

# **MINNESOTA FACILITIES MODEL**

**University of Minnesota**

**July 2001**

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The Minnesota Facilities Model (MFM) represents a systematic method for evaluating and planning for the use of space in campus facilities. Use of the MFM promotes a better understanding of the facilities planning process by formally identifying the relationship between instructional, research and support service programs and services, and the physical facilities required to accommodate those programs. Information gained from applying the MFM is used in conjunction with the Compact Agreement and Capital Budget Management Process to ensure University buildings support programmatic initiatives.

Efficient space management requires a commonly accepted set of standards and procedures for estimating space needs. In July 1982, a team of University staff and faculty was appointed to study procedures and standards used at other research institutions of higher education and to develop a method of evaluation appropriate for use at the University of Minnesota. The Minnesota Facilities Model was the result of that study. The MFM was reviewed internally by collegiate administrators and also by space management personnel at other universities. After ten years of use, the MFM was reviewed and updated by the Planning and Programming staff of Facilities Management. Again, this revision was accomplished with the examination of other research institutions and the recommendations of the University Senate Committee on Finance and Planning.

The continued remodeling of existing facilities and responsible planning of new facilities is an integral part of the University's ongoing effort to provide instructional, research, and service programs that meet the needs of the State of Minnesota. Coupled with judicious maintenance and operations practices, the use of the MFM helps ensure that University accomplishes its mission in the most cost-effective manner possible.

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**University of Minnesota**

**July 2001**

**Office of the Associate Vice President  
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# MINNESOTA FACILITIES MODEL

## Table of Contents

<b>I.</b>	<b>INTRODUCTION</b>	1
	Application	3
	Research Allowance Verification	4
	Program Predictor and Space Projection Worksheets	4
<b>II.</b>	<b>INVENTORY COMPONENT</b>	
	Facilities Inventory System	5
	Classification of Space	6
	Classification Guidelines	7
	Space Coding Sheets	8
<b>III.</b>	<b>QUALITATIVE COMPONENT</b>	
	Physical Condition Rating	12
	Functional Rating	14
<b>IV.</b>	<b>PROGRAM COMPONENT</b>	
	Student Data	15
	Faculty/Staff Data	16
	Programmatic Data	17
<b>V.</b>	<b>PREDICTOR COMPONENT</b>	
	Office Space	18
	Research Space	21
	Instructional Space	22
	Library Space	25
	Other Space Categories	28
<b>VI</b>	<b>APPENDIX</b>	
	A. Space Projection Worksheet	31
	B. Instructional Lab and Research Allowances	32

## **INTRODUCTION**

The Minnesota Facilities Model was originally introduced as a systematic method for evaluating the use of and need for University facilities. The objectives of implementing and applying the space model was twofold:

- 1) to provide guidelines which accurately express the space requirements of the University, and
- 2) to shape the guidelines into tools most appropriate for assessing the use of University facilities.

A project team of both academic and support offices was organized to investigate space standards and analysis techniques applicable to the needs of the University of Minnesota. Based on this preliminary research, a proposal was written in July 1980, and subsequently discussed and reviewed with representatives from each collegiate unit. In July 1982, the Minnesota Facilities Model (MFM) was approved, published, and put into service. In July 1992, the Minnesota Facilities Model was reviewed by the staff of Planning and Programming in Facilities Management. When the draft revision was complete, the University Senate Committee on Finance and Planning reviewed the draft and forwarded their recommendations to Planning and Programming. This edition of the MFM is the result of that collaborative effort.

In July 2000, the MFM was again reviewed to ensure the accuracy of the document in regard to the numerous organizational changes and to include updated forms and tables as a result of the new SPACE system becoming operative.

The Minnesota Facilities Model is structured into four major components. First, the **Inventory Component** contains the University's Space Inventory System which records the current departmental assignment and use of all rooms in all University

buildings. Second, the physical condition and program suitability of the University's existing facilities are evaluated in the **Qualitative Component**. Third, the programmatic elements which generate space needs (e.g., the number of students, faculty, and staff) are identified in the **Program Component**. Finally, the **Predictor Component** contains the space standards and allowances which provide the means for translating the programmatic elements into physical space.

The Minnesota Facilities Model is used to define and justify the need for the amount of space required. It also serves as a guide for the allocation of instructional research and office space for new or remodeled facilities. When using the MFM for assessing existing programs, architectural constraints in existing buildings may produce a variance in the amount of space predicted by the model and the actual space occupied by the department. When architectural constraints must be considered, the MFM provides a goal for the efficient use of space.

The Minnesota Facilities Model is one of a number of analytical tools available for planning and managing the facility needs of the University of Minnesota. Other tools available for analytical use include, but are not limited to, functional design studies, life and health safety studies, handicapped accessibility studies, building code surveys, maintenance and operations analyses, and qualitative space studies.

