

University Classroom Committee Report To the Provost

2013 – 2014

Committee members

Martina Bode, *Department of Mathematics, WCAS*
Susanna Calkins, *Searle Center for Advancing Learning and Teaching*
Stephen H. Carr, *Office of the Dean, McCormick School of Engineering*
Jacquelyn Casazza, *Office of the Registrar*
Rick Morris, *Office of the Dean, School of Communication*
Ronald Nayler, *Facilities Management (co-chair)*
Sofia Sami, *Associated Student Government*
Marianne Ryan, *University Library*
Jean E. Shedd, *Office of the Provost (co-chair)*
Robert L. Taylor, *Academic and Research Technologies, Information Technology*
Joel Trammell, *Office of the Dean, Weinberg College of Arts & Sciences*
Paul B. Weller, *Planning, Facilities Management*
Ken Woo, *School of Continuing Studies*

December 2014

**UNIVERSITY CLASSROOM COMMITTEE
REPORT
2013-2014
Executive Summary**

- In 2013-2014, the Classroom Committee devoted much of its work to planning for the Kresge Hall renovations, scheduled to begin in late summer 2014. The Registrar, NUIT and the Utilization Subcommittee worked together to continue to analyze scheduling needs and identify swing-space classrooms to use during Kresge's renovation. A total of 21 new Registrar-controlled classrooms have been built out in various locations on campus, with an additional two classrooms provided by Garrett Theological Seminary. A new NUIT support office on the first floor of Locy Hall provides space for A&RT staff and students to offer improved support services to the extended South Campus classroom locations during the Kresge renovations in FY2015 and FY2016. Work continues to monitor overall classroom usage and identify additional swing spaces.
- In order to more efficiently manage space availability, in Fall 2014 the Office of the Registrar began enforcing the 14% limit on department course offerings scheduled in a "prime" timeslot. Through this process, they also identified ways to make scheduling more efficient, both in terms of room use and the scheduling process itself. Departments are now able to participate in measuring their own compliance with the 14% rule, and this has allowed the Registrar to be able to provide support tailored to the individual departmental needs.
- Information on all the new swing-space classrooms was built into the Office of the Registrar's scheduling system. Furthermore, all Fall 2014 lectures were assigned a classroom. In recent years, even when Kresge classroom space were still available, the Office of the Registrar was unable to assign classrooms to all lectures, so this outcome is a testament to the success of the changes and the compliance of departments.
- NUIT continued to expand WiFi capacity for classrooms, as part of a multi-year investment in wireless capacity for all academic buildings on the Evanston and Chicago campuses. The expanded WiFi capacity that has been brought to these buildings is to serve the increasing mobile needs of users in offices, classrooms and informal gathering spaces in academic buildings. This year marked the first year in which *all* 120 Registrar-scheduled classrooms have reached a base-level of WiFi capacity for meeting current instructional needs with mobile devices.
- The Classroom Committee continues to work with the Educational Technology Advisory Committee (ETAC) to identify new classroom designs that may better meet Northwestern's evolving curricular goals. A work group with participation from students, faculty and administrative staff will be formed in FY2015 to investigate classroom improvements that would allow additional flexibility for communication, feedback, group work and student engagement in some of the larger, fixed-seat classroom settings.

I. Use of the FY2014 Budget Allocation

The Classroom Committee receives an annual budget allocation of \$500,000 to support improvement to the physical condition of the University's general-purpose classrooms, scheduled by the Office of the Registrar. By end of 2014, \$575,000, will have been spent from the FY2013 and FY2014 allocations, leaving FY2014 funding of \$160,000 to use in FY2015 (in addition to the FY2015 allocation):

Work accomplished during FY2014 includes:

1. University Hall 312, 318, 412, 418: support for A&RT technology refresh (new screens, lower wiremold for speakers, remove old coax connections (all UH rooms).
2. Tech L211: provide (2) 10' motorized screens, 2nd projector (projector #1 paid by A&RT), additional data and raceways to utilize former storage area as AV support room). Tech L211 will be the first room on the Evanston campus with a 2nd display, meaning that faculty can use 2 independent sources to 2 different types of media (document camera, laptop, resident PC, clicker) to each off the 2 new screens.
3. Tech L211: provided power outlets for (40) seats.
4. Leverone Auditorium: support for A&RT technology refresh by removing old speakers on 30' – 40' high light truss with (8) new 85# speakers, provide additional data and provide AV/power connection in face of control room to minimize off hours access to the control room which houses A&RT equipment. In addition, Kellogg IT funded power and raceways to locations for cameras to be installed in the future.
5. Library 3322, 3370, 3622, 3670, 3722, 4670, 4722, 4770, 5322, 5722, 5746: new laptop connections with projectors and podiums with document cameras, new furniture, add many markerboards, acoustic panels, larger window in door and fresh paint by fall, 2014. (9) rooms will have Steelcase Node™ tablet armchairs; 2 rooms will keep the existing large seminar table but use with Node task chairs (height adjustable). Capacity is 18 in all rooms except 4770 which has smaller size and capacity of 15.
6. Tech Ryan Auditorium: provided a document camera on a cart so there is now the ability to teach from the main floor, based on cart reservation.
7. Fisk B17, FSL 1-421, 2-378, Tech L168 & M349: provide document cameras, likely from Kresge. Modify each podium to accept document camera (millwork for shelf + Crestron reprogramming).
8. Pancoe Auditorium: assess and make recommendation to upgrade and streamline existing lighting controls.

Work Proposed for FY2015

(Funded by carry-forward of FY2014 funds in addition to FY2015 allocation.)

