doing group work -- we need to have more spaces like the library that people can do that work... the design studios have that... group work -- outside of the classroom would be helpful.

» Are you suggesting that we provide spaces that provide a way for students to connect?

» Yes... we assign group work they need the space.

» The risk -- when we have some time issues trying to help students get out to a lab farm -- that we need to work on working with a different timing.

» We need to have faculty release time to make these changes.

» It would be really great to know about the classrooms -- that are good for discussion and good with technology to get an idea of what is possible... we are all in our little areas - we do not know what those spaces are.

FOCUS GROUP DISCUSSIONS - FACULTY

CHANGE CONTINUED...

» Or even know what spaces are available -- why is there not a matrix that shows the space is available... when I look at classroom scheduling - I want to know what is available and if a space for a larger classroom - a database with the academic learning spaces available for us to use.

» I want to know what tools are available in the classrooms - or what the rooms would be used for.

» Technology does not work -- especially if you have 5 year old technology and then you have new technology -- we need to be able to look at how we will update the technology 5-10 years down the road. We would like to have more classrooms with movable tables and chairs -- but we had to pack more in the rooms so there are now fixed tables.

» The infrastructure -- the building problems -- the CoD is all hot -- it leaks - we do not fix anything after it is built.

» What happens 8 years down the road - will the technology be working -- what is the on going upkeep of the technologies.

» We need to be able to donate for maintenance rather than for capital.

» Maybe we need to get rid of FP&M (said in a whisper).

» We need to be careful on team vs. individual - we need to be able to think about - one way or another.

WHERE ARE YOU GOING? WHAT WILL THE BEST "FACE-TO-FACE" EDUCATION LOOK LIKE IN THE FUTURE?

» One day it's a lecture, one days it's team, one day it does technology - if I can go into a classroom - that can do those things - I would want to add them.

» If we can get rid of the barriers - we can focus on the learning - if we had the flexible learning spaces -- we could just focus.

» If we would know where the spaces - and if having them.

» It looks like it does today. However the best is today -- with barriers removed -- what about all the other people who do not care about teaching and learning.

» We do not make the ultimate decisions -- there needs to be an incentive for good teaching -- it does not seem to be a strong incentive -- I have heard people in the hallway -- 3.5 is okay -- no that is not okay if I do not have a 4.0 or a 4.5 I am not okay... we need to be good teachers.

FOCUS GROUP DISCUSSIONS - FACULTY

WHERE ARE YOU GOING? WHAT WILL THE BEST "FACE-TO-FACE" EDUCATION LOOK LIKE IN THE FUTURE?

» The bulk of learning comes outside of the classroom we learn - outside of the classroom - good face to face teaching creates the tasks and challenges to put in the learning outside of the classroom... good lectures help put the learning outside of the classroom.

» There is a human quality to all of this -- there is something in terms of... I am struggling with the Skype thing now -- I am struggling with the screen - my best moments have been hand to hand that immediate contact and not technology mediated -- integrating the technology to have that -- to have the connection there -- when you are in someone's face... it may not always be positive -- but it was there -- I am struggling with e-mail even... it is communication based and face based -- I want to retain community -- there is something about real and live vs the Facebook thing... we need to not lose sight of that.

» Space design has something to do with the intimacy in the classroom.

» It is raining students out there -- the joke is - open the door to see if anyone out there has a question... what if we are in an education bubble? - what if there is an economic bubble? - we think that this is forever -- we do not know... It could be dust and tumble weeds -- because we are not being realistic.

» That is a trend to watch.

» Marketing - we will lose what we have because of the resources.

» Student attitudes is one of the growing issues is entitlement -- you are entering the world -- cut the umbilical cord from your parents... I spend most of my time dealing with students who do not do what they need to do.

» Students are just doing education as a checklist... to deal with the students that are here vs. there.

» It is up to us - allowing it to happen - I am not going to allow the quality to go down... until we are ready to do that -- to get away with... we are not helping them one bit.