# **MINNESOTA FACILITIES MODEL**

**University of Minnesota**

**Application**

## **APPLICATION**

As part of the University's facilities management process, space analyses are conducted using the Minnesota Facilities Model as follows:

In conjunction with the six-year Capital Budget Management Process, the Minnesota Facilities Model is applied to every department at the University. The results of this application show space shortages and/or surpluses in given departments and colleges. Strategic analysis concerning the efficient and cost-effective use of University facilities is performed in conjunction with the application of the Minnesota Facilities Model. These analyses are made available to the Executive Vice President and Provost and the President of University Services to assist in the decision-making process on the role and use of space in University facilities. Additional in depth studies, such as examining space usage on an individual basis, exploring the physical adjacencies of departments, assessing the maintenance and operations costs are often required. Information on existing and projected space requirements is used in the Needs Identification Preliminary Prioritization and Project Definition and Prioritization (analysis and program preparation) phases of the Capital Budget Management Process.



## **Research Allowance Verification**

As teaching and research methods change within disciplines, the corresponding space guidelines are reevaluated and modified after consultation and agreement between the Office of the Executive Vice President and Provost and Planning and Programming. The diverse nature of research activities necessitates special methods for determining and verifying research space needs. The Minnesota Facilities Model allots a full research allowance to each research generator whether or not all of the personnel are actually conducting research. In determining a discipline's research allowance, the Planning and Programming staff examine existing research space, consult with other Big Ten Universities and/or other major research institutions nationwide to obtain research allowances for similar departments. The current research allowances in the Minnesota Facilities Model are compared with these findings. Planning and Programming staff then make a recommendation regarding the research allowances to the Executive Vice President and Provost who consults with the affected discipline/department before changing the research allowance.

## **Program Predictor and Space Projection Worksheets**

To facilitate the documentation and calculation of a department's space requirements, data requiring staffing levels, an examination of special space needs, and a Space Projection Worksheet are completed each time the MFM is applied to a department. An example of the Space Projection Worksheet is illustrated in Appendix A.

# **MINNESOTA FACILITIES MODEL**

**University of Minnesota**

**Inventory Component**

## **INVENTORY COMPONENT**

The Inventory Component of the Minnesota Facilities Model accounts for the assignment and use of space in existing University facilities. An accurate and up-to-date inventory provides facilities planners and building users with current information on the assignment and use of space in University facilities.

### **Facilities Inventory System**

The Planning and Programming Division of the Office of Associate Vice President for Budget and Finance and CFO maintains the University of Minnesota Facilities Inventory System. The SPACE inventory encompasses more than 62,000 space records totaling nearly 25,000,000 gross square feet of building space. Space on the Twin Cities Campus, four campuses located in Greater Minnesota (Duluth, Morris, Crookston and Rochester), and twenty research centers and experiment stations is continuously updated by Planning and Programming. Information is maintained for both buildings and individual rooms. Tabular data is maintained in an Oracle database and the floor plans are maintained in AutoCAD. Tabular and graphical data can be combined, displayed, and manipulated by using ArcView.

Data elements maintained for buildings are:

- |                             |                                   |
|-----------------------------|-----------------------------------|
| 1. Building Number and Name | 9. Street Address                 |
| 2. Building Abbreviation    | 10. ADA Access                    |
| 3. Campus Number            | 11. Ownership Status              |
| 4. Zone Number              | 12. Building Status               |
| 5. Gross Area               | 13. Building Support Status       |
| 6. Assignable Area          | 14. Year of Construction          |
| 7. Nonassignable Area       | 15. Year of Last Major Remodeling |
| 8. Structural Area          | 16. Date Occupied                 |

Data elements maintained on an individual room basis are:

- |  |                                       |
|--|---------------------------------------|
| 1. Room Number   | 8. ADA Access                         |
| 2. Room Name   | 9. Notes                              |
| 3. Campus Number   | 10. Room Percentage                   |
| 4. Building Number                                       | 11. Area (Department using the space) |
| 5. Floor Number  | 12. Org Number                        |
| 6. Assignable Square Feet                                | 13. Function                          |
| 7. Capacity of Offices, Classrooms, & Instructional Labs | 14. Use                               |
|  | 15. Lease Number                      |

It is essential that the information contained in the inventory system is as accurate and consistent as possible. Many uses are made of the inventory data base system in addition to the planning and management of facilities. Other uses of the inventory include indirect cost recovery for research grants, instructional cost studies, classroom utilization studies, and property accounting purposes.

### **Classification of Space**

The University of Minnesota classifies space in accordance with standardized categories established by the Department of Health, Education, and Welfare in the Higher Education Facilities inventory and Classification Manual (Technical Report 36) and in the Higher Education General Information Survey (HEGIS) taxonomy. Additionally, to aid in the indirect cost recovery rate negotiations for sponsored research, the University of Minnesota has incorporated programmatic classifications from Circular No. A-21 as outlined by the federal government's Office of Management and Budget. The classification system consists of two parts as is illustrated on pages 8 - 11. The Function Categories (see pages 8 and 9) are two digit numbers which identify the programmatic functions (instruction, research, library, student support, etc.). The Room Use Categories (see pages 10 and 11) codes consist of three digit numbers which identify the specific use of a given room (e.g. office, classroom, laboratory, lounge, etc.).

## **Classification Guidelines**

At times it is necessary to prorate space on a square footage basis or on a frequency of use basis. Space is prorated on a percentage basis and a room can be prorated by department, function, or kind. The new SPACE system contains internal rules and guidelines to prevent obvious coding errors such as combining the instruction function code with a room use of research laboratory.

