THE UNIVERSITY OF NORTH CAROLINA

SPACE PLANNING STANDARDS

EXECUTIVE SUMMARY OCTOBER 1998

EVA KLEIN & ASSOCIATES

STRATEGIES FOR THE GLOBAL KNOWLEDGE ECONOMY

503 SENECA ROAD

GREAT FALLS, VA 22066 USA

TELEPHONE: 1 703 406 6100

FACSIMILE: 1 703 406 6101

EMAIL: EVAKLEIN@EVAKLEINASSOCIATES.COM

Eva Klein & Associates

STRATEGIES FOR THE GLOBAL KNOWLEDGE ECONOMY

503 SENECA ROAD

GREAT FALLS, VIRGINIA 22066 USA

TELEPHONE: 703 406 6100

FACSIMILE: 703 406 6101

EMAIL: EVAKLEIN@EVAKLEINASSOCIATES.COM

October 5, 1998

Mr. William McCoy, Vice President for Finance Mr. Jeffrey R. Davies, Associate Vice President for Finance The University of North Carolina General Administration Chapel Hill, NC 27515-2688

Dear Mssrs. McCoy and Davies:

With this letter, Eva Klein & Associates is pleased to transmit the final *Report on Space Planning Standards* for The University of North Carolina. As you directed, in August and September, we updated the analysis that originally was presented in the February 1998 draft, to incorporate Fall 1997 *Facilities Inventory* data. The enclosed *Report* is based on those new data, recent Board of Governors' reviews, and recent comments on a revised draft that we circulated to the institutions in August.

As you know, some of the contents of this *Report* have generated lively dialogue in which a cross-section of opinions and perspectives emerged. With participation of UNC institutions and the Board of Governors, we have come to appropriate resolutions in most cases. The proposed standard for classrooms still concerns some of our constituents, but I continue to believe that the use of 35 hours per week as a utilization target is a useful move toward improved productivity that will help validate the case to be made to the General Assembly for the immense and varied facilities needs of UNC. The exception to consensus or near-consensus in this process was the proposed standard for Research Space. Consequently, in this *Report*, all earlier versions of the recommendations relating to research space have been withdrawn. The recommendation now indicates partial directions for treatment of research space and indicates some additional considerations that are needed, before a final recommendation (or decision) could be made.

Since we embarked on the Capital Equity and Adequacy Study while this earlier Study of Space Planning Standards was still in progress, the two studies have overlapped. The new Equity/Adequacy Study is raising some additional interesting issues that may cause us to both re-visit and extend some of the work that was accomplished in this present Study. We have begun to discuss these issues in Campus Visits and hope to continue to engage the institutions in that dialogue which, this time, takes condition and other non-quantitative factors into account.

We extend our appreciation to the institutional members of the UNC Ad Hoc Task Force on Space Standards for their substantive input and many hours of valuable time. We also appreciate the input and advice that chancellors and others from the institutions provided to us. Finally, we thank the UNC General Administration Working Group for its support and guidance, with special thanks to Mr. David McFadden, whose technical assistance was indispensable to our work.

We hope this work will be a step forward in supporting capital development planning and we look forward to success of the larger, more complex analysis of the *Equity/Adequacy Study*.

Very uruly yours

Eva Klein

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SPACE PLANNING STANDARDS

INTRODUCTION

In 1997, the Board of Governors of The University of North Carolina (UNC) adopted a revised process and presentation format for its capital budget request to the General Assembly, based on study recommendations submitted by Eva Klein & Associates (EKA). In the new format, projects are listed in categories and the categories are prioritized. The budget presentation also provides other descriptive factors that the General Assembly can use in making priority decisions among capital requests. At that time, EKA recommended that UNC develop space standards that would add one quantitative, relatively more objective factor to the many qualitative and subjective considerations about priorities. This report is the result of UNC's request that EKA develop such space planning standards.

Survey of Other States



The first major task in this study was a survey of the *space planning* standards of other state university systems. EKA and Harvey H. Kaiser (HHK) conducted a survey, from which information for 28 public university systems was analyzed. The detailed report of that survey was issued separately to UNC and forms important background for this report. Copies are available from UNC General Administration or from EKA.

UNC Ad Hoc Task Force on Space Planning Standards



For this study, EKA deemed it essential to have substantial participation of the constituent institutions. To that end, UNC General Administration convened an *Ad Hoc* Task Force on *Space Planning Standards*. This group met on many occasions with the EKA team to discuss issues, to review analyses, and to consider alternatives. Members of the *Ad Hoc* Task Force and the General Administration Working Group are provided as Exhibit 1 (page EX-1).

Analyses and Data Update

EKA used existing UNC data on programs, personnel, facilities, and library collections—together with the *Other States Survey* report—to develop and test possible standards for selected categories of University facilities. These were presented and discussed in several meetings of the *Ad Hoc* Task Force. The Office of the NC Higher Education Facilities Commission, UNC General Administration, and the institutions generated some special data reports. The objective throughout was to establish *space planning standards* that will be useful, simple, and rational and for which required data exist.

When our February 1998 draft *Report* revealed several concerns about the Fall 1996 data used, UNC decided to defer the final analysis until the Fall 1997 data were available. Accordingly, this *Report* is based on updated Fall 1997 data, as assembled in the *Facilities Inventory* in July 1998.