- Upgrade tablet armchairs to Steelcase Node chairs as a 5-6 year initiative. This new tablet armchair provides greater student comfort, a large writing surface, cupholder, tablet holder and storage for backpacks under the seat. It is also on casters and very easy to move, supporting forming smaller groups easily. Many of the tablet armchairs installed 2001 – 2005 are also showing some damage from heavy use. During Summer 2014, existing Kresge tablet armchairs are being used the Kresge Swing Space Classrooms.
- Contribute to Classroom transformations such as “The Garage”, blended learning, flipped classrooms and other ideas.
- Provide Facilities Management support for A&RT technology upgrades; consider 2nd displays in classrooms, video conferencing in classrooms and other ideas.
- Provide more power outlets in classrooms per ASG recommendations. Start a multi-year initiative to provide outlets in 2 or 3 classrooms per year. Quantity of outlets capped at 30-40% of room capacity because not all students need to charge their devices during class and outlets are expensive to install. Certain buildings will not be able to receive outlets because the electrical panels in these buildings are at maximum capacity (University Library).

Please see Appendix I for a detailed list of all FY 2014 approved projects.

II. Technology improvements to general-purpose classrooms (scheduled by the Office of the Registrar)

NUIT staff worked on multiple fronts during the 2013-2014 year regarding classroom technology upgrades and classroom design planning, making for the busiest year of classroom technology accomplishments since the startup of the NU Classroom Committee in 2000. Some specific accomplishments for this year are listed below.

1. NUIT’s classroom technology group worked with the Classroom Committee to implement scheduled AV upgrades to nine Registrar classrooms during FY2014, using recurring funding that had previously been allocated to NUIT for the purpose of assuring that existing, technology-enhanced Registrar classrooms are kept up to date. Investments were made to the following Registrar classrooms:
 - Leverone Auditorium – complete AV technology upgrade, along with an acoustical analysis and acoustical redesign
 - Tech L211 – complete AV upgrade, added dual-source dual-projection capabilities per faculty requests
 - University Hall 312, 318, 412, 418 – complete AV technology upgrades
 - Tech Ryan Family Auditorium – projector upgrade
 - Tech Lecture Room 2 – projector upgrade
 - Tech Lecture Room 3 – projector upgrade

Not included in the recurring classroom funding allocation, but paid for by the Office of the Provost as part of a special project for a School of Communication faculty member’s teaching needs:

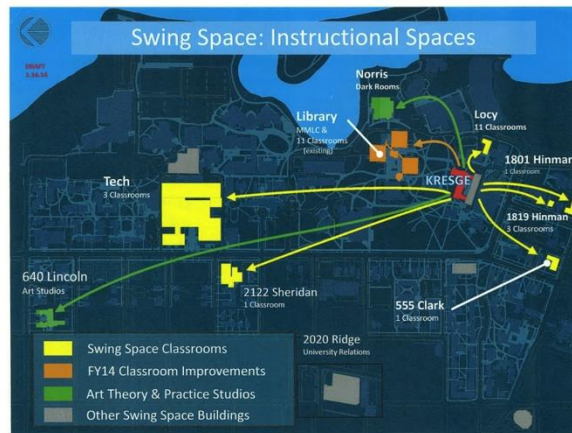
- Francis Searle 3-220 – complete AV upgrade, and H.323 videoconferencing capabilities

In addition, mobile technology enhancements were added to three classrooms (Tech Ryan Family Auditorium, Tech Lecture Room 4, Tech L361) to allow faculty the mobility to use tablet computers to drive classroom presentations from any location in the room, rather than being tied to a podium location. These experimental enhancements were done in response to faculty request; and the feedback from instructors, so far, has been very positive about the increased freedom of movement afforded by the mobile enhancements in these traditional lecture halls.

2. NUIT's Mike Curtis has also been a primary partner to Facilities Management, the Registrar and to Weinberg College teams that have been preparing for the impending renovation of Kresge Hall, which will take many classrooms out of operation during a two-year construction period.

This work has involved the preparation of 39 classrooms with technology enhancements during FY2014. An additional seven classrooms will be upgraded during the fall 2014 quarter, all in order to meet classroom capacity needs for Registrar-scheduled courses during FY2015 and FY2016.

Additionally, a NUIT support office on the first floor of Locy Hall will provide space for NUIT A&RT staff and students to provide services to the extended classroom locations during FY2015 and FY2016, improving response times to new South Campus classrooms during the Kresge Hall renovation.



3. NUIT continued during FY2014 with expansion of campus WiFi capacity for classrooms, as part of a multi-year investment in wireless capacity for all academic buildings on the Evanston and Chicago campuses. The expanded WiFi capacity that has been brought to these buildings is to serve the increasing mobile needs of users in offices, classrooms and informal gathering spaces in academic buildings. This year marked the first year in which *all* 120 Registrar-scheduled classrooms have reached a base-level of WiFi capacity for meeting current instructional needs with mobile devices.

See Appendix II for a summary of the WiFi capacity status of Registrar scheduled classrooms on the Evanston campus.

4. The Educational Technology Advisory Committee (ETAC) and the NU Classroom Committee have begun joint planning activities for identifying new classroom designs that may better meet Northwestern's evolving curricular goals. Meeting quarterly, the co-chairs of ETAC and the Classroom Committee have been working to identify opportunities within current construction projects and renovation efforts for next-step experimentation in new classroom designs. Recently, these joint discussions have resulted in the formation of a startup workgroup to investigate, during FY2015, lecture hall improvements that would allow larger lecture classes additional flexibility for communication, feedback, group work and student engagement in these somewhat-fixed classroom settings. The startup workgroup will be expanded this fall with faculty participation from targeted STEM departments and other programs that meet in Northwestern's larger lecture halls. The hope is that these investigations into improved lecture hall models will support the gains and the enthusiasms being reported by NU faculty as they make commitments to blended learning practices and other engaged learning practices.