# **MINNESOTA FACILITIES MODEL**

**University of Minnesota**

**Qualitative Component**

## **QUALITATIVE COMPONENT**

In strategic space planning, the quality of a facility must be considered. The quality or functional suitability of a space is often subjective and difficult to measure. Not taking the qualitative factor into consideration, however, results in the misleading supposition that all space is assumed to be qualitatively and functionally suitable, equal, and interchangeable.

The **Qualitative Component** of the Minnesota Facilities Model helps quantify the value and adaptability of a facility to the changing missions of the University. The **Qualitative Component** is composed of a Physical Condition Rating and a Functional Program Rating.

### **Physical Condition Rating**

Criteria used in assessing the physical condition of space are basically architectural/engineering assessments covering structural, mechanical, electrical, and building code considerations. An evaluation of the physical condition of a building is conducted in four major assessment areas: Primary Structure, Secondary Structure, Mechanical Systems, and Health and Life Safety Systems. On the basis of these ratings, facilities are classified as being worth investment, not worth investment of candidates for decommissioning and eventual demolition.

Physical Condition Evaluation Elements are summarized as follows:

	Good	Fair	Poor
	<u>5</u>	<u>3</u>	<u>1</u>
Primary Structure*			
Foundation			
Walls			
Floors			
Roofs			
Secondary Structure			
Ceilings			
Interior Walls and Partitions			
Windows			
Doors			
Mechanical Systems			
Cooling			
Heating			
Plumbing			
Electrical			
Health & Life Safety			
Building Codes			
Fire Codes			
Handicapped Accessibility			

\*If the Primary Structure for a facility is rated as poor, the entire building rating is poor regardless of the number of points scored.

### Physical Condition Ratings

<u>Total Points</u>	<u>Rating</u>
50 - 75	Good
30 - 49	Fair
15 - 29	Poor

<u>Rating</u>	<u>Condition</u>	<u>Explanation</u>
Good	Worth Investment	Facility is in sound condition and is worth investing money to ensure the space is responsive to programmatic needs
Fair	Not Worth Investment	Facility is in useable condition but not worth investing money in improvements
Poor	Decommission	Facility is in poor condition, should not be used, occupants should be relocated and the space should be demolished



This collaborative assessment of physical condition is conducted with input from the University Building Code Division officials, Environmental Health and Safety personnel and Facilities Management staff.

### **Functional Rating**

When analyzing the space needs of a programmatic unit, the issue of the functional suitability of the space is also important. The following functional elements are considered when rating a facility:

<u>Space Efficiency</u>	<u>Support Services</u>	<u>Environment</u>
Area	Water, Air, Gas	Light
Shape	Waste Disposal	Acoustics
Multiple Use	Equipment	Communications
Location		Aesthetics

Using the above elements, a building is rated as meeting one of the following three conditions:

Suitable	The space and programmatic needs are adequately matched
Minor Remodeling	Some remodeling of space required to accommodate the needs of the program
Major Remodeling	The space requires major remodeling for adequate use by the program

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# **MINNESOTA FACILITIES MODEL**

**University of Minnesota**

**Program Component**

## **PROGRAM COMPONENT**

The **Program Component** of the Minnesota Facilities Model defined three pieces of information: students served by the program, faculty/staff housed in the program, and programmatic data, that generate a need for space.

Student data reflects instructional activity and the classification of student enrollments. Faculty/staff data identifies the categories of employees generating office and research space needs. Programmatic data is used to determine space needs for specialized or unique functions.

Existing space requirements are determined by applying the Minnesota Facilities Model to a department's current student, faculty/staff and programmatic data. When projecting the future growth and/or decline in a department's enrollment or staffing levels, these projections are reviewed by the appropriate vice president and approved by the Executive Vice President and Provost prior to projecting space needs.

### **Student Data**

Students generate classroom and instructional laboratory space as a result of both scheduled and unscheduled instructional activity. Scheduled instructional activity is obtained from course inventory and enrollment reports for any particular quarter. The appropriate statistic is Weekly Student Contact Hours (WSCH). Unscheduled instructional activity is determined by the anticipated number of hours students will spend in special class lab or individual study. For each course the department provides the number of hours a student is expected to use laboratory and non-laboratory facilities on a weekly basis for both scheduled and unscheduled activities. Up to thirty minutes is counted as one half hour of use; over thirty minutes of use is counted as one hour.

Students also generate office space and research space when hired for teaching, researching, and administrative positions. Graduate fellows are not considered for office space unless they are also hired as teaching/research assistants. Both graduate and undergraduate student employees are included in projecting space requirements.

Advanced graduate students, professional degree candidates, and post-doctoral students engaged in research activities also generate research space. Advanced graduate students are those who have passed their pre-lims and Plan A Masters Degree candidates who have completed their first year's work.

### **Faculty/Staff Data**

Faculty generate space on the basis of their office needs and research activities. Staff members primarily generate office space. Emeriti faculty and volunteers do not generate office space. All Professional and Administrative appointments and all Civil Service positions generate office space. All supervisory employees, clerical, and finance staff members generate an office allowance. Scientific or technical staff may be allocated office and research space. Employees (such as trades workers) who do not individually require space in campus facilities are not included in calculating a unit's space needs.