FINDINGS AND CONCLUSIONS

STANDARD CLASSIFICATION SYSTEMS FOR HIGHER EDUCATION FACILITIES

The following brief explanation of HEGIS room use codes, National Center for Educational Statistics (NCES) Classification of Instructional Programs (CIP) codes, and the National Center for Higher Education Management Systems (NCHEMS) program codes is provided so that the reader can interpret recommendations that follow in this report. The reader is referred to North Carolina's Facilities Inventory and Utilization Study, 1997 or to the Postsecondary Education Facilities Inventory Classification (PEFIC) Manual, 1992, for more detailed information on facility classification.



HEGIS Room Use Codes

Capital facilities in higher education are categorized by room use codes, established in 1973 as part of the federal statistical database on higher education that then was called the Higher Education General Information Survey (HEGIS), predecessor of the IPEDS survey. Consequently, categories of space are described as HEGIS room use codes. Three-digit HEGIS room use codes that permit categorization of space by use or function are shown in Figure 1.

And the second property and the second	Pigure 1
	HEGIS ROOM USE CODES
100	Classroom Facilities
200	Laboratory Facilities
300	Office Facilities
400	Study Facilities
500	Special Use Facilities
600	General Use Facilities
700	Support Facilities
800	Health Care Facilities
900	Residential Facilities
000	Unclassified Facilities
WWW/XXX/YYY	Non-assignable Area
ZZZ	Structural Area



Exhibit 2 (page EX-2) provides the more detailed HEGIS *room use sub-codes* for sub-categories of space, within each of the above overall *room use codes*.

NCES CIP Discipline Codes



In addition, space planning standards make use of program or discipline codes, based on the Classification of Instructional Programs (CIP), a two-digit format published by the National Center for Educational Statistics (NCES). Exhibit 3 (page EX-3) provides a list of the NCES CIP discipline codes. In this analysis, these CIP discipline codes are used to create categories of space planning standards for teaching and research laboratory space.

National Center for Higher Education Management Systems (NCHEMS) Program Classification Structure



The third classification system for facilities is the *Program Classification Structure (PCS)* established by the National Center for Higher Education Management Systems (NCHEMS). UNC facilities are categorized by these *PCS* or *program codes*, which are shown in Figure 2.

NCE	Figure 2 EMS Program Classification Structure (PCS)
10	Instruction
20	Research
30	Public Service
40	Academic Support
50	Student Service
60	Institutional Administration
70	Physical Plant Operations
80	Student Financial Support
90	Independent Operations
00	Unassigned



The complete list of NCHEMS program sub-codes, within each of the broad program codes, is provided in Exhibit 4 (page EX-4).

In this analysis, some categories of space have been analyzed only for certain HEGIS room use sub-codes and only for certain NCHEMS PCS program codes. For example, the proposed planning standard for Library Space is applied only to space coded as HEGIS room use sub-codes 410, 420, 430, 450, and 455, and that **also** is coded as PCS program code 41-Library Services (for central libraries). Library Space that is coded otherwise, such as study rooms that may exist in residence halls, is excluded.

¹ The Category Code classifications used by the NC Higher Education Facilities Commission for the *Facilities Inventory* are an updated adaptation of a taxonomy originally developed by NCES in 1970 for use in the annual HEGIS survey. NCES subsequently discontinued use of the HEGIS taxonomy in favor of the CIP classification, originally developed in 1980. The CIP structure is not suitable to classifying and coding facilities space and no adequate replacement structure has since been developed at the national level. For this reason, academic affairs authorities at UNC General Administration and HEFC staff have updated the HEGIS taxonomy based on academic programs created or terminated at the sixteen UNC constituent institutions and North Carolina's community colleges. HEFC staff can provide a "cross-walk" between the HEGIS and CIP taxonomies, as needed.

OTHER STATES' PRACTICES

Increasing Interest and Great Degrees of Variation

The survey of space planning standards practices of other states revealed that there is growing interest in the use of space planning standards. Based on information from 28 state systems/governing boards, the survey also revealed a wide divergence of practices in the types of space standards in use (planning, utilization, or programming/design standards). The degree of use of space planning standards seemed to vary with the level of activity in capital projects.

There also was extensive variation in the categories of space for which standards are developed, ranging from all *HEGIS room use codes* to just those which are the most frequent subject of capital projects requests.

Also, while most systems rely on standard reference and classification works in this field, many have created variations in treatment of categories, in units of measure used, and in standard space allowances provided.

Typical Analysis Methodology

Space planning standards typically are expressed as Assignable Square Feet (ASF) allowances per units of use or need. "Use" or "need" is calculated based on unit measures such as Student Clock Hours of Instruction, student FTEs, employee FTEs, library volumes, dollars of research expenditures, and so forth, depending on the category of space in question.

Based on a combination of the ASF allowance that the planning standard expresses and the unit measure of use or need, one calculates the projected or predicted or standard square footage (in this report, Standard ASF) that an institution **should have** in that category of space. Then, from a comparison of the Standard ASF with the institution's Actual ASF, a Variance from Standard reflects either a positive variance or a negative variance. This Variance from Standard is as an indicator of potential capacity or lack of capacity in that category of space. Typically, the calculated Variance from Standard is considered, along with many other factors, in planning and budgeting.

The Standard ASF calculation can be used in two ways. First it can be calculated based on **current** use or need. For example, one can calculate the Standard ASF of office space required on the basis of current FTE employees. Alternatively, as a future planning device, the Standard ASF calculation can be used to project **future** space needs, based on specific assumptions of program, enrollment, employment, or research growth during a given planning period. For example, an institution that has an approved target for enrollment growth and a capital project request for classroom facilities, can present the calculation of the Standard ASF of

classroom space **that will be needed**, when the enrollment growth has occurred, *versus Actual ASF* classroom space, before the capital project.