5. NUIT staff have been members of planning teams this year for future classroom designs in several new campus buildings that are now under construction: the Visitor Center, the Music and Communication Building, the new Kellogg School of Management Building, and “The Garage” at the North Campus Garage.

III. University Registrar Preparations for Kresge Closure

Planning for the closure of Kresge Hall was a key challenge during the 2013-14 academic year. Below is a summary of the options considered to meet the scheduling needs, the scheduling approach adopted, the outcomes observed so far, and what we expect in the future.

1. Scheduling Proposals

A scheduling model and analysis by FM determined that if we distributed our offerings more thoroughly throughout the day we could accommodate the loss of the Kresge classroom space. We considered shifting the class day to begin the earliest classes at 8:30am rather than 8:00am in the hope of increasing the use of the earliest meeting time. We also identified an additional meeting time that ended at 5:30pm. We reviewed this proposal with faculty, many administrators, and students and identified a number of possible negative ramifications including the times of meals and the need to staff important campus buildings like the library earlier. The potential benefit of the change was not significant enough to outweigh the known cost, so we chose not to implement this change to the class meeting times.

We also considered reducing the percentage of classes that could be offered in prime hours. Further study revealed that with the addition of swing spaces and the relocation of some programs the classroom demand would actually be very similar to the demand when Harris Hall closed for renovation. We chose to maintain the 14% requirement implemented at the time Harris closed, modified slightly so departments could more easily comply, and to rigorously enforce it. We also identified ways to make scheduling more efficient, both in terms of room use and the scheduling process itself.

2. Modified Scheduling Approach

In the past we calculated scheduling compliance in two groups, those of classes of over and under 55, each evaluated separately for the purpose of compliance. Now the total number of a department's classes serves as the denominator for both groups. This change makes it easier for departments to meet the 14% requirement. The new calculation specifically helps larger departments that offer many smaller (0-54 enrollments) and larger courses (55+ enrollments). Specific actions we took to enforce this compliance policy were:

- Beginning with scheduling for Spring 2014, we notified departments that non-compliance for Fall 2014 scheduling would have more ramifications. We rigorously enforced the 14% compliance policy when scheduling the Fall 2014 term.
- We no longer accept requests for specific buildings or rooms, but have identified departmental building preferences and individual faculty may ask for placement on parts of the campus (north, central or south). This allows for more efficient room scheduling and more staff time to review and negotiate compliance.
- To encourage departments to calculate their own compliance, we created an Excel worksheet and have provided it to all departments. This allows departments to strategically

plan schedules knowing how compliance is measured and lessens the complaints and confusion during compliance evaluation.

- We also improved our overall compliance evaluation process, by running reports for all departments within five business days after receiving a class schedule proof. If the department is noncompliant, we send them the report and ask them to use the worksheet to recalculate compliance. This has opened dialogue with noncompliant units and we have been able to offer them individual support, unique to their departmental needs. In addition, we have had more time to work with them to establish a suitable schedule for faculty, departments and students.
- As a further step in ensuring the workability of this new enforced compliance policy, we established a committee of faculty and administrators to hear appeals for exceptions to compliance that could not be resolved by scheduling staff. No such appeals were made for Fall 2014.
- Finally, we built all the new swing spaces in the scheduling system and used the scheduling algorithm to efficiently schedule classes into those spaces. This process required significant system changes, testing, and manipulation.

3. Scheduling Outcomes

All Fall 2014 lectures were assigned a classroom. In recent years we have been unable to assign all lectures even with Kresge space still available, so this outcome is a testament to the success of the changes and the compliance of departments. We did still have approximately 20 discussions for which there was no room available, most of which were larger (40 students), and are scheduled 3:30 – 4:50pm on Tuesday and/or Thursday. Due to our stringent application of the compliance policy many classes were forced out of the 10 AM – 2 PM prime hours. Instead of meeting earlier (8 AM or 9 AM), a majority moved later to the first hour outside of the 10 AM – 2 PM prime hour slot, which is 3 PM for 50 minute classes and 3:30 PM for 80 minute classes. In addition to identifying possible future problems this indicates that our attempt to shift teaching patterns earlier in the day by starting at 8:30am might not have been successful either.

4. Looking Forward

Fifty more classes were offered in Winter 14 than in Fall 13, continuing a pattern we have seen in recent years. If this pattern continues, which we anticipate it will, we may have a much more difficult time finding space for classes in the upcoming winter term.

Based on the patterns we've seen in Fall 14 the 3:30-4:50pm meeting time may need to be reconsidered as a prime hour.

We may need to consider requiring departments to distribute their offerings throughout the week, not just throughout the day. We are currently only evaluating the hour that a course is offered, but not the day of the week, so one department could offer all classes on T/Th or M/W. Forcing more distribution would certainly improve scheduling of space and students' time and may have other positive impacts on the campus.

By no longer allowing requests for individual rooms we have much better data on what exactly faculty want and need in their classrooms. We've noted the following changes and trends in room requests:

- Chalkboard requests have skyrocketed. The data seems to show that these are requests to not have a whiteboard. The concern we hear from faculty is that they don't have markers, or that they dry out, but there is almost always chalk available. We should plan to solve the marker problem or install chalkboards in new and/or updated classrooms.
- Seminar rooms are increasingly requested, and more regularly for classes larger than 25, which is our traditional seminar room cap. We should consider outfitting some rooms with smaller moveable tables rather than moveable tab arm desks. If the number of rooms with this type of flexible seating increases we should consider assigning the responsibility of moving the furniture.
- Requests for resident computers have increased. We believe this may be a result of the Kresge and other south campus faculty anticipating holding classes in buildings far from their offices.
- Requests for clickers are only slightly increasing. Requests for document cameras are steady, and we believe the current supply is sufficient.
- Information collected from departments about expected enrollment and requested room capacity continues to be poor. Last year 100 classes each term drastically overestimated their expected enrollment which resulted in assignment to rooms much larger than was necessary.

