

# **University Classroom Committee Report To the Provost**

**2002 – 2003**

## **Committee members**

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**September 2003**

# **CLASSROOM COMMITTEE REPORT FOR FY 2003**

## **COMMITTEE CHARGE AND STRUCTURE**

The Classroom Committee was established by the Provost in January 2000 and charged with evaluating classroom use and quality, and recommending to the Provost and the Deans policies on classroom utilization, scheduling, physical improvements and priorities for assignment. The Committee includes representatives from the faculty, deans' staff, the Searle Center for Teaching Excellence, Office of the Registrar, Information Technology, Associated Student Government, Facilities Management and the Office of the Provost.

Much of the work of the Classroom Committee is accomplished through the three subcommittees that focus on teaching methodology and technology; classroom quality; and classroom utilization. Additionally, the co-chairs work with faculty and staff from the Chicago campus to explore improvements in the quality and utilization of classrooms in Chicago. A recurring allocation of \$500,000 has been established for the Classroom Committee to address priority needs.

## **USE OF FY 2003 BUDGET ALLOCATION**

During FY03, the Classroom Committee allocated its \$500,000 budget to renovate 12 of the University's 110 general-purpose classrooms, at a total cost of \$471,500.<sup>1</sup> Improvements included repainting walls, replacing seating with new ergonomic tablet-arm chairs, and installing new lighting, carpeting, and window blinds in selected rooms in Fisk, Frances Searle, Harris, Kresge, and Lunt Halls. Additionally, funds were allocated for design for improvements to Fisk 217 and for preliminary HVAC cost analysis for Harris and Kresge Halls. See Appendix II. for a detailed listing of improvements made in each classroom.

## **SMART CLASSROOMS**

In March 2003, the committee submitted to Northwestern's Budget Planning Group a proposal recommending that the University fund the conversion of the 83 non-technology-enhanced classrooms in the Registrar-assigned pool to laptop-based Technology Enhanced Classrooms (TECs) over the next ten years. In the interests of economy and flexibility, the committee recommended that Northwestern adopt a laptop-based classroom model as the baseline for smart classroom design, rather than the costlier and less adaptable resident PC-based model that the University currently uses in its 28 existing technology-enhanced classrooms. The committee's proposal included a rationale describing the many merits of using smart classrooms; a comparison of the technologically-enhanced classrooms at Northwestern vis-à-vis our peer institutions; recommendations for classroom specifications; and a timetable specifying the schedule and cost of converting the classrooms between FY04 and FY13.

The proposal arose from a growing belief that technologically-enhanced classrooms are becoming the standard among peer institutions and that Northwestern's teaching facilities lag

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<sup>1</sup> The \$471,500 figure includes an \$18,000 overage for renovating Swift 107 during FY01.

behind this emerging standard. In addition, faculty users are integrating technology into their teaching methods more and more, as a 2001 – 2002 survey by Academic Technologies found. For instance, 53% of respondents use the classrooms' smart capabilities more than 66% of the time. 90% stated that such capabilities were essential to the success of their course. It is now an opportune time to implement a comprehensive plan to outfit all of Northwestern's general-purpose classrooms with a benchmark level of technological enhancement.

In July 2003, the Classroom Committee's proposal was approved by Central Administration. Funding for the project will come from both Central Administration and IT.

The initial funding is for a three-year period, at the end of which Central Administration will seek an evaluation from the Classroom Committee, Academic Technologies and the Searle Center of the success of this initiative. Assuming that Central Administration is satisfied with the project's success, funding for the next 3 years' investment will become available, and so on, until the project has been completed.

Academic Technologies is beginning planning work this month on how such a major new project can most successfully proceed. Bob Taylor and his staff will explore more fully this fall the design, staffing and support implications for this type of technology-enhanced classroom---a significant departure from our current Smart Classroom model. The first converted classrooms are expected to come into use during spring or summer of 2004.