The calculations in this report are on the basis of **current** units of use or need based on ASF of space in the *Facilities Inventory* as of Fall 1997 data. Therefore, it is important to note that the ASF that will be added by projects currently under construction or in planning are not included in these statistics.

Caveats to Use of Space Planning Standards

All the available policy documents from the *Survey* of other state systems make it abundantly clear that *space planning standards* are of value but are not to be used in an absolute manner in making complex decisions about facility needs. In virtually all cases where quantified *space planning standards* are applied in capital planning, the policy documents make it clear that they are used as **guidelines** and as **non-exclusive considerations** in capital project evaluation, along with qualitative and other factors that may justify, or not justify, a need for a given project.

It is assumed that the institutions will make use of the predictive value of this tool, in formulating project descriptions and justifications. General Administration may use the *planning standards* in ongoing analyses of how to accommodate system-wide enrollment growth.

UNC'S PUBLISHED SPACE CRITERIA



UNC has had published *Space Criteria* for many years. These are published as Table 11 (provided here as Figure 3) in the *Facilities Inventory and Utilization Study* and have been available for the information and use of constituent institutions in campus-level planning. Until now, however, these criteria were not used at the level of the Board of Governors in systemwide resource allocation considerations.

In the analysis for this study, EKA and the *Ad Hoc* Task Force used UNC's existing space guidelines, along with the *Survey* information about other states, as a point of departure for developing the proposed new *space planning standards*.

UNC'S CATEGORIES OF CIP PROGRAM CODES

In recent developments to modify the formula for portions of operating budget funding, UNC has adopted four categories of CIP programs/disciplines that represent different levels of average per *Student Credit Hour* (SCH) cost. These four categories have been used as part of the basis for creating categories of disciplines for *planning standards* for teaching and research laboratories, where differentiation by disciplines seems necessary. Exhibit 5 (page EX-5) provides these four UNC CIP discipline groups.



		CAROLINA	1006 75	
The second of the second secon	IES INVENTORY AND UTI SPACE	LIZATION STUDY: Criteria	1996 – TABLE II	980
Space Categories		Average	R	ange
CLASSROOMS		S		
Room Utilization Ratio(RUR)		30 hrs/wk	20) to 32 hrs/wk
Station Occupancy Ratio (SOR)	men gran i gazarakan mende	65%	4.	to 85% - Automorphism
Station Occupancy		19.5 hrs/wk		to 27.2 hrs/wk
ASF/Student Station ASF/WSCH (Space Factor)		18 ASF) to 25 ASF
LABORATORIES (CLASS)		0.923		19 to 1.11
RUR, Lower Division		24 hrs/wk		2 to 26 hrs/wk
RUR, Upper Division		16 hrs/wk	Kyropennia inikania	to 18 hrs/wk
SOR, Lower Division		80%		5 to 85 %
SOR. Upper Division		6096	5.	i to 65%
Station Occupancy, Lower Division	n	19.2 hrs/wk	10	5.5 to 22.1 hrs/wk
Station Occupancy, Upper Divisio	n	9.6 hrs/wk	7.	7 to-11 7 hrs/wk
ASF/Station		varies by discip	line	
LIBRARIES				
Stack Unit Floor Area Criteria				
Type of Stack Area		Avg Bound Vo. 8 to 10		vg ASF/Volume
Open-stack study rooms Open stacks		8 to 10 10 to 12		125 to 0.10 [0 to 0.083
Closed stacks		12 to 15	**************************************	.083 to 0.067
High Density Compact Storage		40 to 60		025 to 0.017
Reading Stations Unit Floor Area C				
Type of Station		ASF/Station		
Open tables and chairs		20 to 25		
Small carrels		25 to 30		
Research carrels (open)		30 to 35		
Enclosed studies (faculty)		40 to 70		
Microfilm and Audio/visual carrel		35 to 45		
Typing stations (Multiple station	s in an enclosed room)	25 to 35		
Reading Lounge Conference rooms, seminar rooms		25 to 30 20 to 25		
OFFICES	'attoritati-Roali attorica	20 W 23		
	Academic Departments		Non-Academic Dep	artments
		Multiple		
	Single Occupancy	Occupancy	Single Occupancy	Multiple Occupancy
Personnel Category	ASF/station	ASF/station	ASF/station	ASF/station
Administrator-Press Vice-Press	N/A	N/A	300±50	NA
Vicespies. Dean	N/A 240±20	N/A N/A	240±30 N/A	N/A N/A
Chair Chair	180±20	N/A	N/A	N/A
Professional	120±10	90±10	120±20	90±10
Secretarial-Clerical	120±10	90±20	120±40	90±2Ò
Graduate Assistants	N/A	50±10	N/A	N/A
Conference Rooms and Conference				
Stations	ASF/Station	Conference Room AS	\$ F	
10	25	30±5		
15	22	30±5		
20	20	30±5		
25	20	30±5		
	- 15	30±5		
30	12	90-9		

DATA SOURCES AND CONSIDERATIONS

This report is built of two main analytical elements:

- 1. The analysis that leads to proposed new space *planning standards* for each category of space addressed.
- 2. The calculations of *Standard ASF* and *Variance from Standard* for each category, for each UNC constituent institution, based on the proposed new *planning standards*.