We believe this last point can in part be addressed by a new class scheduling tool (WEN) that we will deploy in the upcoming academic year for Evanston campus departments. This new class scheduling tool will help departments plan their course offerings up to a year in advance.

We are designing this with Leepfrog Technologies, in partnership with Stanford, Yale, and Marquette Universities and the University of Alabama. Through this partnership effort we will be able to learn better ways to understand teaching patterns, gather information earlier, evaluate scheduling compliance, and identify other methods by which to validate whether a proposed schedule is workable and appropriate. Being a part of this community of great universities has already exposed us to new ideas about scheduling and compliance and we're sure to learn more from them and our colleagues on campus as use of this tool expands.

IV. Classroom Utilization

During the 2013-2014 Academic Year, the Utilization Subcommittee focused on planning for the Kresge/Crowe renovations. We worked closely with the Registrar and NUIT to provide further analysis of scheduling needs and identification of swing-space classrooms to use during Kresge's renovation. Part of this analysis resulted in the Registrar enforcement of the 14% limit on department course offerings scheduled in a "prime" timeslot. We continue to monitor scheduling patterns and explore options for additional swing space rooms for Winter Quarter 2014.

The incomplete record of scheduled events in RES (particularly meetings, luncheons, colloquia, presentations, tutorials, student group activities, etc.) continues to complicate planning efforts. With multiple scheduling systems in use at Northwestern and the inability of these systems to share information across platforms, a more complete picture of seminar/classroom usage is not available to inform and help ease potential scheduling crunches during Kresge's renovation. Ongoing planning

remains an exercise in guesswork and extrapolation. A more inclusive record of past utilization and data would help sort out “impressions” and anecdotal accounts of usage.

Swing Space Classrooms	
Building	# Rooms
1801 Hinman	1
1819 Hinman	2
2122 Sheridan Road	1
555 Clark	1
Crowe	1
Locy Hall	11
Tech, F-Wing	3
University Library	1

1. Swing Space Classrooms During Kresge Renovation

During the 2013-14 Academic Year, swing-space was identified for temporary loss of ~32 classrooms, 19 of which were scheduled by the Registrar. A total of 21 new Registrar-controlled classrooms have been built-out in various locations on campus, plus “rental” of 2 classrooms at Garrett Theological Seminary. A small amount of additional space has been made available by units that offered the Registrar partial use of departmentally-controlled rooms. While requests for such offerings resulted in few spaces during the planning process, the Registrar has found some departments willing to offer shared use once the Fall scheduling process commenced and departments had a better idea of availability.

2. Projection of Fall 2014 Scheduling vs. Actual Utilization

In an attempt to understand the impact of scheduling in a reduced and reconfigured classroom pool, an abstracted schedule model based on Fall 2012 data was employed. The modeled data included Registrar-scheduled courses and all courses scheduled in Kresge by Kresge-resident departments. This methodology compared each course’s capacity enrollment (as opposed to actual enrollment) with proposed seat counts in a hypothetical pool of swing-space classrooms. Assuming an upper limit of 70% room utilization (80% for language courses) rooms were filled with courses that matched the room capacity. No account was made for room preferences or for times of day or week in this model.

By this means it was estimated that for Fall Quarter 2014 a room utilization of ~71% (9 am to 5 pm) could be expected under swing-space classroom conditions. With most of the scheduling activity complete, the actual overall room utilization for Fall 2014 is estimated at ~67% (however, be aware of the increased use of the 8 am timeslot mentioned below). Although the overall average is a bit lower than the modeled average, utilization in a number of locations has significantly exceeded expectations. Harris Hall, for example, will be operating at over 90% room utilization. In addition, University Hall, Parkes Hall, Lunt, Library, and Fisk Hall are scheduled with utilizations over 75%.

While extremely efficient in many locations, Fall scheduling allowed very limited flexibility, and presented particular difficulties in the 3 to 5 pm timeslots on Tuesdays and Thursdays. The timeslot at 8 am continues to be poorly used with only ~13% utilization, though this reflects roughly a 10% increase relative to past years.

3. Projection of Winter 2015 Scheduling

An assumption in modeling Kresge’s swing-space classroom need was that Fall Quarters would pose the greatest scheduling challenges and would account for the most severe conditions. Relative to trends and previous years, utilization for Fall Quarter 2013 was down 2.1% (67.5%; for this reason Fall 2012 course data was used for modeling) while utilization for Winter Quarter 2014 was up 1.4% (67.3%; by Spring 2014 swing-space decisions were already in place). If this is repeated during 2014-15 or reflects the start of a trend towards more course offerings during Winter Quarters, classroom need during Winter Quarter 2015 could

roughly match or exceed that for Fall 2014. Attempts to identify additional classroom swing-space will continue.

4. Kresge's Renovation and Future Classroom Planning Efforts

Kresge's renovation will be underway as anticipated during Fall 2014. Ideally, the renovation is to be completed with Kresge's new classrooms ready for Fall Quarter 2016. Depending on a repeat of extreme winter weather conditions, unforeseen field conditions, labor strikes, or other unpredictable circumstances, these new classrooms may not be on-line until Winter Quarter 2017. In the meantime, the new Music/SoC Building will be in operation Fall 2015, which may allow the Registrar some relief and flexibility until Kresge is completed.