During Fall 2003, the Classroom Committee will be engaging in further discussions about this project, and in the identification of the rooms to be converted during the first year.

### **CHANGES IN CLASSROOM UTILIZATION**

The committee's initial analysis of the impact of the Registrar's new scheduling guidelines reveals that the policies appear to be having their intended effect. The following trends support this conclusion:

- More classes are being taught in the afternoon and less in the morning in centrally-scheduled rooms.
- Classes are distributed more evenly over the day.
- More classes are conforming to the standard scheduling guidelines.

Despite the recent conversion of some classrooms to other programmatic uses, the utilization rates for classrooms have fallen when compared to utilization rates two years ago. This decline in utilization rates is attributable primarily to the addition of new classrooms (in Scott Hall, Andersen Hall and the McCormick Tribune Center) during those two years and to the implementation of the new scheduling guidelines. These lower utilization rates provide the opportunity for the University to: (1) convert additional classrooms to laboratory and office space to meet compelling program needs; (2) lower the seat count in overcrowded classrooms and (3) convert traditional classrooms to flexible classrooms.

Faculty have notified the Office of the Registrar that moving more classes to the afternoon has negatively impacted student athletes, who have limited time available in the afternoon due to practice schedules. The committee will continue to monitor both the desired and undesired impact of the new scheduling guidelines on students and faculty, recommending revisions whenever circumstances demand.

### **FUTURE EFFORTS**

The efforts of the Classroom Committee in FY04 and beyond will be focused on:

- Developing priorities for FY04 funding for general improvements
- Completing analysis of classroom conditions (HVAC, chalk/marker boards, screens, lights, furniture, etc.) and refine process for selecting future projects
- Continuing to review and refine the new scheduling policies, taking into account faculty and student responses to them
- Reviewing classrooms for overcrowded conditions, recommend alternatives, and define impacts
- Developing priority list for conversion to flexible classrooms and define impacts
- Reviewing/analyzing use of classrooms scheduled through Schools/Depts
- Wieboldt classrooms: Continuing to work with SCS and the Law School
- Seeking external funding for priority projects
- Working with the Searle Center to develop and implement mechanisms that encourage and aid faculty in using innovative pedagogies to improve student learning
- Providing the flexible, physical environments that optimize student learning.
- Developing a long-term plan for the Committee that would place Northwestern in the forefront of classroom education.

## **APPENDICES**

- I. Report from the Subcommittee on Teaching Methodology and Technology**
  - a. Proposal to Make all Northwestern Classrooms Smart**
  - b. Evaluation Recommendations**
  - c. Programs/Courses Supporting Appropriate Faculty Development**
  
- II. FY03 Classroom Renovations, Budget Approved and Pending Funding**
  
  
- III. Report from the Subcommittee on Classroom Utilization**
  - a. Plan of scheduling times**
  
  
- IV. Report on Smart Classroom Upgrades and Issues**

## **Appendix I: Report of the Subcommittee on Teaching Methodology and Technology**

Subcommittee members:

Greg Light (Chair), Paul Loach, Franziska Lys, Rick Morris, Bob Taylor

### **Summary**

The Teaching Methodology/Technology subcommittee met twice during the academic year. It primarily focused on looking at ways to follow up and implement the broad strategy for the development of pedagogically and technologically enriched classroom on campus which it had developed during the prior academic year. In this undertaking the sub-committee followed three plans of action:

1. It enhanced the 2002 strategy recommendation with a long term proposal for making all Northwestern classrooms smart classrooms.
2. It continued to make a case for implementing *smart flexible classrooms* on campus.
3. It made initial recommendations for evaluating the pedagogical experience and effectiveness of using smart technology in the classroom.
4. It recommended the development of appropriate programs/courses to support the development of faculty skills for teaching in such enhanced classrooms.