In general, it was assumed that existing sources of data would be used for calculations in this methodology, with adjustments as possible and appropriate. It should be noted that several problems arise when data that are collected for one purpose are applied for an entirely different purpose. The definitions of terms in the data collection may not be appropriate or useful for the new use to which they are put. This is an issue of data **validity**. In this study, the most significant example of validity problems arose in connection with counts of FTE employees in connection with Office Space. The IPEDS-S Personnel Data File (PDF) is created for the purpose of position control and federal government reporting. By definition, it is not defined to be a count of all persons who physically use offices. It includes counts of non-office users and excludes some counts of office users.

In addition, there are questions of data **reliability**. Despite the fact that UNC constituent institutions follow centrally-coordinated guidelines for reporting of *Facilities Inventory* data, there remains the possibility of differences in how spaces are coded at each campus.

It is also incumbent upon each institution make a conscientious effort to ensure that its' *Inventory* is accurately maintained and updated correctly each year.

In each section of the recommendation sections on proposed *planning standards*, data issues are discussed in detail. There is a recommendation about continuing improvement of data methodology. The value of the proposed new *space planning standards* will improve, over time, as data methods are refined to suit this new use.

RECOMMENDATIONS: UNC'S USE OF SPACE PLANNING STANDARDS

PURPOSE AND TYPE OF UNC'S SPACE STANDARDS

Space standards are of three types: (1) planning, (2) utilization, and (3) programming or design. In initial discussions for this study, the Task Force considered which type of standards were to be developed. The purpose of these new space standards for UNC is to augment other information available to accompany capital project requests—not for design of projects.

Thus, the type of *space standards* to be adopted falls in the category of *planning standards*. For classrooms and class laboratories, *utilization standards* are incorporated as part of the *planning standards*, as the extent of scheduled use of these facilities is a major factor in the quantity of space required for them. Thus, this report does not propose detailed *programming/design standards*, of the type that would be required to guide architects and cost estimators in actual design of a facility.

Recommendation

1:

UNC should adopt planning standards for use in the capital budget process, incorporating utilization standards for classroom facilities and teaching laboratory facilities in those planning standards. There is no purpose to creating detailed programming/design standards for systemwide application.

As a single possible exception, UNC may wish to research and develop *programming/design standards* for various types of electronic or master classrooms. These are very new types of space that many of the institutions are planning and building, and there is little organized information available on how to plan them. Thus, a thoroughly researched set of design guidelines for various types of such rooms could be useful to institutions in their facility planning efforts.

CATEGORIES OF FACILITIES FOR NEW SPACE PLANNING STANDARDS

After consideration of the utility of establishing *planning standards* for various HEGIS *room use codes*, it was determined that *planning standards* should be developed only for categories of facilities that are:

- Most common to all 16 constituent institutions
- > Most conducive to capacity comparisons
- Most typically the subject of General Fund appropriations.

This has led to a recommendation to develop standards for four of the ten HEGIS *room use codes*, and only for certain *sub-codes* within these.



UNC should adopt space planning standards only for those HEGIS room use codes and NCHEMS PCS program codes that represent the most commonly funded and built facility types, that are in use on all/most campuses, and for which comparative capacity is most logical to consider.



Based on these recommendations, HEGIS room use codes and sub-codes and NCHEMS PCS program code categories selected for this Study are displayed in Figure 4, and discussed following.

Figure 4 Proposed HEGIS and Program Codes for UNG Space Planning Standards						
HEGIS Code	HEGIS Sub-Code	Program Code	Type of Facility			
100	110		Classrooms (scheduled for instruction)			
200	210		Class laboratories (scheduled for instruction)			
	250	20	Research/Non-Class Laboratories			
	255	20	Research/Non-Class Laboratory Service Space			
300	310		Offices			
	315		Office Service Space			
	350		Conference Rooms			
	355		Conference Room Service Space			
400	410	41	Study Rooms			
	420	41	Stack Space			
	430	41	Open-Stack/Study Room Space			
	440	4]	Processing Rooms			
	455	41	Service Space			

- > Classrooms (HEGIS 110). This includes classrooms that are regularly scheduled for instruction. HEGIS code 115 (classroom service space) is omitted in the standards and in the calculations for classrooms (HEGIS 110), in accordance with typical comparative reporting practices in higher education.
- > Teaching Laboratories (HEGIS 210). Within this definition both teaching and research laboratories are defined as facilities characterized by special purpose equipment or a specific room configuration that ties instructional or research activities to a particular discipline or a closely related group of disciplines. This includes those laboratories that are regularly scheduled for instruction. HEGIS 220 open laboratories are excluded. As with classrooms, HEGIS 215 support space is excluded from the calculations, in accordance with typical comparative reporting practices in higher education.

- > Research Laboratories (HEGIS 250/255). HEGIS room use sub-code 250 is laboratory space used for research. Based on higher education industry reporting standards, HEGIS code 255 for research laboratory service space is included in the calculations. Further, calculations are based only on HEGIS 250/255 space that is coded as NCHEMS PCS program code 20—Research, although some 250/255 space listed in the Facilities Inventory appears within other NCHEMS PCS program codes.
- ➤ Office Space (HEGIS 300). The recommendations for office space standards provide ASF allowances as a single number, rather than as four separate standards for all four relevant HEGIS office sub-codes. The one ASF allowance is intended to cover and provide for HEGIS 315 office service, 350 conference room, and 355 conference service, in addition to HEGIS 310 offices. This approach permits institutions widest latitude in how to actually configure uses of space for office and conference room functions.
- ➤ **Library Space (HEGIS 400)**. For libraries, separate calculations for HEGIS sub-codes 410 study rooms, 420 stack space, 430 open stack/study space, 440 processing rooms, and 455 study service are summed into a single standard to determine needed space. Again, this approach allows for variations at each campus in actual library configurations. Also, the standards are being established only for Library Space that is reported under NCHEMS PCS program code 41—Library Services, and meant to cover "central libraries." Library Space in residence halls and other facilities are excluded from these calculations.