SAMPLE ASSESSMENT

Building: _____
Yr Built: _____
Room #: _____
Capacity: _____
Last Updated: _____
Date: _____

ROOM ASSESSMENT	Y	N		Y	N		Y	N

1. Lighting: _____
   Notes: _____

	Access to Daylight:	☐ ☐	Controlled?	☐ ☐	Type:	Direct / Indirect
	Strategic Switching:	☐ ☐	Dimming Capability	☐ ☐		

2. A/V Equipment: _____
   Notes: _____

Dig. Projector:	☐ ☐	Supplemental Monitors:	☐ ☐	Smartboard:	☐ ☐
White Board:	☐ ☐	Wireless Enabled:	☐ ☐	Small Group Display:	☐ ☐
Projection Screen:	☐ ☐	Blackboards:	☐ ☐		

3. Mechanical Systems: _____
   Notes: _____

4. Life/Safety: _____
   Notes: _____

5. Finishes

Floors	Material:				
	Condition:	Poor	Fair	Good	Excellent
	Notes:				

Walls	Material:				
	Condition:	Poor	Fair	Good	Excellent
	Notes:				

Ceiling	Material:				
	Condition:	Poor	Fair	Good	Excellent
	Notes:				

6. Furniture Type:

Traditional:	☐ ☐	Fixed Table	Project Based:	☐ ☐	Group:	☐ ☐
Lecture:			Blended:	☐ ☐		

Area of room: _____   Average students prgrammed: _____
seats (capacity): _____   Actual students per classroom: _____
Area per seat: _____   Access to offices for support help? _____

24'-6"

26'-10"
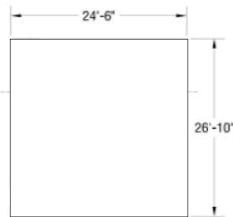
Room Proportion: _____

BUILDING SYSTEM ASSESSMENT

BUILDING	MECHANICAL	FIRE SUPPRESSION	ROOF COVERING
AGRONOMY	AHU's replaced in 1984-85; VAV system; intake at grade takes in snow and gets plugged	Fire alarm panel recently updated, but devices need updating; sprinkled	Replaced in 2013; System 2001 white ventilated
CARVER	4-hydronic zones, no re-heat; high velocity double-duct system (not desirable by modern standards); 6 total AHU's	No sprinklers; devices need updating to addressable type	5-10 years old; System 2001 white ventilated
COOVER	Perimeter heat; original constant volume system	Partially sprinkled-system set up to expand sprinklers; 100% DDC controls in addition	5-10 years old; System 2001 white ventilated
FOOD SCIENCE	Past moisture issues; AHU constant volume system in 2432 replaced in early 1980's;	Updated in 1983; sprinkled.	Condition unknown
GERDIN	If re-planning, would provide separate AHU for auditorium to alleviate noise, draft and stuffiness; VAV system throughout building	DDC controls; sprinkled; fire alarm up to date	PVC under warranty
GILMAN	AHU's last replaced in 1980's, with exception of AHU 15 & 16 –replaced in 1999 and 17 in 2003	Not sprinkled.	15 years old
LAGOMARCINO	Mixed systems throughout building: 4-pipe fan coils, constant volume AHU –dated to 1978; chilled beams in renovated area	Partially sprinkled; new fire alarm panel; no horns-speakers instead	5-10 years old; System 2001 white ventilated
MACKAY	AHU 3 replaced in 2007; VAV system with perimeter re-heat	Sprinkled. Updated FA panel; speaker and strobe	System 2001 white ventilated installed in
MOLECULAR BIOLOGY	AHU split between labs and offices; own AHU for auditorium	Sprinkled. Updated FA panel; some devices have been updated to addressable	Original-needs replacement soon.
PEARSON	Set up for VAV, but room are not updated; currently double-duct system; desired to update mechanical on all classrooms	Sprinkled; new FA panel; updated DDC controls in part of building only	System 2001 white ventilated installed in 2007
ROSS	High-velocity double-duct system-needs updating; 1 AHU per floor-original equipment; opportunity to update 1 floor at a time	Unknown if sprinkled. FA not upgraded.	Condition unknown.
SWEENEY	Constant volume double duct system-desired to update	Sprinkled. Part of building updated with addressable devices, others need updating ; updated panel	System 2001 white ventilated installed in 2000
TROXEL	AHU for auditorium; separate for rest of building; chilled beams in lobby with radiant perimeter heat	Sprinkled. Addressable fire alarm devices.	Vegetated roof

NOTE: THESE FINISHES ARE ASSOCIATED WITH THE COST PLANNING TOOL AND CAN BE USED TO QUICKLY SELECT FINISHES AND FURNITURE FOR CLASSROOM PLANNING. SEE FIGURE 12 - COST PLANNING TOOL FOR ADDITIONAL INFORMATION.