### **Proposal to Make all Northwestern Classrooms Smart**

In 2001-02 the Pedagogy/Technology Subcommittee recommended that Northwestern's classroom strategy achieve a broad range of pedagogically and technologically based goals. Goals were set out in five categories for the short term (1 year) and the medium term (3 years). In the current academic year the sub-committee extended the strategy with respect to the long term, recommending that the university convert the 84 non-technology-enhanced classrooms in the Registrar-assigned pool to Laptop-based Smart Classrooms over the next ten years. This was a comprehensive proposal sent to the Budget Planning Group, informed by pedagogical rationale, survey data from peer institutions, survey data from faculty, faculty development initiatives and an analysis of the costs.

As a result of this proposal the most current classroom enhancement strategy is as listed below. As this strategy is an on-going project and is still incomplete, it is recommended that the pedagogical/ technological classroom enhancement strategy be developed, updated and monitored by the sub-committee in consultation with the classroom committee each year.

### Classroom Enhancement Strategy 2003

	<b>Short term (one year)</b>	<b>Medium Term (3 years)</b>	<b>Long term (10 years)</b>
<b>1. Wireless technology</b>	Two classroom locations be identified for the installation of wireless technology permitting access to web via laptops. (Kresge and Tech.)	That a realistic target be set for a substantial proportion of the University's classroom to be able to access wireless technology.	That the university convert the 84 non-technology-enhanced classrooms in the Registrar-assigned pool to Laptop-based Smart Classrooms
<b>2. Smart Classrooms</b>	Five new <i>smart classrooms</i> are developed: the specific location to be decided in consultation with the utilization and the teaching subcommittees.	That a realistic target be set for a substantial proportion of the University's classroom to be 'smart':	
<b>3. Flexible Classrooms</b>	Two conventional classrooms are converted into <i>low-tech flexible classrooms</i> .	That realistic and appropriate targets be set for the conversion of traditional classrooms to a 'flexible' configuration.	
<b>4. Smart Flexible Classrooms</b>	Two <i>smart flexible classrooms</i> are developed.	That realistic and appropriate targets be set for developing smart, flexible (wireless) classrooms and learning environments.	
<b>5. Semi-smart Flexible Classrooms</b>	Four conventional classrooms are converted into <i>semi-smart flexible classrooms</i>	That realistic and appropriate targets be set for developing semi-smart, flexible (wireless) classrooms.	

#### **Evaluation Recommendations**

In accordance with the development of a more long term and detailed strategy, the sub-committee would also recommend that faculty utilization and experience of pedagogically and technologically (P&T) enhanced classrooms be monitored and evaluated in the future. In particular it is proposed that:

- A question be added to the CTEC's for courses using P&T enhanced classrooms.
- That faculty surveys be extended to address their pedagogical experience and use of these classrooms

#### **Programs/Courses Supporting Appropriate Faculty Development**

Following last year's proposal that appropriate means for supporting faculty in the effective use of these enhanced classrooms for teaching be developed and promoted, the Searle Center for teaching Excellence in conjunction with Academic Technologies initiated diverse workshops for faculty and for graduate students

- *Teaching with New Technology*: workshop for faculty (3 hours: Feb. 2002 & Feb. 2003)
- *Teaching, Learning and Technology*: institute for faculty, 5 full day intensive workshop Sept. 9-13<sup>th</sup>, 2002; Sept. 8-11<sup>th</sup>, 2003

- *Web-based Instruction for Northwestern Graduate Students (WINGS): 5 half-day workshop series (Spring 2003)*