Much has been done over the last year to better understand the number and size of classrooms needed in the Kresge/Crowe complex using a methodology similar to the swing-space assessment described above. While the number of Kresge seminar/classrooms will roughly match the pre-renovation count, the mix of classroom sizes, meaning the number of seats in each classroom, will better reflect past seat utilization patterns. The physical dimensions of Kresge classrooms are largely dictated by the building's existing structural grid as well as the programmatic demand for faculty offices, administrative office spaces, art studios, MMLC computer labs, et cetera. While the renovation is underway and before Winter 2016 when final decisions are made about Kresge's furnishings and A/V installations, classroom seat counts will again need to be reviewed and somewhat adjusted taking into account the Music/SoC Building, Jacobs Center backfill, renovation of Fisk Hall, and pedagogical/technological changes transforming the way courses are taught.

Please see Appendix III for detailed data on classroom utilization.

V. University Classroom Committee Goals for FY2015

- Develop a five-year schedule for the overall physical improvement of Registrar-scheduled (general purpose) classrooms, covering the period 2013 – 2018. *(This goal is carried over from 2012-2013. With the advent of on-line teaching, more significant changes to University classrooms may need to be made in the not-too-distant future. Developing a five-year plan to physically improve classrooms while keeping the plan flexible may best serve the University in a time of increasingly rapid change.)*
- Develop and adopt guidelines for equipping and functionality of general-purpose classrooms (scheduled by the Office of the Registrar)
- Continue to work with the Educational Technology Advisory Committee (ETAC) to identify new classroom designs that may better meet Northwestern's evolving curricular goals, through a joint work group comprised of students, faculty and administrative staff. Investigate classroom improvements that would allow additional flexibility for communication, feedback, group work and student engagement in some of the larger, fixed-seat classroom settings, and advise ETAC and Classroom Committee on opportunities to pilot projects that advance these goals.
- Continue to evaluate opportunities to create classrooms of sizes that best match teaching needs. With the completion of Kresge renovation in two years, should the swing-space classrooms all be retained? When Jacobs Center classrooms become available, should they be retained, or converted to other uses? What impact will future renovations on the Evanston campus have on existing classrooms spaces?
- Gather information on the use of active learning classrooms and flipped classrooms, and the impact of new modes of teaching on the current general-purpose classroom inventory, to guide the Classroom Committee in making future improvements to classrooms.
- Identify the policy issues that arise as a result of lack of a common scheduling system and recommend steps to improve this situation, in collaboration with the Office of the Registrar.
- Continue to monitor initiatives arising from Northwestern University's strategic plan, We Will, especially ones that relate to teaching and learning in NU classrooms, and support these initiatives through the work of the Classroom Committee.

Appendices

- I. FY2014 Approved and Completed Projects
- II. WiFi Status of Registrar Classrooms at end of FY2014
- III. Overview of FY2014 Utilization Data for Registrar Classrooms

Appendix I: FY2014 Approved and Completed Projects

Funding, 08/14:	Fund Name:	Amount:	
812-1800100-80036001-01	FY2014 Classroom Renovations	\$500,000	PR001163
820-1800100-80032487-01	FY2013 Classroom Renovations	\$317,871	PR000906
820-1800100-80031031-01	FY2012 Classroom Renovations	\$28,010	PR000817

FY14 PROJECTS STATUS:

Status	Room	cap	sf	Description	Cost	Funds Spent
1 complete by fall 2014	University Hall 312, 318, 412, 418 and Tech L211	varies	varies	FM work to support A&RT technology upgrades to be scheduled summer, 2014. data, hang speakers, change screens, minor carpentry, patch/paint, as per A&RT program.	\$30,000	\$30,000
2 complete by fall 2014	Tech L211	166	2,540	provide power outlets for 40 seats using 5 available circuits	\$30,000	\$60,000
3 complete by fall 2014	Leverone Auditorium	600	6,575	FM work to support A&RT technology upgrades to be scheduled summer, 2014. provide additional data, hang 8 speakers, per A&RT program. Also provide power/raceways for 2 camera locations funded by Kellogg (not part of 50k)	\$50,000	\$110,000
4 completed March 2014	Tech Ryan Aud.			provided faculty member with removeable document camera on a cart so teaching could take place from the main floor instead of the stage.	\$3,000	\$113,000
5a complete by fall 2014	Library 3370,3622, 3670, 3722 4670 4722 4770 5322 5722 5746; less work: 3322	18 ea.	varies	FM electrical, carpentry, painting, acoustic panels (note: lighting will be upgraded to dimming LED but that cost for that retrofit is paid by the Classroom repair account)	\$115,000	\$228,000
5b completed March 2014	Library 3370,3622, 3670, 3722 4670 4722 4770 5322 5722 5746; less work: 3322	18 ea.	varies	AV equipment: podium, projector, speakers, document camera, speakers, crestron control equipment and resident PC for all 11 rooms	\$235,000	\$463,000
5c completed June 2014	Library 3370,3622, 3670, 3722 4670 4722 4770 5322 5722 5746; no work: 3322	18 ea.	varies	Furniture: 8 rooms - Node tablet armchairs; 2 rooms - tables and chairs, relocate existing furniture. Budget: 7500 per room.	\$75,000	\$538,000
6 install after Kresge swing space rooms are set up	FSL 1-421, 2-378, Fisk B17, Tech L168, M349	varies	varies	provide document camera in rooms from Kresge stock; estimate \$1500/per room for millwork and set up	\$7,500	\$545,500
7 Allison 1021, summer 2014	Allison 1021; Elder 30 & 32			Elder 030, 032, Allison 1021: provide doc. camera; Housing funded Allison, implement by August, 2014.	\$12,000	\$557,500
8 for summer 2014	Abbott Lab. Aud.(Pancoe Aud.)			Approve 2k for Electric Shop to assess best solution to correct dimmer panel. Report back and then budget dimmer panel repair or replacement	\$2,000	\$559,500
9 winter break 2014	Fisk B17, FSL 1-421, 2-378, Tech L168 & M349:			provide document cameras, from Kresge move out. Modify each podium to accept document camera (millwork for shelf + Crestron reprogramming).	\$15,000	\$574,500

Appendix II: WiFi Status of Registrar Classrooms at end of FY2014

This spreadsheet reports the WiFi capacity status of classrooms on the Evanston campus scheduled by the Registrar. Teaching activities in these classrooms are supported by NUIT. Overall funding and improvements to these classrooms are coordinated by the NU Classroom Committee. The number of classrooms in this report is up 5 from FY2014 to 120 classrooms in FY2015.