An adjusted head count (AHC) figure is used in tabulating the number of faculty and staff to be housed. Under an adjusted head count system, each individual employed one-half time or less is counted as .5 persons and each individual employed more than one-half time is counted as 1 person.

## **Programmatic Data**

Certain space requirements are not generated on the basis of student and faculty/staff needs. Examples of programmatic data required to supplement various space needs include:

1. Library materials. In order to determine the amount of stack space required in libraries, the number of volumes and equivalent materials to be stored needs to be determined.
2. Special facilities. An instructional or research program may require space to accommodate a specialized function (e.g. museum) or large pieces of equipment (wind tunnel, wave tank) or a research center (Shepherd Laboratories, Lions Laboratory).
3. Public assemblies. Campus facilities are used both by members of the University community and the general public. Public use of University facilities can range from clinical services to athletic contests to artistic performances. The level of public use of University space is recognized and considered in providing appropriate types of facilities.
4. Non-university agencies. Organizations which do not receive University funding but occupy University facilities are identified and evaluated when applying the Minnesota Facilities Model.

# **MINNESOTA FACILITIES MODEL**

**University of Minnesota**

**Predictor Component**

## **PREDICTOR COMPONENT**

The **Predictor Component** establishes space allowances and utilization goals which form the basis for translating the elements of an academic or support program into a defined need for space. The “envelope” of space required to house a department is determined by applying these standards. The design and size of specific rooms within a department’s generated space “envelope” is addressed on an individual room basis.

The **Predictor Component** is divided into four types of space: office, research, instruction, and special use/programmatic.

### **Office Space**

Space for offices is required for instructional, research, and administrative programs.

#### **Instructional Office**

Office space is generated by those employees providing instructional services which may include course preparation, test grading, tutoring, counseling, and studio instruction. Personnel who generate instructional office space include:

##### Faculty

Professor (Full, Associate, and Assistant)

Instructor

Lecturer

Teaching Specialist

Visiting, Adjunct Professor

Student

- Teaching Assistant
- Teaching Associate I and II
- Undergraduate Student Assistant

Space for research equipment and materials required within a professorial office is identified in the Research Guideline.

Research Office

Research activities are conducted in both laboratories and offices. Research personnel may be “officed” within research laboratories or lab service rooms. Regardless of the location, research personnel generate office space in the same manner as instructional personnel. Personnel who generate research office space include:

- |                     |                          |
|---------------------|--------------------------|
| Research Associate  | Post-Doctoral Fellow     |
| Research Specialist | Post-Doctoral Associate  |
| Research Fellow     | Civil Service Scientist  |
| Research Assistant  | Civil Service Technician |
| Project Assistant   |                          |

The amount of office space generated by individual research personnel is identified in the Research Standard section of the Minnesota Facilities Model.

Administrative Office

Professional, administrative, and clerical positions require a primary office work station and also generate reception, conference, file, and commons space. Service units and departments where central University files are accommodated generate added traffic and are allowed additional space for queuing and file storage.

Personnel who generate administrative office space include:



Academic Administrative and Professional  
All Staff Appointments

Civil Service

Professional Staff  
Secretary/Clerical  
Student Office Assistant

Student

Administrative Fellow I and II  
Undergraduate Student Assistant

The office standard (instructional, research, and administrative) is 120 asf per adjusted head count (AHC). (See page 17 for a description of adjusted head count).

### **Office Standard**

Predictor:

adjusted head count employees requiring office space

Allowance:

primary office = 120 asf

Formula:

AHC Employees x 120 asf = Office Space Requirement

An additional 30 asf is allocated per AHC to accommodate office service space such as reception areas, conference rooms, file storage, copy rooms, work rooms, and staff lounges.

### **Office Service Standard**

Predictor:

adjusted head count employees requiring office space

Allowance:

office service/storage = 30 asf

Formula:

AHC Employees x 30 asf = Office Service Requirement

## Research Space

Research space is activity oriented and as such can be located in both laboratories and offices. Personnel who generate research space include:

### Faculty

- Professor (Full, Associate, and Assistant
- Research Associate
- Research Specialist
- Research Fellow

### Civil Service

- Scientist

### Student

- Post-Doctoral Fellow
- Post-Doctoral Associate
- Advanced Graduate Students

Research space needs vary according to discipline. Primary determinants for generating research space are the level of graduate student activity and the amount of research equipment and materials to be accommodated. Research allowance ranges for broad disciplinary areas are indicated in the following table.

### Research Allowance Ranges

#### ASF/Researcher

- 20 asf - 50 asf
- 50 asf - 150 asf
- 150 asf - 300 asf
- 300 asf - 450 asf
- 450 asf - 600 asf

#### Disciplinary Areas

- Humanities & most Social Sciences
- Clinical Social Sciences, Law
- Physical, Life & Health Sciences
- Engineering, Agriculture, Forestry
- Veterinary Science

Allowances for individual disciplinary units are detailed in Appendix B.