<b>Appendix II.: FY03 PROJECT LIST</b>						
<b>FY O3 UPGRADES</b>	<b>Class Size</b>	<b>SF</b>	<b>Description of Improvements by Room</b>	<b>Status</b>	<b>Completion Date</b>	<b>Room Total</b>
Frances Searle 1-421	90	1188	replace fixed seating, paint, atlas carpet	Materials on order; waiting for summer session to end	9/22/03	\$55,200
Frances Searle 1-441	85	1188	replace fixed seating, paint, atlas carpet	Materials on order; waiting for summer session to end	9/22/03	\$70,150
Frances Searle 2-378	40	708	atlas carpet and paint; add dimming to 10-12 fixtures	Carpentry work in progress	9/22/03	\$26,335
Frances Searle 2-378	40	708	Smart Improvements - AV costs	A/V equipment bids due July 17; costs will likely exceed projected estimate by 5%-20%	9/22/03	\$15,000
Kresge 153 (old capacity: 81)	65	1122	build out chalkboard wall, reloc mot screen & podium; remove old seating, add desks, carpet tile, paint, blinds, chalkboards, lights	Carpentry work in progress; A/V equipment bids due July 17; costs will likely exceed projected estimate by 5%-20%	9/22/03	\$58,190
Kresge 4-425	36	700	demolition & new chalkboards, desks, carpet, chalkboards, paint, 1 data, lights, blinds	Waiting for Crowe/Kresge faculty moves to start construction	9/22/03	\$32,315
Kresge 4-435	36	607	desks, carpet, chalkboards, paint, 1 data, lights, blinds	Waiting for Crowe/Kresge faculty moves to start construction	9/22/03	\$30,360
Kresge 4-445	20	572	flex-tables & chairs, carpet, chalkboards, paint, 1 data, lights, blinds	Waiting for Crowe/Kresge faculty moves to start construction	9/22/03	\$39,330
Harris Hall HVAC Study	--	--	Preliminary engineering to for best recommendation to fix HVAC at Harris Hall (& its classrooms).	Need to finish summer work before addressing this project	1/1/04	\$31,500
Kresge Hall HVAC Study	--	--	Preliminary engineering to for best recommendation to fix HVAC at Kresge Hall (& its classrooms).	Need to finish summer work before addressing this project	1/1/04	\$31,500
Lunt 101,102,103 & 107		1433	Recarpet paint and new blinds	Materials on order; waiting for summer session to end	9/1/03	\$21,620
Fisk 217	391	1188	A/E to renovate room for future implementation	Need to finish summer work before addressing this project	1/1/04	\$42,000
Swift 107 FY01 overage						\$18,000
<b>FY03 Expenditures</b>						<b>\$471,500</b>
					FY03 BALANCE	\$28,500

### **Appendix III: Report of the Subcommittee on Classroom Utilization**

Subcommittee members: Tamara Kagel, Paul Loach, Marv Lofquist, Michael Maysilles, Jacquayin Rivera, Paul Weller (chair)

The Classroom Utilization Subcommittee compared utilization studies for Academic Year 2002-03 with utilization studies completed two years ago in order to evaluate and better understand the impact of the following:

**1) Policy changes:**

The policy adopted in 2002 was intended to regularize class meeting times and spread them out over the day.

**2) Schedule modifications:**

The standard schedule for Tuesdays and Thursdays was modified to allow for an additional timeslot that did not previously exist.

**3) New classrooms that came on line during the last two years:**

Over the last couple years the following new classrooms came on line: Block Auditorium (Clssrm. 106 with 157 seats), Anderson Classrooms 1-1246 (98 seats), 2-2245 (84 seats), and 3-3245 (50 seats), the McCormick Tribune Center Forum (Clssrm. 1-101 with 154 seats), McCormick Tribune Center Classrooms 3-119 (46 seats), and 3-127 (46 seats).

**4) Classrooms that were taken off line in Winter 2003:**

Three classrooms scheduled by the Registrar were reassigned and converted to other uses by Medill and MMC: Fisk Classrooms 201 (85 seats), 211 (80 seats), and 401 (60 seats).