August 11, 2014 Update

	#	%
Classrooms with EXCELLENT (fully covered) WiFi	100	84%
Classrooms with GOOD (partially covered) WiFi	20	17%
Classrooms with no WiFi coverage	0	0%

Evanston Classrooms with full or partial WiFi coverage	Seats	WiFi Access Point (AP) Coverage	Owner	Coverage Status	rooms upgraded by year				Comments and FY11 FY12 FY13 FY14 installs	AP Installed by year				comments for continuing improvements
					FY14	FY13	FY12	FY11		FY14	FY13	FY12	FY11	
2122 Sheridan 231	25	1 AP in room	provost	good					installed during building rehab of dorm					
2122 Sheridan 232	30	1 AP in room	provost	good					installed during building rehab of dorm					
555 Clark B01	60	1 AP in room	provost	good					installed during building rehab FY07 (Kellogg?)					
555 Clark B03	60	1 AP in room	provost	good					installed during building rehab FY07 (Kellogg?)					
Allison Hall 1021	15	1 AP in hallway	provost	good					installed during building rehab of dorm					
Annenberg 101	30	1 AP in room	provost	good	FY14				FY14 - 4 Aps installed	4				
Annenberg G15	120	4 Aps	provost	good	FY14				FY14 - 4 Aps installed	4				
Annenberg G21	120	4 Aps	provost	good	FY14				FY14 - 1 AP installed	1				
Annenberg G28	15	1 AP in room	provost	good	FY14				FY14 - 1 AP installed	1				
Annenberg G29	20	1 AP in room	provost	good	FY14				FY14 - 1 AP installed	1				
Annenberg G30	25	1 AP in room	provost	good	FY14				FY14 - 1 AP installed	1				
Annenberg G31	20	1 AP in room	provost	good	FY14				FY14 - 1 AP installed	1				
Annenberg G32	30	1 AP in room	provost	good	FY14				FY14 - 1 AP installed	1				
Elder 30			provost	good										
Elder 32			provost	good										
Fisk 114	30	1 AP in room	provost	good										
Fisk 217	329	9APs	provost	good			FY12		FY12 - 9 APs installed (SEPT 12)			9		
Frances Searle 1-421	88	4 Aps in room	provost	good	FY14				FY14 - 4 Aps installed	4				
Frances Searle 1-441	88	4 Aps in room	provost	good	FY14				FY14 - 4 Aps installed	4				
Frances Searle 2-107	60	3 APS in room	provost	good	FY14				FY14 - 3 Aps installed	3				

Frances Searle 2-370	32	3 APS in room	provost	good	FY14		<i>FY14</i> - 2 Aps installed	2	
Frances Searle 2-378	28	2 APS in room	provost	good	FY14		<i>FY14</i> - 2 Aps installed	2	
Frances Searle 2-407	65	2 APS in room	provost	good	FY14		<i>FY14</i> - 3 Aps installed	3	
Frances Searle 3-220	49	2 APS in room	provost	good	FY14		<i>FY14</i> - 2 Aps installed	2	
Harris 107	225	4 APS in room	provost	good		FY11	Installed during Harris Hall rebuild in FY10/11		4
Harris L06	30	1 AP in room	provost	good		FY11	Installed during Harris Hall rebuild in FY10/11		1
Harris L07	82	2 APS in room	provost	good		FY11	Installed during Harris Hall rebuild in FY10/11		1
Harris L28	30	1 AP in room	provost	good		FY11	Installed during Harris Hall rebuild in FY10/11		1
Leverone Auditorium	600	7 Aps	provost	good		FY12	<i>FY12</i> - 7 Aps installed (Kellogg)		7
Locy 106B	24	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Locy 109	16	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Locy 110	16	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Locy 111	49	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Locy 213	14	2 APS in room	provost	good	FY14		<i>FY14</i> - 2 Aps installed	2	
Locy 301	42	3 APS in room	provost	good	FY14		<i>FY14</i> - 3 Aps installed	3	
Locy 303	16	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Locy 305	16	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Lunt 101	18	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Lunt 103	23	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Lunt 104	33	1 AP in room	provost	good	FY14		<i>FY14</i> - 1 AP installed	1	
Lunt 105	51	3 APS in room	provost	good					
Lunt 107	40	2 APS in room	provost	good	FY14		<i>FY14</i> - 2 Aps installed	2	
Pancoe Auditorium	105	4 Aps in room	provost	good		FY13	<i>FY13</i> - 4 Aps installed		4
Parkes 213	20	1 AP in room	provost	good		FY11			1
Parkes 215	30	1 AP in room	provost	good		FY11			1
Parkes 222	30	1 AP in room	provost	good					
Parkes 223	35	2 APS in room	provost	good					
Parkes 224	32	2 APS in room	provost	good					
Swift 107	107	4 Aps in room	provost	good	FY14		<i>FY14</i> - 4 Aps installed	4	
Tech L150	48	2 APS in room	provost	good		FY13	<i>FY13</i> - 2 Aps installed		2
Tech L158	24	1 AP in room	provost	good		FY13	<i>FY13</i> - 1 AP installed		1
Tech L160	37	2 APS in room	provost	good		FY13	<i>FY13</i> - 2 Aps installed		2
Tech L168	25	1 AP in room	provost	good		FY13	<i>FY13</i> - 1 AP installed		1
Tech L170	30	1 AP in room	provost	good		FY13	<i>FY13</i> - 2 Aps installed		2
Tech L211	171	5 Aps in room	provost	good		FY13	<i>FY13</i> - 5 Aps installed		5