In the next chapter, specific *planning standards* are proposed for the above categories of space.

USE OF SPACE PLANNING STANDARDS

These proposed *planning standards* are gross indicators of **quantity** of space needs for selected space categories. They are not capable of expressing factors to address equally important information about the **quality** of space—either in terms of overall facility **condition** or in terms of the **suitability** of facility configuration to meet contemporary and future needs.

More importantly, although two categories—the proposed *planning* standards for 210 teaching laboratories and 250/255 research laboratories—are differentiated for groupings of disciplines, these proposed space *planning standards* do not permit a meaningful way to account for other differences in overall mission, program diversity, or specific strategic plans of individual institutions. Therefore, their use as an absolute indicator of the need for a given project not only would not be useful; it could be harmful.



Treat the calculations of Variance from Standard in a given category as one indicator of potential need for a capital project and then evaluate it along with equally important factors of condition and suitability, all in context of specific institutional mission, plans, and enrollment growth projections. Do not permit the calculation to be treated as an "absolute" indicator, as this would be an overstatement of its value and meaning.

Therefore, these proposed *planning standards* must be used in conjunction with several other factors in project justification by institutions and in the Board of Governors' and the General Assembly's evaluation of the need for (or relative priority of) any given capital project proposal. It would be a mis-use of the *planning standards* to use them as a stand-alone measure of space need.

INCORPORATION OF SPACE PLANNING STANDARDS INFORMATION IN CAPITAL BUDGET PRESENTATION

These space planning standards are being proposed for use as additional information in UNC's capital budget presentation. That presentation already incorporates information about priorities by major category and by other qualitative factors.

Recommendation

#4:

Where applicable, include information on the institution's *Variance from Standard* in the category relevant to the proposed project, in the biennial Capital Budget presentation document. Also include discussion of the implications of the calculated *Variance* for the institution's strategies and programs.

As noted above, the base calculations are done with *current* use and *current* space inventory data. Institutions can use the standards to incorporate in their presentations the *predicted* space requirement impact of expected changes, for example the impact of projected enrollment growth on 110 classroom space or the degree to which a given requested facility will expand capacity.

There will be a number of capital projects in the budget request for which no space *planning standards* apply and, therefore, no calculation of variance will be presented at all.

INCORPORATION OF CONDITION INFORMATION IN CAPITAL BUDGET REQUEST

In development of the *space planning standards* presented herein, considerable consideration was given to issues of facility condition. The *Ad Hoc* Task Force and the consultants determined that there is no way to include a factor for facility condition in the formulas for these proposed *planning standards*. This is because condition data are not available in FCAP reports disaggregated by HEGIS *room use code* and by NCHEMS PCS *program code*. Thus, these *planning standards* are *quantitative* measures only.

However, the consultants believe that *qualitative factors—poor condition* or overall *obsolescence* or *unsuitability* of some facilities, in fact, drives some capital requests. Information about condition issues is, therefore, critical to a fair evaluation of the relative need for certain projects, but must be presented separately.

Recommendation

#5: Include in the capital budget presentation a presentation of building-based deficiency for each capital project, based on FCAP reports.

The NC State Office of Construction conducts periodic reviews of UNC campus facilities under its statewide Facilities Condition Assessment Program (FCAP). These FCAP deficiency data are recorded by building and by systems, not by HEGIS room use codes or by CIP discipline codes or by NCHEMS PCS program codes. Thus, it is not currently possible to present condition deficiency data by these categories.

The building-based deficiency data will have to serve as an overall indicator of potential deficiency in the category of space relevant to the proposed capital project. Since this is the case, the building-based deficiency data will need to be supported by a sub-analysis and narrative explanation that relates the FCAP deficiencies to the specific capital request in question.

DATA REPORTING DEFINITIONS AND METHODS

As noted in the Introduction section and as described briefly below, and in greater detail in the appropriate sections on space types, there are a number of data issues that could bear additional refinement. When the February 1998 draft of this report was reviewed, it contained a Recommendation #6 that suggested convening the Ad Hoc Task Force on Space Standards to review coding and uniform reporting issues for the Facilities Inventory.

That recommendation was implemented in Spring 1998. The data now included in this version of the Report reflect better clarity about the questions of that time.



The following is a restatement of Recommendation #6, to reflect some additional data issues that would benefit from additional consideration.

Consider convening a Task Force on Space Planning Standards periodically, to address ways to refine or modify databases (or create new reports) that would improve the accuracy of calculations relating to space standards. Determine the costs and benefits of additional or changed reporting versus improvement of the calculations of Variances.

The Task Force's mandate could include recommendations on:

- Whether or not to initiate a discussion with the NC Office of State Construction about the feasibility of incorporating HEGIS room use codes and NCHEMS PCS program codes in the FCAP reports (and the costs/benefits of doing so).
- > Whether the IPED-S or NSF survey reports on research expenditures can be modified by a consistent method to arrive at research dollars by discipline, or whether a new report would need to be created.
- ➤ How, in a discipline-related research space standard, the dollars would be coded in the case of multidisciplinary research grants.
- > Whether a standard modification/addendum can be created for the PDF that counts office users consistently.
- Whether it is feasible and desirable to require reporting of Student Clock Hours for undergraduate Health Affairs programs at UNC-Chapel Hill Health Affairs and ECU Health Affairs.