While two years ago only WCAS had guidelines to encourage standard scheduling, the new University policy implemented Fall Quarter 2002 was intended to encourage standard scheduling from 9 to 2 daily for courses making use of classrooms scheduled by the Registrar. The percentage of courses conforming to standard scheduling increased from 62% two years ago to 72% during Academic Year 2002-03. Distribution across times has somewhat improved, with utilization rates dropping for time-periods between 9 to 2, and remaining in the low 70% range for the 2 to 3 timeslot, with the exception of the Fall Quarter when utilization for the 2 to 3 timeslot increased to 82%. The new policies appear to have resulted in an increased use of standard scheduling and a modest decrease of pressure on prime time-periods between 10 to noon.

Although most of new classroom usage is reserved for KGMS, Economics, Medill and IMC, over the last two years more classrooms came on line than were eliminated, and this along with schedule modifications that added a timeslot on Tuesdays and Thursdays resulted in, as had been expected, a lower level of utilization. During Academic Year 2002-03 average utilization 9 to 5 daily dropped to 59% from 65% two years ago. A comparison of Fall and Winter Quarters is particularly striking, since Fisk classrooms were decommissioned after Fall Quarter 2002 (before the start of Winter Quarter 2003):

- Fall Utilization based on rooms scheduled 9 to 5 daily: dropped to 61% (2002) from 66% (2000);
- Winter Utilization based on rooms scheduled 9 to 5 daily: dropped to 60% (2003) from 65% (2000).

Fisk classrooms appear to have been eliminated with no apparent impact, and in fact utilization for Spring Quarter 2003 dropped to 56%, lower than Winter 2003 Utilization at 60% and substantially lower than Spring 2000 Utilization at 65%. Of course, to more fully understand the impact of classrooms eliminated in Fisk, utilization data from Fall 2003 will need to be compared with data from Fall 2002.

With this decline in utilization over the last two years, further consideration should be given not just to modification and upgrade of existing classrooms, but potential alternative uses of some existing classroom spaces. Seat utilization has remained roughly constant with average seat utilization for rooms scheduled 9 to 5 daily at 47% compared to 45% two years ago. If funding is available to make better use of existing classroom spaces, for example, by decreasing the number of seats in a classroom to accommodate furnishings that allow for greater flexibility of use and better pedagogical methods, particular classrooms should be targeted for these modifications with further exploration of the hypothetical impact on scheduling. Also, “smart” classrooms continue to be associated with higher levels of utilization. While during the last two years the number of “smart” classrooms has roughly doubled, average utilization for “smart” classrooms has only dropped from 73% to 68%, and remains 11% higher than utilization for “non-smart” classrooms. Finally, the declining level of utilization might allow options for providing Schools and Departments with additional space as their programmatic goals justify a trade-off between space used as classrooms versus space used to meet other programmatic needs. With anticipated addition of classroom facilities in Pancoe and Ford, the question reasonably needs to be asked: can some portion (if not a comparable amount of space) be converted to alternative uses?

Despite efforts to improve Library seminar rooms scheduled by the Registrar, utilization of these small classrooms dropped from 45% two years ago to 34% during Academic Year 2002-03. Not only should potential alternative uses for these rooms be explored, but this drop in utilization needs to be better understood in the context of seminar rooms assigned to Schools and Departments, and whether the existing number of seminar rooms and conference rooms across the University can be justified given current rates of utilization. This needs to be investigated and considered in greater detail next year.

### **Overview of Utilization of Data**

Below is a summary of information for the Fall, Winter and Spring Quarters, which is shown in greater detail in the attached charts and spreadsheets, and compared with classroom utilization data from two years ago.

**Daily Utilization for all Classrooms scheduled by Registrar: Comparison with Fall Quarter 2000-01, Winter Quarter 1999-00, and Spring Quarter 1999-00**

Utilization based on rooms scheduled for Fall, Winter & Spring (2002-03): average of 59% 9 to 5 daily;  
Comparison: utilization has dropped from 65% to 59%;  
Fall Utilization based on rooms scheduled 9 to 5 daily: dropped from 66% to 61%;  
Winter Utilization based on rooms scheduled 9 to 5 daily: dropped from 65% to 60%;  
Spring Utilization based on rooms scheduled 9 to 5 daily: dropped from 65% to 56%.  
For 2002-03, utilization based on rooms scheduled is higher during the Fall and Winter Quarters.