Tech L221	45	2 APS in room	provost	good	FY14		FY14 - 2 APs installed	2	
Tech L251	55	2 APS in room	provost	good	FY14		FY14 - 2 APs installed		
Tech L361	102	4 Aps in room	provost	good		FY13	FY13 - 4 APs installed	4	
Tech LG52	40	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech LG62	20	1 AP in room	provost	good		FY13	FY13 - 1 AP installed	1	
Tech LG66	40	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech LG68	38	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech LG72	35	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech LG76	38	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech LR2	277	8 Aps installed	provost	good		FY12	FY12 - 8 APs installed		8
Tech LR3	272	8 Aps installed	provost	good		FY12	FY12 - 8 APs installed		8
Tech LR4	88	4 APs installed	provost	good			FY11 - 4 APs installed		4
Tech LR5	88	4 APs installed	provost	good			FY11 - 4 APs installed		4
Tech M120	30	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech M128	40	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech M152	56	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech M164	56	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech M166	26	1 AP in room	provost	good		FY13	FY13 - 1 AP installed	1	
Tech M177	40	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech M345	102	4 Aps installed	provost	good		FY12	FY12 - 4 APs installed		4
Tech M349	28	2 APS in room	provost	good		FY13	FY13 - 1 AP installed	1	
Tech MG28	40	2 APS in room	provost	good		FY13	FY13 - 2 APs installed	2	
Tech Ryan Auditorium	599	7 Aps	provost	good		FY13	FY13 - 7 APs installed	7	
University Hall 101	48	2 APS in room	provost	good	FY14	FY13	FY14 - 2 Aps installed	1	1
University Hall 102	65	2 APS in room	provost	good	FY14	FY13	FY14 - 2 Aps installed	1	1
University Hall 112	20	1 AP in room	provost	good					
University Hall 121	48	2 APS in room	provost	good	FY14	FY13	FY14 - 2 Aps installed	1	1
University Hall 122	75	2 APS in room	provost	good	FY14	FY13	FY14 - 2 Aps installed	1	1
University Hall 218	20	1 AP in room	provost	good		FY13	FY13 - 1 AP installed	1	
University Hall 312	20	1 AP in room	provost	good					
University Hall 318	20	1 AP in room	provost	good					
University Hall 412	20	1 AP in room	provost	good					
University Hall 418	20	1 AP in room	provost	good					
University Library 3322	15	coverage from 3325a	provost	good					
University Library 3370	15	coverage from 3368a	provost	good					
University Library 3622	15	coverage from 3625a	provost	good					
University Library 3670	15	coverage from 3668a	provost	good					
University Library 3722	15	coverage from 3733a	provost	good					
University Library 4646	15	coverage from 4644	provost	good					
University Library 4670	15	coverage from 4644b	provost	good					

University Library 4722	15	coverage from 4644	provost	good				
University Library 4770	15	coverage from 4699	provost	good				
University Library 5322	15	coverage from 5302	provost	good				
University Library 5722	15	coverage from 5773a	provost	good				
University Library 5746	15	coverage from 5725a	provost	good				
1801 Hinman 2225	49	1 AP in 2225 - partial coverage	provost	partial				
1819 Hinman 103	12	1 AP in room 102 - potential coverage from adjacent room	provost	partial				
1819 Hinman 110	10	1 AP in room 102 - potential coverage from adjacent room	provost	partial				
2122 Sheridan 250	???	2 AP may be sufficient depending on final seat count	provost	partial				2 AP may be sufficient depending on final seat count
2122 Sheridan 260	45	1 AP in room partial coverage	provost	Partial				
555 Clark 230	??	Aps in nearby 226 and 239 - partial coverage	provost	partial				
Fisk B17	40	1 AP in nearby B18 - partial coverage	provost	Partial	FY13		1	Additional APs to be added to bring Ratio of AP to Seats up to standard
Harris L04	20	partial coverage from nearby classrooms	provost	partial		FY11		Installed during Harris Hall rebuild in FY10/11
Harris L05	20	partial coverage from nearby classrooms	provost	partial		FY11		Installed during Harris Hall rebuild in FY10/11
Locy 214	40	partial coverage from nearby classrooms	provost	partial				
Locy 314	16	partial coverage from nearby classrooms	provost	partial				
Locy 318	35	partial coverage from nearby classrooms	provost	partial				
Lunt 102	12	partial coverage from nearby classrooms	provost	partial				
Parkes 212	30	partial coverage from nearby classrooms	provost	partial		FY11		1
Parkes 214	35	partial coverage from nearby classrooms	provost	partial		FY11		1

Tech A110	50	1 AP in room - partial coverage	provost	Partial	FY13	<i>FY13</i> - 1 AP installed	1	Additional APs to be added to bring Ratio of AP to Seats up to standard
Tech F279	18	partial coverage from nearby F278	provost	Partial				
Tech F280	27	partial coverage from nearby F278	provost	Partial				
Tech F281	40	partial coverage from nearby F278	provost	Partial				
University Hall 118	20	partial coverage from nearby classrooms	provost	partial	FY13	<i>FY13</i> - 1 AP installed	1	

Appendix III: Overview of FY2014 Utilization Data for Registrar Classrooms

Below is the summary of information for the Fall, Winter and Spring Quarters, and compared with classroom utilization data from previous years:

Daily Utilization for all Classrooms scheduled by Registrar: Comparison of Fall, Winter and Spring Quarters 1999 to 2014

Utilization based on rooms scheduled for Fall, Winter & Spring (2013-14): average of 65% 9 to 5 daily;

Comparison: utilization between 1999 to 2014 dropped from 65% ('99-00), down to 59% ('02-03), down to 57% ('03-04), down to 55.5% ('04-05), but subsequently increased to 57.4% ('05-06), up to 60.8% ('06-07), up to 63.1% ('07-08), up to 63.3% ('08-09), up to 63.2% ('09-10), decreased to 59.0% ('10-11), increased to 66.1%* ('11-12), increased to 66.3% ('12-13), and decreased to 65%.