Research activity occurs both in offices and laboratories. a maximum of fifty square feet of each faculty member's research allowance can be transferred to that faculty member's primary office allowance. Adjusting the size of individual faculty offices may be appropriate in disciplines which generate little need for traditional research laboratory spaces.

### **Research Standard**

Predictor:

adjusted head count (employees requiring research space)

Allowance:

see Appendix B

Formula:

AHC Researchers x Allowance = Research Space Requirement

### **Instructional Space**

#### Instructional Class Laboratory

Instructional laboratories are defined as rooms requiring special-purpose equipment for student participation, experimentation, observation, or practice in a discipline. Instructional class labs are used on a regularly scheduled basis (University of Minnesota Room Use Category 210). For irregularly scheduled special class laboratories, desired weekly room utilization and station occupancy goals vary. Special class labs contain equipment so specialized that they are irregularly scheduled (University of Minnesota Room Use Category 220). The appropriate measure of the use for an instructional class laboratory is Weekly Student Contact Hours (WSCH).

Individual laboratory sizes and lab service and storage needs vary between disciplines. Instructional laboratory allowances for each discipline are illustrated in Appendix B.

## Instructional Class Laboratory Standard

Predictor:

WSCH (scheduled laboratory activity)

WSCH (expected independent study activity)

Standards:

weekly room utilization goal = 20 hours

station occupancy goal = 80%

Allowance:

see Appendix B

Formula:

$$\frac{\text{Allowance Instruction + Service) (asf)}}{20 \text{ Weekly Room Hours} \times 80\% \text{ Station Occupancy}} = \text{ASF per WSCH}$$

$$\text{ASF} \times \text{WSCH} = \text{Instructional Lab Space Requirement}$$

### Individual Study Laboratory

Individual study laboratories are defined as rooms used for individual student experimentation, observation, study, or practice. This category includes instructional computer terminal rooms, individual carrels for tutorial or programmed instruction, and music practice rooms. Space in this category may either be scheduled (music practice rooms), nonscheduled (first-come, first-served basis) or assigned to individual students (architecture studios). An individual study allowance of 30 asf is provided resident graduate students without teaching or research appointments.

## Individual Study Lab Standard

Predictor:

WSCH (expected independent study activity)  
AHC (students requiring studio space)

Standards:

weekly room utilization goal = 50 hours  
station occupancy goal = 80%

Allowance:

average station size: study carrels = 30 asf  
music practice = 70 asf  
tutorial = 20 asf  
computer = 60 asf

Formula (Unscheduled):

$$\frac{\text{Station Size (see above)}}{50 \text{ Weekly Room Hours} \times 80\% \text{ Station Occupancy}} = \text{ASF per WSCH}$$
$$\text{ASF} \times \text{WSCH} = \text{Individual Study Lab Space Requirement}$$

Formula (Assigned Space):

$$\text{Average Station Size} \times \text{AHC Students} = \text{Individual Study Lab Space Requirement}$$

Formula (Graduate Students):

$$\text{Head Count Graduate Students} \times 30 \text{ asf} = \text{Individual Study Lab Space Requirement}$$
  
(minus RA's and TA's)

### General Purpose Classroom

Classrooms are defined as general purpose, centrally scheduled rooms for classes not requiring special equipment for individual student use (HEGIS room use 110). Lecture halls, lecture demonstration rooms and seminar rooms are included in this category.

## Classroom Standard

Predictor:

WSCH scheduled activity (lecture, recitation, etc.)

Standards:

weekly room utilization goal = 32 hours

station occupancy goal = 65%

Allowance:

average station size (including service) = 16 asf

Formula:

$$\frac{16 \text{ asf}}{32 \text{ Weekly Room Hours} \times 65\% \text{ Station Occupancy}} = .77 \text{ asf}$$

32 Weekly Room Hours x 65% Station Occupancy

.77 asf x WSCH = Classroom Space Requirement

Classroom space requirements for academic units are calculated based upon their amount of classroom instructional activity. The classroom standard is based upon 45 hours of available use per week (8:00 am to 5:00 pm), Monday through Friday).

## Library Space

University library space consists of reading/study rooms, stacks, processing rooms, and carrels. Since all library materials are obviously not in the form of bound volumes, the volume equivalency table should be used to determine the amount of space required for various types of nonbound materials. These equivalency standards are depicted in the table on the following page and are based on figures compiled by J. Alan Bruffey in Space Utilization and Facilities Requirements of University Libraries, 1976 - 1986.

The use of 18.2 bound volumes per square foot indicates a shelving capacity of 85%. When 85% of capacity is attained, the stack area is considered to be at maximum capacity and additional stack space is required. When housing archival collections, materials are often more densely shelved using high capacity storage units termed compact shelving. For compact shelving at 85% capacity, the standard is 36.4 volumes per square foot. This standard usually pertains to the type of shelving normally used for archival storage. The building floor loading capacity must be appropriate for the additional weight imposed by compact shelving.