Distribution across times has somewhat improved, with utilization rates dropping for time periods between 9 to 2 (a notable drop during the 9 to 10 timeslot), and remaining in the low 70% range for the 2 to 3 timeslot, with the exception of the Fall Quarter when utilization for the 2 to 3 timeslot increased to 82%.

**Daily Utilization for “Smart” Classrooms scheduled by Registrar:**

While during the last two years the number of “smart” classrooms has roughly doubled, average utilization for “smart” classrooms has only dropped from 73% to 68%, and remains 11% higher than utilization for “non-smart” classrooms.

<b>Trend</b>	<b>Fall 2002</b>	<b>Winter 2003</b>	<b>Spring 2003</b>
Utilization of “smart” classrooms 9 to 5 daily	66%	72%	67%
Utilization is higher compared to “non-smart” classrooms	6%	16%	12%

Patterns are somewhat more skewed towards the peak time between 10 to noon, especially for Winter Term.

**Room Utilization by Building 9 to 5 daily:**

Buildings with adjacent programs (departmental and faculty offices) tend to have higher rates of utilization.  
Kresge (75%) and Harris (70%) have highest rates of utilization.  
Compared to two years ago when Tech has the highest rate of utilization, Tech has dropped from 75% to 59%.  
University Library is still the lowest (dropped from 45% to 34%), and primarily has rooms with less than 20 seats.

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

<b>Capacity</b>	<b>2 Years Ago</b>	<b>Current</b>
Up to 20:	52%	46%
21 to 80:	65%	62%
81 to 120:	62%	64%

**Seat Utilization based on the Size of Scheduled Classrooms:**

Average seat utilization for rooms scheduled from 9 to 5 daily: 47% (compared to 45% two years ago)

<b>Capacity</b>	<b>2 Years Ago</b>	<b>Current</b>
Up to 20:	61%	57%
21 to 80:	47%	45%
81 to 120:	48%	51%
> 120	39%	39%

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

**Enrollment Utilization for Fall, Winter and Spring Quarters during 2002-03:**

Requested maximum enrollments compared to actual enrollments for courses scheduled 9 to 5 daily:

<b>Quarter</b>	<b>Enrollment Utilization</b>
Fall	74%
Winter	70%
Spring	51%
Average	65%

**Standard vs. Non-Standard Scheduling by Term**

While previously, only WCAS had guidelines to encourage standard scheduling, during the last two years a University policy has been adopted to encourage standard scheduling roughly between 9 to 2 daily for courses making use of classrooms scheduled by the Registrar. The impact has been an increase in the percentage of courses conforming to standard scheduling:

<b>Quarter</b>	<b>2 Years Ago</b>	<b>Current</b>
Fall	64%	73%
Winter	65%	72%
Spring	58%	71%

## Classrooms added during the last two years or still to be added

### Evanston campus

Classroom	Capacity	Users
Block "Aud." Clssrm. 106	157 fixed seats (sloped; approx. 1,800 nasf)	Block
Scott "Seminar" Clssrm.	212 30 seats (approx. 1,045 nasf)	Pol. Sc.
Note: Increased availability of Clssrm. 212 results from relocation of Career Services from Scott's 2 <sup>nd</sup> floor, and relocation of current Pol. Sc. seminar functions from Clssrm. 212 into Rm. 201.		
Anderson Clssrm. 1-1246	98 seats (tiered; approx. 1,450 nasf)	KGSM
Anderson Clssrm. 2-2245	84 movable chairs (approx. 1,450 nasf)	KGSM
Anderson "Seminar" Clssrm. 3-3245	50 fixed seats (tiered; approx. 930 nasf)	Econ
McCormick Trib. Bldg. "Forum" 1-101	154 fixed seats (tiered; approx. 3,300 nasf)	Medill
McCormick Trib. Bldg. Clssrm. 3-119	46 fixed seats (tiered; approx. 1,050 nasf)	IMC
McCormick Trib. Bldg. Clssrm. 3-127	46 fixed seats (tiered; approx. 1,050 nasf)	IMC
Life Sc. Bldg. "Lecture" Clssrm. 1-101	105 movable (tiered; approx. 1,850 nasf)	WCAS
Ford Design Center Clssrm.	65 seats (approx. 1,200 nasf)	McCormick