Compared to previous years based on rooms scheduled 9 to 5 daily ('99-00 vs. '02-03 vs. '03-04 vs. '04-05 vs. '05-06 vs. '06-07 vs. '07-08 vs. '08-09 vs. '09-10 vs. '10-11 vs. '11-12 vs. '12-13 vs. '13-14):

Fall Utilization: dropped from 66% to 61% to 58.1% to 57.8%, increased to 59.3 to 63.2% to 64.1%, dropped to 63.3%, increased to 64.5%, decreased to 62.0%, increased to 69.7%*, decreased to 69.6%, and decreased to 67.5% in Fall '13.

Winter Utilization: dropped from 65% to 60% to 52%, increased to 58%, decreased to 57.5%, increased to 61.9%, to 63.9%, to 66.8%, decreased to 66.6%, 60.2%, increased to 66.1%*, decreased to 65.9%, and increased to 67.3% in Winter '14.

Spring Utilization: dropped from 65% to 56% to 54% to 51%, increased to 55.5% to 57.3% to 61.3%, decreased to 59.8%, to 58.3%, decreased to 54.8%, and increased to 62.4%*, increased to 63.3%, and decreased to 60.3% in Spring '14.

For 2013-14 classroom utilization was highest during the Fall and Winter Quarters. Relative to trends and previous years, utilization for the Fall Quarter is down 2.1% while utilization for the Winter Quarter is up 1.4%. Spring Quarter utilization is down 3%. Overall average utilization increased 1.3% from '12-13.

Since Academic Year 2010-11, all quarters through Academic Year 2013-14 have shown uneven distribution throughout the day, with utilization pressure being higher during the 10 to noon and 1 to 3 time periods.

Room Utilization by Building 9 to 5 daily†:

In buildings with multiple classrooms scheduled by the Registrar, Kresge, Harris Hall, and University Hall are the three building with the highest overall utilization: Kresge at 78.2% (compared to 81.6% in '12-13); Harris Hall at 77.1% (compared to 80.6% in '12-13); and University Hall at 75.4% (compared to 75.2% in '11-12). Of the years for which we have data, Kresge has consistently been the building with the highest utilization. For buildings with only one classroom scheduled by the Registrar, utilization increased in Coon Auditorium {Lev. Aud} to 62.4%, (from 40% in 2012-13), increased in Swift Hall Lecture Room 107 to 71% (from 69.7% in '12-13) and decreased in Pancoe Auditorium to 57.5% (down from 63.1% in '12-13).

Room Utilization Based on Size of Room Scheduled: Up to 20 seats; 21 to 80 seats; 80 to 120 seats:

	'99-00	'02-03	'03-04	'04-05	'05-06	'06-07	'07-08	'08-09	'09-10	'10-11	'11-12*	'12-13	'13-14
Up to 20 (31 rms):	52%	46%	43%	39%	45%	46%	48%	47%	49%	42%	52%	46%	53%
21 to 80 (70 rms):	65%	62%	60%	61%	66%	67%	66%	67%	68%	67%	75%	72%	68%
21 to 40 (50 rms):											70%	71%	66%
41 to 60 (16 rms):											70%	75%	76%
61 to 80 (4 rms):											76%	77%	71%
81+ (18 rms):	62%	64%	61%	56%	64%	65%	63%	66%	70%	67%	70%	69%	71%

Compared to Academic Year 2012-13, utilization increased in the smallest rooms while decreasing in all mid-sized rooms and increasing slightly in the largest.

Seat Utilization based on the Size of Scheduled Classrooms:

* All room utilization comparisons with years prior to Fall 2010 are likely impacted by an apparent ~5% increase due to implementation to X25, and as reported in the Classroom Utilization Report from Academic Year 2011-12.

† For this section, only calculations from X25 were used.

Seat utilization represents the percentage of seats occupied when a room is used. While average seat utilization for rooms scheduled from 9 to 5 daily peaked in '03-04 and again in '11-12 (54% representing the highest utilizations), seat utilization has generally been low. Seat Utilization in 2013-14 decreased somewhat with the most significant decrease in the smallest rooms. Seat utilization for rooms up to 20 seats fell 4.7% to a record low of 52.3%.

	'99-00	'02-03	'03-04	'04-05	'05-06	'06-07	'07-08	'08-09	'09-10	'10-11	'11-12*	'12-13	'13-14
Up to 20 (31 rms):	61%	57%	65%	66%	64%	64%	66%	64%	62%	59%	68%	57%	52.3%
21 to 80 (70 rms):	47%	45%	53%	49%	45%	47%	48%	49%	50%	48%	52%	52%	52.8%
21 to 40 (50 rms):											52%	52%	53.2%
41 to 60 (16 rms):											52%	53%	52.3%
61 to 80 (4 rms):											48%	48%	47.9%
81 to 120:	48%	51%	56%	53%	44%	46%	45%	46%	48%	50%	57%	58%	53.2%
120 and larger:	39%	39%	44%	43%	40%	41%	43%	44%	42%	42%	40%	41%	39.1%
Average	45%	47%	54%	53%	48%	50%	51%	51%	51%	50%	54%	53%	50.1%

For any classroom potentially targeted for a decrease in the number of seats, seat utilization specific to the classroom needs to be considered, along with options for shifting some scheduled courses into classrooms with a larger number of seats.