## Volume Equivalency Table

<u>Type of Material</u>	<u>Items per ASF 85% Capacity</u>
Bound Volumes	18.2 Volumes
Architectural Drawings	242 Drawings
Audio Cassettes	62 Cassettes
Audio Tape Reels	39 Tapes
Compact Disks	110 Disks
Dial Photos	1115 Photos
Disk Records - LP's and 78's	58 Records
Disk Records - Single LP's	76 Records
Films - 8mm	34 Films
Films - 16mm	8 Films
Film Cassettes	18 Cassettes
Government Documents	195 Documents
Manuscripts (lineal feet)	2.54 Lineal Feet
Maps	34 Maps
Microcards	2734 Cards
Microfiche	1993 Sheets
Microfilm - 35mm	33 Reels
Microfilm - 16mm	59 Reels
Microprint	1968 Cards
Multimedia Kits	6 Kits
Music Scores	32 Scores
Photo Negatives - 4" x 5" Film	1373 Negatives
Photo Negatives - 6.5" x 8.5" Glass	59 Negatives
Photo Negatives - 11" x 14" Nitrocellulose	181 Negatives
Photo Positive Prints	113 Prints
Photo Slides - 35mm	526 Slides
Photo Slides - 3.25" x 4" Glass	247 Slides
Pictures and Reproductions	87 Items
Technical Reports	115 Reports
Video Cassettes	13 Cassettes
Video Tape Reels	18 Reels

The method for determining library space requirements incorporates three components: reading/study space, stack space, and library service space. If the use of these guidelines indicates a significant space deficit in one or more of the three library components, it may be possible to convert one type of space to another.

## Library Standard

Predictor:

number of faculty and students  
number of volumes and equivalents

Standards:

number of reading/study station required = 20% Undergrad FTE  
20% Graduate FTE  
10% Regular Faculty

traditional reading/study station size = 30 asf

computer reading/study station size = 45 asf

central stack allowance = 18.2 Volumes/asf

Formula:

30 asf x (Sum of 20% Undergrad FTE +  
20% Grad FTE + 10% Reg Faculty) x 40% = Reading/Study  
and Space

45 asf x (Sum of 20% Undergrad FTE +  
20% Grad FTE + 10% Reg Faculty) x 60% Requirements

Plus

Plus

Total Number of Volumes and Equivalents

Volume and Equivalent Conversion Ratio = Stack Space  
Requirement

Plus

20% Reading/Study Space + Stack Space = Service Space  
Requirement

Reading/Study Space + Stack Space +  
Service Space = Total Library Space  
Requirement



### Special Space Requirements

Space designated within the classifications of special, general and support room uses (University of Minnesota Room Use Categories 520, 525, 650, and 680) represents a diverse grouping of physical facilities. The standard for these categories of space are as follows:

### General Use Lounge and Commons Space

An appropriate amount of general use lounge and commons space should be provided in each University building. The requirement for commons space is generated by the number of faculty, staff, and visitors using the facilities in the building.

#### **Commons Standard**

Predictor:

Headcount employees allocated space in the building

Allowance:

1 asf per headcount employee

Formula:

Headcount Employees x 1 asf = Building Commons  
Space Requirement

The commons space standard refers only to general use (public) lounge space within a building. Other types of “lounge” space are treated as follows:

1. Lounges located within a student union or student center are included in space guidelines for union type facilities. The amount of space required for union or student center functions is determined on a campus wide basis considering the total number of students served.
2. Lounges located in libraries are included in the service space component of the library standard.

### Student Study Space

Student study space should be provided in all University instructional facilities. This need is particularly acute at a commuter institution with limited on campus residential facilities. The volume of student traffic and the amount of space required for student study resulting from instructional activities is reflected in and can be projected from the number of classroom seats and the cumulative capacity of laboratories existing or planned in the building.

#### **Student Study Standard**

Predictor:

total classroom seats  
total instructional laboratory stations

Allowance:

1 asf per classroom seat/lab station

Formula:

Total Classroom Seats + Lab Stations = Student Study  
Space Requirement

### Student Union Space

In addition to commons space dispersed in buildings throughout the campus, a central core of student union building space is also required. Recreational rooms, lounges, and bookstores are examples of space included in this category.

#### **Student Union Standard**

Predictor:

FYE students

Allowance:

9 asf per FYE student

Formula:

FYE students x 9 asf = Student Union Space Requirement

### Recreational Sports and Physical Education (Kinesiology) Space

Regardless of the size of a campus, a critical mass of sports facilities is needed. For this reason a minimum core requirement of sports facilities is required which then is expanded based on the number of students to be served.

#### **Recreational/Athletic Standard**

Predictor:

HC students

PE majors

PE minors

Allowance:

core requirement (1,000 students)	=	40,800 asf
core requirement (5,000 students)	=	68,000 asf
HC students (above core requirement)	=	9 asf
PE majors	=	35 asf
PE minors	=	20 asf

Formula:

$$\text{core requirement} + (\text{HC students} \times 9 \text{ asf}) + (\text{PE majors} \times 35 \text{ asf}) + (\text{PE minors} \times 20 \text{ asf}) = \text{Recreational/Athletics Space Requirement}$$

Not all types of University space needs can be determined merely by projections from faculty, student, and staff data. Art galleries, armories, health service clinics, intercollegiate athletic facilities and residential facilities are examples of space types which must be justified programmatically. Size of equipment to be housed, expected usage, and the importance of the role these rooms will serve are more appropriate planning parameters.