## Plan of Scheduling Times

Chart 1 - Standard Meeting Patterns

	M	T	W	Th	F
8:00 AM					
8:30 AM					
9:00 AM					
9:30 AM					
10:00 AM					
10:30 AM					
11:00 AM					
11:30 AM					
12:00 PM					
12:30 PM					
1:00 PM					
1:30 PM					
2:00 PM					
2:30 PM					
3:00 PM					
3:30 PM					
4:00 PM					
4:30 PM					

Chart 2 - One day a week or two days a week other than TTh

*Shaded areas show acceptable scheduling times*

	M	T	W	Th	F
8:00 AM					
8:30 AM					
9:00 AM					
9:30 AM					
10:00 AM					
10:30 AM					
11:00 AM					
11:30 AM					
12:00 PM					
12:30 PM					
1:00 PM					
1:30 PM					
2:00 PM					
2:30 PM					
3:00 PM					
3:30 PM					
4:00 PM					
4:30 PM					
5:00 PM					
5:30 PM					
6:00 PM					

Chart 3 - Three days a week other than MWF

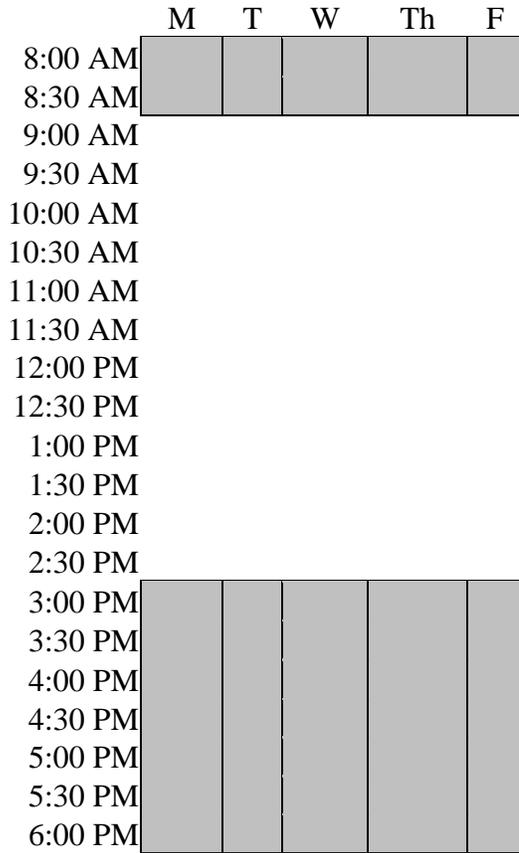
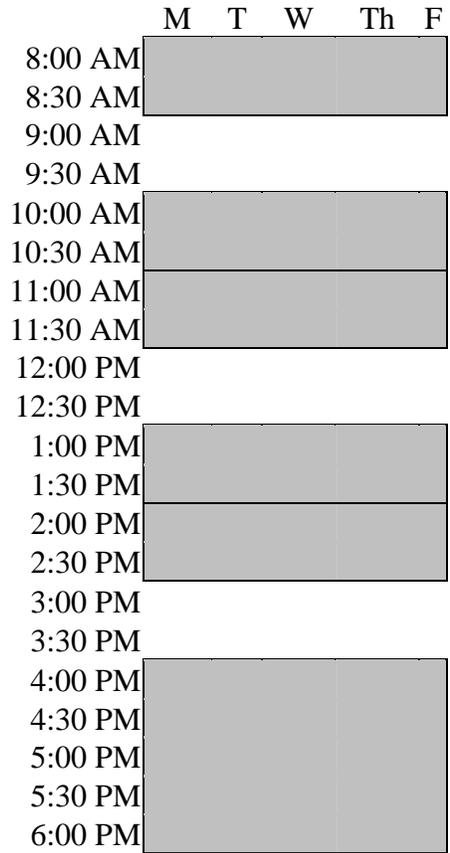