RECOMMENDATIONS: PROPOSED UNC SPACE PLANNING STANDARDS

This chapter of the report proposes space *planning standards* for five space types that represent the most common and typical capital funding requests for UNC as a whole. These five space types are:

- Classrooms
- Teaching laboratories
- > Research laboratories
- ➤ Offices
- > Library/Study facilities.



Tables 1 to 5 of Exhibit 6 (pages EX-6 to EX-10) summarize other state standards for these five categories.

For each of the five categories of space the discussion is organized into:

- > Definition of the Category
- > Format of Space Planning Standard and Units of Measure
- > Discussion
- > Recommendation(s)
- > Analysis of Variance from Standard.

CLASSROOM SPACE PLANNING STANDARDS

Definition of the Category

The classroom space planning standard is developed for HEGIS room use code 110, representing classrooms that are **regularly scheduled for instruction**. Neither the proposed ASF Station Size allowance nor the analysis of Actual ASF versus Standard ASF includes the related HEGIS room use code 115—classroom service space.

Format of Space Planning Standard and Units of Measure

Classroom space planning (and utilization) standards are formulated from the following four elements:

- **Student Station Size** is the assignable square feet (ASF) per student station.
- Room Utilization Rate (RUR) or Average Weekly Room
 Hours of Instruction (WRH) is the hours per week that an
 available room is in scheduled use. It does not include casual use.
- Station Occupancy Ratio (SOR) is the average percent of student stations in the room that are occupied when the room is being used.
- **Space Factor** is a calculation that consolidates all three of the above into a single measure or factor. The *Space Factor* is calculated as follows:

Student Station Size (Weekly Room Hours) X (Station Occupancy Ratio)

The Space Factor is the planning standard. It is multiplied by FTE students or by Weekly Student Clock Hours to predict the institution's requirements or capacity (Standard ASF) needs for classrooms. The higher the Space Factor, the more liberal the standard space allowance.

Discussion



In Figure 5, UNC's previously published *Space Criteria* guidelines for 110 classrooms are arrayed with data from the *Survey of Other States*. Table 1 of Exhibit 6 (page EX-6) provides details of other state standards for classrooms.

The Ad Hoc Task Force considered various alternatives in light of the survey data. It was concluded that UNC institutions currently have

opportunities, in varying degrees, to improve classroom utilization and that this is appropriate to do, given resource constraints and the projected increase in enrollments.

FIGURE 5 COMPARISON OF UNC PUBLISHED SPACE CRITERIA WITH OTHER STATE SURVEY DATA							
		ıblished Criteria		om Survey er States			
The state of the s	Ranges	Averages	Ranges	Averages			
Student Station Size (Assignable Square Feet or ASF)	10 to 25	18	14 to 22	16.6			
Average Weekly Room Hours (Hours per week a room is scheduled for use.)	20 to 32	30	24 to 40	31.7			
Station Occupancy Ratio (Percent of Stations Occupied)	45% to 85%	65%	60 to 71%	63.43%			
Space Factor (Station Size/(RUR x SOR)	0,919 to 1,11	0.923	0.972 to 0.775	0.826			

Note: The Space Factors in this table are calculated and may not be identical to those reported Space Factors in the Survey of Space Standards in Exhibit 6.

Sources: NC Facilities Inventory and Utilization Study: 1996, Table 11- Space Criteria, and Eva Klein

& Associates, Survey of Other States, 1998.

Recommendation

The following recommendation mirrors previously published UNC criteria for two of the three factors—Student Station Size and Station Occupancy Ratio. In contrast, it constitutes an aggressive initiative to make much more effective use of existing classroom space, by significantly increasing the standard for Average Weekly Room Hours (utilization).



#7:

UNC should adopt a Space Factor of 0.79 as its *planning/utilization standards* for 110 classroom space. The three components of the Space Factor are:

Average Student Station Size 18 ASF Average Weekly Room Hours 35 hrs/week Station Occupancy Ratio 65%.



While the 18 ASF allowance for *Station Size* is more generous than the *Survey* average and the same as UNC's previously published guideline (see Table 11). The proposed *Station Occupancy Ratio* of 65% is slightly less generous than the *Survey* average and the same as UNC's previously published guideline (see Table 11). Most importantly, the target of 35 hours of *Weekly Room Hours* is an aggressive *utilization standard*. As a result, the proposed *Space Factor* of 0.79 is slightly below the *Survey* average *Space Factor* of 0.85 (average in Table 1 of Exhibit 6). It is much lower than the *Space Factor* currently achieved by UNC institutions. Therefore, this proposed standard represents a voluntary initiative of the UNC constituent

institutions, as represented by the Ad Hoc Task Force, to be far more efficient in classroom utilization in the future.

Analysis of Variance from Standard



Figure 6 provides calculations that compare Actual ASF with the calculated Standard ASF, based upon Fall 1997 data for 110 classrooms and Student Clock Hours. Data are shown for the planning standard and actual institution data for Average Student Station Size, Average Weekly Room Hours, Station Occupancy Ratio, and the Space Factor; as well as Actual ASF and Student Clock Hours. In the last four columns, calculations are shown for the Standard ASF, the ASF Variance from Standard, the Percent Variance from Standard, and the Percentage of the Institutional Share of System Capacity.