# **MINNESOTA FACILITIES MODEL**

**University of Minnesota**

**Appendix**

## **Appendix A**

### **Space Projection Worksheet**

## **Appendix B**

### **Tables of Instructional Laboratory and Research Standards**

Attach Page 31 found in Excel/db/MFM/MFMp31

**Instructional Laboratory & Research Standards**

**Twin Cities Campus**

<u>Academic Unit</u>	<u>Research Instructional Standard</u>			<u>Academic Unit</u>	<u>Research Instructional Standard</u>		
	<u>Allowance ASF</u>	<u>Station/Service ASF</u>	<u>Factor ASF</u>		<u>Allowance ASF</u>	<u>Station/Service ASF</u>	<u>Factor ASF</u>
<b><u>Agric., Food, &amp; Environ. Sci., Col. of</u></b>				<b><u>Liberal arts, Col. of (continued)</u></b>			
Agricultural & Applied Economics.	20	15/1	1.0	Sociology	20	32/16	3.0
Agricultural Engineering	300	80/16	6.0	South Asian Studies	20	15/1	1.0
Agronomy & Plant Genetics	220	55/9	4.0	Spanish & Portuguese	20	30/2	.8 *
Animal Science	300	80/16	6.0	Speech Communication	40	15/1	1.0
Entomology	220	40/8	3.0	Statistics - Applied & Theoretical	20	15/1	1.0
Food Science & Nutrition	300	70/10	5.0	Theater Arts	20	90/6	6.0
Horticultural Science	300	55/9	4.0	Urban Studies	20	15/1	1.0
Plant Pathology	220	55/9	4.0				
Rhetoric	20	25/7	2.0	<b><u>Medical School</u></b>			
Soil, Water, & Climate	220	55/9	4.0	Anesthesiology	300	40/24	4.0
				Biochemistry	300	40/24	4.0
<b><u>Arch. &amp; Landscape Arch., Col. of</u></b>				Cell Biology & Neuroanatomy	300	40/24	4.0
Architecture	80	70/10	5.0	Dermatology	300	40/24	4.0
Landscape Architecture	80	70/10	5.0	Family Practice & Community Health	40	40/24	4.0
				Lab Medicine & Pathology	300	40/24	4.0
<b><u>Biological Sciences, Col. of</u></b>				Medicine	300	40/24	4.0
Biochemistry	300	55/9	4.0	Microbiology	300	32/32	4.0
Ecology, Evolution, & Behavior	300	55/9	4.0	Mortuary Science	40	60/20	5.0
General Biology Program	220	25/7	2.0	Neurology	300	40/24	4.0
Genetics & Cell Biology	300	40/8	3.0	Neurosurgery	300	40/24	4.0
Plant Biology	300	55/9	4.0	Obstetrics & Gynecology	300	40/24	4.0
				Ophthalmology	300	40/24	4.0
<b><u>Carlson School of Management</u></b>	20	15/1	1.0	Orthopaedic Surgery	300	40/24	4.0
				Otolaryngology	300	40/24	4.0
<b><u>Dentistry, School of</u></b>	220	50/14	4.0	Pediatrics	300	40/24	4.0
				Pharmacology	300	40/24	4.0
<b><u>Education &amp; Human Develop., Col. of</u></b>				Physical Medicine & Rehabilitation	300	40/24	4.0
Child Development	100	24/8	2.0	Physiology	300	40/24	4.0
Curriculum & Instruction	80	40/8	3.0	Psychiatry	300	40/24	4.0
Educational Policy & Administration	20	15/1	1.0	Radiology	300	40/24	4.0
Educational Psychology	100	24/8	2.0	Surgery	300	40/24	4.0
Kinesiology & Leisure Studies	100	150/50	12.5	Therapeutic Radiology	300	40/24	4.0
Social & Philosophical Foundation	80	24/8	2.0	Urological Surgery	300	40/24	4.0
Work, Community, & Family Education	100	80/16	6.0				
				<b><u>Natural Resources, Col. of</u></b>			
<b><u>General College</u></b>	20	24/8	2.0	Fisheries & Wildlife	220	40/8	3.0
				Forest Resources	220	25/7	2.0
<b><u>Human Ecology, Col. of</u></b>				Wood & Paper Science	300	55/9	4.0
Design, Housing, & Apparel	100	70/10	5.0				
Family Social Science	40	25/7	2.0	<b><u>Nursing, School of</u></b>	40	56/8	4.0
Food Science & Nutrition	300	70/10	5.0				
Social Work	20	15/1	1.0	<b><u>Pharmacy, School of</u></b>	220	40/24	4.0
<b><u>Humphrey Institute of Public Affairs</u></b>	20	15/1	1.0	<b><u>Public Health, School of</u></b>			
				Biometry	220	15/1	1.0
<b><u>Institute of Technology</u></b>				Dental	20	15/1	1.0
Aerospace Engineering & Mechanics	300	100/44	9.0	Environmental Health	220	15/1	1.0
Chemical Engineering & Materials Sci.	300	60/36	6.0	Epidemiology	220	15/1	1.0
Chemistry	300	54/18	4.5	Health Care Psychology	220	15/1	1.0
Civil Engineering	450	100/44	9.0	Health Education	20	15/1	1.0
Computer Science	60	60/0	1.5 *	Health Service Research	20	15/1	1.0
Earth Sciences	300	40/8	3.0	Hospital & Health Care Admin.	20	15/1	1.0
Electrical & Computer Engineering	300	60/36	6.0	Interdisciplinary Studies	20	15/1	1.0
Mathematics	20	15/1	1.0	Maternal & Child Health	20	15/1	1.0
Mechanical Engineering	300	100/28	8.0	Nursing	20	15/1	1.0
Physics & Astronomy	300	50/14	4.0	Nutrition	100	15/1	1.0
				Physiological Hygiene	220	15/1	1.0
<b><u>Law School</u></b>	80	60/4	4.0	Veterinary	220	15/1	1.0
<b><u>Liberal Arts, Col. of</u></b>				<b><u>University College</u></b>	20	15/1	1.0
Afro-American & African Studies	20	15/1	1.0				
American Indian Studies	20	15/1	1.0	<b><u>Veterinary Medicine, Col. of</u></b>			
Ancient Studies	20	30/2	.8 *	Biology	300	40/8	3.0
Anthropology	100	30/18	3.0	Large Animal Clinical Science	450	80/16	6.0
Arts	220	90/6	6.0	Pathobiology	300	55/9	4.0
Arts - Studio	--	90/6	2.4 *	Small Animal Clinical Science	300	70/10	5.0
Art History	40	16/16	2.0				
Classical & Near Eastern Studies	20	15/1	1.0				
Communication Disorders	120	24/8	2.0				
Cultural Studies & Comp. Literature	20	15/1	1.0				
Dance	100	150/50	12.5				
Economics	20	15/1	1.0				
English	20	15/1	1.0				
French & Italian	20	30/2	.8 *				
Geography	100	40/8	3.0				
German, Scandinavian, & Dutch	20	30/2	.8 *				
History	20	15/1	1.0				
Humanities	20	15/1	1.0				
International Studies	20	15/1	1.0				
Journalism & Mass Communications	40	40/8	3.0				
Ling's & Asian & Slavic Lang's & Lit's	20	15/1	1.0				
Music	40	40/8	3.0				
Music - Practice	--	70/2	1.8 *				
Philosophy	20	15/1	1.0				
Political Science	20	36/12	3.0				
Program in American Studies	20	15/1	1.0				
Psychology	220	24/8	2.0				