CARPET
FINISH STANDARDS

COST PER SQUARE FOOT: $3.50 SF

MANUFACTURER
Interface Flor
www.interfaceflor.com
(770) 437-6800

INTERFACE CARPET TILE THE POND COLLECTION
Primary (carpet to be used for primary fields of warm and cool neutrals)
Pattern #1242202500 Berlin, Color #6712 Mushroom
Pattern #1242202500 Berlin, Color #6709 Dune
Primary (carpet to be used for the primary path of travel)
Pattern #1242202500 Berlin, Color #6711 Bark
Pattern #1242202500 Berlin, Color #6710 Loam
Secondary (carpet to be used for specific areas and to add variation and/or
supplement the primary carpets)
All patterns and colors from The Pond Collection

MUSHROOM   **DUNE**   **BARK**   **LOOM**
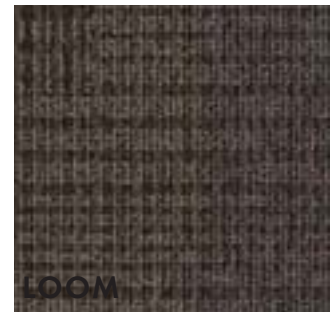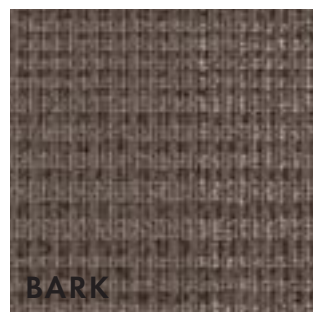
INTERFACE CARPET TILE SYNCOPATION
Accent carpet used in small quantities to reinforce color scheme or design
in common areas and to supplement way finding. For example, color insets can help
indicate classrooms or meeting rooms.

CORAL   **LAGOON**   **QUARTZ**
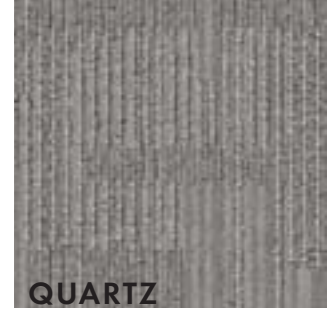
RESILIENT FLOORING
FINISH STANDARDS

COST PER SQUARE FOOT: $6.00 SF

MANUFACTURER
Forbo Flooring Systems
http://www.forboflooringna.com
(800) 842-7839

FORBO FLOORING SYSTEMS - MARMOLEUM, FRESCO | CONCRETE
Primary (resilient flooring to be used for primary fields of warm and cool neutrals as well as the
    primary path of travel)
   Pattern #3707 Black Hole
    Pattern #3705 Meteorite
    Pattern #3711 Cloudy Sand

BLACK HOLE METEORITE CLOUDY SAND

FOBO FLOORING SYSTEMS - MARMOLEUM, WALTON | CIRRUS
    Accent colors to be used in small quantities to reinforce color scheme or design
    in common areas and to supplement way finding. For example, color insets can help
    indicate classrooms or meeting rooms.

BERLIN RED PETROL EGGPLANT PURPLE
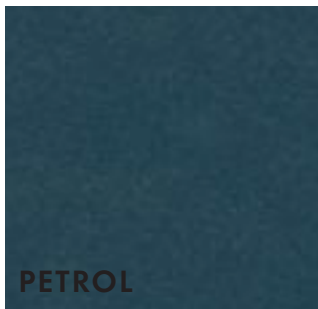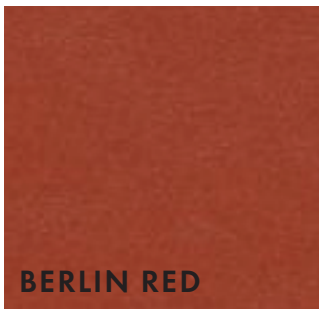
STANDARD PAINT COLORS
FINISH STANDARDS

COST PER SQUARE FOOT: $1.10 SF

MANUFACTURER
Sherwin Williams
www.sherwin-williams.com
(800) 474-3794

GENERAL PAINT COLORS
Primary (color to be used for primary fields of warm and cool neutrals)

| PURE WHITE | ESCAPE GRAY | CONTENTED | FUNCTIONAL GRAY |
| DOVER | AMAZING GRAY | ACCESSIBLE BEIGE | LIBRARY PEWTER |

ACCENT PAINT COLORS
Accents paint colors used in small quantities to reinforce color scheme or design
in common areas and to supplement way finding. Typical recommendation is one accent
color per room and should coordinate with carpet and furniture colors.

| RAIN | GECKO | STILL WATER | THUNDER GRAY |
| BURLAP | RAUCOUS | DRIZZLE | ROYCROFT COPPER RED |

ACOUTSTIC CEILING TILE

FINISH STANDARDS

COST PER SQUARE FOOT: $3.50 SF

MANUFACTURER

USG Corporation

www.usg.com

(312) 606-4000

CEILING TILE AND GRID

Ceiling Tile
USG Millennia #76705
2x2x3/4" tapered edge
Grid
USG
15/16"

LIGHTING
FINISH STANDARDS

UNIT COST: $150.00

MANUFACTURER
Lithonia Lighting
www.lithonia.com
(770) 922-9000

GENERAL ILLUMINATION LITHONIA RT5

    3 1/8" depth
    Two-piece refractor system
    Available in a number of ballast configurations including
    set light output or step level dimming.