The analysis is as follows:

- > Overall, on a systemwide basis, there appears to be underutilized classroom capacity. The systemwide *Variance from Standard* is 312,133 ASF of classroom space. This represents a potential additional available systemwide classroom capacity of 25.6 percent.
- ➤ While actual Student Station Size and Station Occupancy Ratio for most of the institutions fall slightly below the new targets, it is primarily the relatively low actual Average Weekly Room Hours (utilization) of 110 classroom space that appears to be the factor that is generating the calculated positive variance for classroom capacity.
- > Based on the conclusions of the Ad Hoc Task Force, the institutions appear willing to undertake more efficient scheduling and other means to improve utilization of 110 classrooms.
- ➤ In a number of cases, there are facilities coded as 110 classroom space that may have minimal utility because of deteriorated condition or because of an obsolete configuration. Therefore, some apparent positive variances of space exist based on pure quantity, but the space is not used or cannot be used due to condition, suitability, or other factors of quality.
- > Centralized *versus* decentralized scheduling (and availability of software to support scheduling) appears to be a factor in utilization. Departmental control of 110 space is a factor that tends to lower utilization. On some large campuses, centralized scheduling still does not enable full efficiency, as the distances between buildings are a problem.
- > Some UNC institutions appear to need to focus their capital requests for classroom space on major renovations or

- replacements, before considering requests for additions of classroom footage.
- The negative variances seem to indicate that NC State, UNC-Charlotte, and UNC-Wilmington do not have sufficient classrooms for current Student Clock Hours.
- For UNC-Chapel Hill, the calculation shows a positive *Variance from Standard* (or available capacity) but, on a percentage basis, it is a much smaller one than others. If one assumes a possible plus or minus 10 percent error factor in these calculations, UNC-Chapel Hill also would be at capacity now, or unable to accommodate growth without additional classrooms.
- > The twelve other institutions appear to have varying degrees of classroom capacity to accommodate some enrollment growth, either with improved scheduling or with major renovations to existing facilities, or both. Program areas, geographic locations, and overall market demand also are factors in how much apparent capacity actually can be used.
- ➤ Overall based on the system capacity calculations, the 16 constituent institutions vary from -6 to +15 percent of the existing systemwide classroom capacity. Four institutions, Appalachian, NC A&T, NC Central, and Western Carolina, together account for about 55 percent of currently available system capacity. The remaining potential classroom capacity is distributed, in smaller percentages, among UNC-Greensboro, East Carolina, Fayetteville State, UNC-Pembroke, UNC-Asheville, Elizabeth City State, Winston-Salem State, and the NC School of the Arts.

	Control of the control	Contract Value of Canada ACC Vancant	Om Sapara	FIGURE 6	E 6	Alloward	Percentage	FIGURE 6 FOR THE PROPERTY PERCENTAGES FOR 110 CLASSED COME.	SMOURS	
	Average Student Station Size (ASF)	Average Weekly Room Hours	Station Occupancy Ratio	Space Factor	Actual ASF	Student Clock Hours (SCH)	Standard ASF	Variance from Standard	% Institutional Variance from Standard	% Institutional Share of System Capacity
Planning Standard UNC Fac. Inventory Table	18 SF/Stat. (Table 16)	35Hrs/WK (Table 3)	65% (Table 7)	0,79 (Table 9)	(Table 16)	(Table 8)				
Research Universities I: NC State	15	31.9	60.8	0.73	200,295	275,338	217,517	(17,222)	%(6:2)	%(9)
NG State Vet UNC-Chapel Hill	17	28.0	59.4	0.88	6,929 191,396	218,612	172,703	18,693	10.8%	%9
UNC-Chapel Hill-Health Affis Doctoral Universities I:	13				47/883					
UNG-Greensboro Doctoral Universities II:	2	30.5	8:09	5	55	27.44.8	S PO G	2	S - 1	
East Carolina Bact Carolina Health Affre	9 8	25.4	65.2	26'0	160,736	173,294	136,902	23,834	17.4%	%8
Masters/Comprehensive										
Colleges/Universities I: Appalachian State	6	25.7	59.6	113	(52,577	135,490	107,037	45,540	42.5%	%g)
Fayetteville State	8 <u>.</u> 9	24.7	52.3	1.37	53,582	39,219	30,983	22,599	72.9%	%E!
NG Central	16	18.1		1.55	87,159	56,113	44,329	42,830	%9'96'8%	14%
UNC-Charlotte UNC-Pembroke	2)	18.2	25.3 55.3	1.60	48,276	30,194	23,853	24,423	102.4%	%8 %8
Western Carolina	19	21.8	53.5	1.46	89,100	61,122	48,286	40,814	84.5%	13%
Baccalaureate Colleges 1: UNC-Asheville	21	29.2	52.8	1.25	40,500	32,418	25,610	14,890	58.1%	9%5
Baccalaureate Colleges II: Elizabeth City State	16	18.5	43.9	1.77	40,507	22,907	18,096	22,411	123.8%	% <u>7</u>
Winston Salem State Specialized Institutions:	o 8	V 6		8	110 L			138,44,000 etc.		
NC School of Arts UNC Systems Totals UNC Systems Totals Source: Reports generated by the NC Commission on Higher Education Facilities based upon Fall 1997 Facilities invariant	2.4. ommission on High	P. E. Education Facilit	ies based upon Fal	1997 Facilities II	1,616,413		1,220,543	312,133	Part of	%00I

TEACHING LABORATORY SPACE PLANNING STANDARDS

Definition of the Category

HEGIS *room use code* 200 includes all laboratory spaces. HEGIS 210 is the category of laboratories that are **scheduled for regular use** in instruction, as opposed to other categories that are "open labs" (HEGIS 220) or research labs (HEGIS 250). The associated HEGIS 215 support space is not included, for the same reasons as for the exclusion of HEGIS 115—classroom support space, that is, most other systems report their classroom and teaching laboratory data in this way.