Chart 4 - Four or more days a week



## **Appendix IV: Report on Smart Classroom Upgrades and Issues**

### **NU Smart Classroom upgrades accomplished in FY03**

Comprehensive classroom upgrades were made to 4 existing Smart Classrooms this year : University Hall 102, University Hall 122, Swift 107, and Parkes 214. In addition, work is underway to repurpose the classroom equipment that used to be in Fisk 201 to a new Smart Classroom in Kresge 153 by the start of classes in September 2003.

Smaller-scale functional improvements were made to other University classrooms during the year. New flat-panel monitors or computers were installed in Harris 107, Swift 107 and Lunt 105.

In a special partnership with the School of Communications, a new laptop-based Smart Classroom will open in Searle 2-378 by the start of classes in September 2003.

NU network ports are being added this summer next to the ceiling projector in all NU Smart Classrooms in order to manage many functions that are becoming available with network-savvy projectors. This upgrade, along with the purchase of additional web-based management software, will allow AT to respond more quickly to classroom emergencies and it will also increase the security measures that the University has in place to protect classroom equipment.

All NU Smart Classroom network ports are being upgraded this summer to Switched-100 Mb capacity.

Although a funding request was turned down in FY02 to build a Flexible Classroom in Tech, AT made incremental improvements to Tech MG51 during FY03 to move this computer lab towards a Flexible Classroom model. Tech MG51 was used with success in FY03 by experimental classes in Biochemistry (WCAS), Political Science (WCAS), and Decisions Analysis (Kellogg).

### **Security Issues**

Security and theft problems in NU Smart Classrooms increased significantly in FY03. Three ceiling projectors were stolen this year, one flat panel monitor was stolen, and several unsuccessful break-in attempts were made upon podium or projector equipment. Total value of the stolen hardware in FY03 was approximately \$20,000.

AT and Facilities Management upgraded security cables and other security measures this year at an approximate cost of \$8,000. As mentioned above, new projector and podium equipment is gradually being installed in our classrooms with network-based alarms and notification of tampering.

As the University increases the value of its equipment investment in Evanston classrooms, it will be very important to keep the security situation under control.

## **Faculty Surveys**

Every academic quarter, all faculty who have arranged with the Registrar to book a class into a NU Smart Classroom that quarter are polled via an on-line survey about their classroom experience. The results from these surveys confirm a high rate of utilization of the basic technologies (projector and network services) in NU Smart Classrooms. Looking at the data over the period of the last three years, the surveys also confirm that our faculty are now experiencing fewer technical problems in NU Smart Classrooms---apparently due to the technology overhauls that have been accomplished in classrooms during the last two years, and also due to a more thorough and persistent program of faculty training by AT in these use of these classrooms.

## **Videoconferencing Classroom Investments**

AT worked with individual schools in FY03 to design and deploy technology-enhanced classrooms on campus that offer special capabilities for videoconferencing and for web-casting. In cooperation with the Medical School, the Ward Conference Room (5-230) was renovated in FY03. It now serves as a life science seminar room that communicates with videoconferencing rooms in Evanston and at other university sites. A similar installation is being made in the new Pancoe Auditorium on the Evanston Campus this summer, and this new videoconferencing theater will open by the start of classes in September 2003. Similar discussions are underway with the Psychology Department about a classroom upgrade that may be made in FY04 in Swift Hall to provide for stronger collaboration efforts among neuroscience faculty and students.