SIDE CHAIRS
FINISH STANDARDS

UNIT COST: $110.00

MANUFACTURER
Herman Miller
www.hermanmiller.com
(800) 851-1196

MOVEABLE SIDE CHAIRS
    WC410P Caper Stacking Chair with Molded Seat, with Arms
    Frame Finish: Metallic Silver
    Casters: NONE

SILVER GRAY   **WHITE**   **GREEN APPLE**   **CAPPUCCINO**
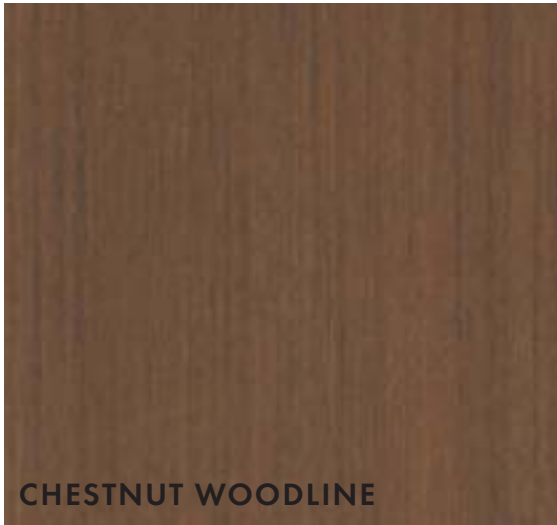
MOBILE TABLES

FINISH STANDARDS

MANUFACTURER
Bretford
www.bretford.com
(800) 521-961

UNIT COST: $175.00

FLIP-TOP RECTANGULAR TRAINING TABLES
HERE Flip-top Rectangular Training Table
HTR2460 60"Wx24"Dx29"H
Laminate Top and Vinyl Edge
Standard Color on Trim and Legs

CHESTNUT WOODLINE

LEAVE LIKATRE LAMINATE

ANTHROCITE TRIM AND PAINT

WARM GRAY TRIM AND PAINT

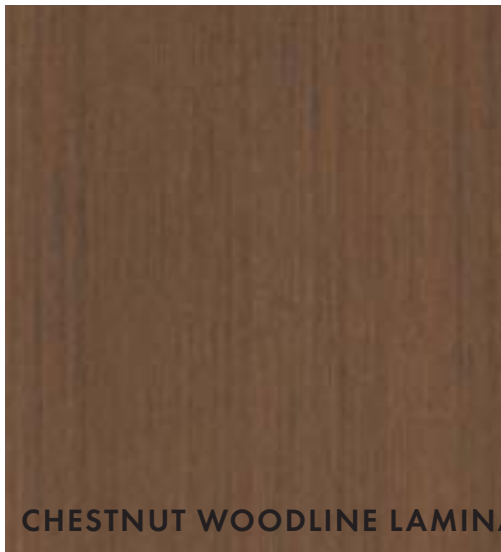# MOBILE LECTERN

FINISH STANDARDS

UNIT COST: $2,300.00

MANUFACTURER
Fixtures Furniture
www.izzyplus.com
(855) 321-4999

MOBILE LECTERN
      Dewey HelpDesk wtih Cabinets - Seated Height
      HTR2460 60"Wx24"Dx29"H
      Laminate Top and Vinyl Edge
      Standard Color on Trim and Legs

CHESTNUT WOODLINE LAMINATE

GRAPHITE

MOBILE TABLET ARM CHAIRS

FINISH STANDARDS   **UNIT COST: $230.00**

MANUFACTURER
Steelcase
www.steelcase.com
(888) 783-3522

MOBILE TABLET ARM CHAIR
    Node Tripod Base with Work Surface with Casters
    Width 23.75", Seat Height from Floor 18.25"
    Work Surface Height from Floor 28.5"

ELEMENT	CITRON	WASABI	PICASSO

WHITE BOARDS
FINISH STANDARDS

UNIT COST: $650.00

MANUFACTURER
Steelcase
www.steelcase.com
(888) 783-3522

VERB WHITE BOARDS
Display Easel - Large
Wall Track and Hooks
Storage Dock
Platinum Metallic on Trim and Legs

Easel - large

Wall track and hooks