\*Factor based on 50 hours per week individual lab utilization



Instructional Laboratory & Research Standards

Coordinate Campuses

Academic Unit	Research Allowance	Instructional Standard Station/Service	Factor
	ASF	ASF	ASF
<b><u>Crookston Campus</u></b>			
Agriculture Division	300	80/16	6.0
Arts & Sciences Division	40	24/8	2.0
Business Division	20	15/1	1.0
Food Management	300	70/10	5.0
Hospitality & Home Economics	40	25/7	2.0
<b><u>Duluth Campus</u></b>			
<u>Business &amp; Economics, School of</u>	20	15/1	1.0
<u>Education &amp; Human Service Professions, Col. of</u>			
Allied Clinical Health	220	50/14	4.0
Child & Family Development	40	40/8	3.0
Industrial & Technical Studies	100	80/16	6.0
Instructional Science	80	40/8	3.0
Health, Physical Education & Recreation	100	150/50	12.5
Psychology & Mental Health	100	24/8	2.0
Social Work	20	15/1	1.0
<u>Fine Arts, School of</u>			
Art	220	90/6	6.0
Music	40	40/8	3.8
Music Practice	--	70/2	1.8*
Theatre	20	90/6	6.0
<u>Liberal Arts, Col. of</u>			
American Indian Studies	20	15/1	1.0
Communication	20	15/1	1.0
Composition	20	15/1	1.0
English	20	15/1	1.0
Foreign Languages & Literatures	20	30/2	.8*
Geography	100	40/8	3.0
History	20	15/1	1.0
Interdisciplinary Programs	20	15/1	1.0
International Studies	20	15/1	1.0
Philosophy	20	15/1	1.0
Political Science	20	36/12	3.0
Sociology/Anthropology	20	32/16	3.0
Women's Studies	20	15/1	1.0
<u>Medicine, School of</u>	300	40/24	4.0
<u>Science &amp; Engineering, College of</u>			
Archaeometry	300	40/8	3.0
Astronomy	300	50/14	4.0
Biology	300	56/9	4.0
Biology - General	220	25/7	2.0
Chemical Engineering	300	60/36	6.0
Chemistry	300	54/18	4.5
Computer Engineering	300	60/36	6.0
Computer Science	40	60/0	1.5*
Geology	300	40/8	3.0
Industrial Engineering	300	100/28	8.0
Mathematics & Statistics	15/1	1.0	
Physics	300	50/14	4.0
<b><u>Morris Campus</u></b>			
Education Division	40	24/8	2.0
Humanities Division	20	15/1	1.0
Science/Mathematics Division	20	15/1	1.0
Social Sciences Division	20	15/1	1.0

\*Factor based on 50 hours per week individual lab utilization.