Format of Space Planning Standard and Units of Measure

Planning standards for teaching laboratories have the same components as those for classrooms. Typically, there is an ASF Station Size for lab stations, a standard for Average Weekly Room Hours (the number of hours the lab is scheduled for instruction), and a standard for the Station Occupancy Ratio (the number of stations occupied when the lab is in scheduled use). Like for HEGIS 110 classroom space, these can be combined into a Space Factor, which then is the standard that is computed with Student Clock Hours.

As the Station Sizes for labs typically are much larger than for classrooms and as the target for Weekly Room Hours typically is lower, the calculated Space Factor for teaching laboratories typically is much higher than the Space Factor for 110 classrooms.

The Standard ASF an institution requires is the number of Student Clock Hours of Instruction (in the labs) multiplied by the Space Factor.

Discussion

Unlike HEGIS 110 classroom space, which is generically usable for scheduled classes in various disciplines, the design, layout, and equipping of HEGIS 210 teaching laboratory space vary considerably with the disciplines taught. For example, disciplines like history, literature, or public affairs typically have virtually no laboratory requirements, while disciplines like physical sciences, engineering, architecture, or agriculture have varying degrees of extensive laboratory space needs for teaching. Also, the 210 laboratory space often can be used only for a given program or discipline, or even only for given courses within a discipline. For example, a laboratory designed for teaching nursing skills is completely unusable for any other purpose. For this reason, the utilization targets for 210 labs must be lower than those for 110 classrooms.

Typically, other state systems have established *planning standards* for teaching laboratories based on categories of disciplines, with different ASF station size allowances for each discipline. However, there is no single common method for grouping disciplines.

In the *Ad Hoc* Task Force's considerations of how to cluster disciplines for categories of teaching laboratory *planning standards*, several alternatives were considered, including:

- Standard ASF allowance ranges for each CIP classification promulgated by the Council for Educational Facilities Planners International (CEFPI)
- > UNC's published Space Criteria for teaching labs, by discipline
- > UNC's four newly established CIP discipline code groupings for the operating budget formula.

The CEFPI standards suggest three general categories, A, B, and C, that reflect different levels of intensity of class labs. In addition, they provide suggested ranges for ASF *Station Size* allowances for specific disciplines.

For the sake of simplicity and consistency, it would be an attractive option to use the same categories that UNC is applying in its operating budget formula. However, this proved to be an unsatisfactory solution, because the characteristics of programs that drive overall budget considerations are not exactly the same as those that drive space needs. For example, while dance and theater may be less expensive overall than engineering, dance and theater require very extensive quantities of square footage, similar to the footage required by engineering.



UNC's currently published *Space Criteria* provide for different *Room Utilization Ratios* for lower and upper division, as shown in Figure 7. Table 2 of Exhibit 6 (page EX-7) provides other state standards for teaching laboratories.

FIGUR UNC PUBLISHED SPACE CRITERIA		BORATORIES
Space Categories	Average	Range
RUR, Lower Division	24 hrs/wk	22-26 hrs/wk 📳
RUR, Upper Division	16 hrs/wk	14-18 hrs/wk
SOR, Lower Division	80%	75-85 %
SOR, Upper Division	60%	55-65%
Station Occupancy, Lower Division	19.2 hrs/wk	16.5-22.1 hrs/wk
Station Occupancy, Upper Division	9.6 hrs/wk	7.7-11.7 hrs/wk
ASF/Station	varies by	/ discipline

In this analysis, it was concluded that simplification to a single standard for *Room Utilization Rate* and for *Station Occupancy Ratio* that would be applicable to both lower and upper division would be desirable, leaving variations, based on discipline groups, only in *Station Sizes* and *Space Factor*.



Recommendation

#8:

For the sake of simplicity, use a single utilization standard for Weekly Room Hours of 20 hours per week and a single standard for Station Occupancy Ratio of 70 percent. And vary only the ASF Station Size which will result in varying Space Factors for each of the four categories of teaching labs.



The four proposed categories along with *Station Size* and *Space Factor* are shown in greater detail in Figure 8.

For application of *planning standards* for teaching laboratories, adopt four categories of disciplines—Highly Intensive, Intensive, Moderately Intensive, and Non-Intensive, modified from the UNC CIP and CEFPI codes and develop different ASF *Station Size* allowances for each of the four categories, as follows:

Highly-Intensive	108
Intensive	70
Moderately-Intensive	50
Non-Intensive	33

The recommendation to use a single standard for *Weekly Room Hours* and for *Station Occupancy* is a deliberate attempt to simplify teaching lab *space planning standards*, as many other state systems vary these standards for lower division, upper division, and for graduate program labs, as well as by discipline.

Therefore, while simplicity is an advantage, it must be recognized that this simplification results in a "grosser" measure of lab space needs than would be the case if division levels were taken into account. For this reason, the proposed *Weekly Room Hour Utilization Standard* of 20 hours/week has been set at the low end of a potential range, to accommodate differences in levels of instruction and to accommodate additional time that must be allocated for clean-up and set-up of class labs between classes.

In contrast, the *Station Occupancy Ratio* target of 75% is aggressive. The combined intent of these recommendations is that, while it may not be possible to schedule labs for many hours per week, they should be scheduled for classes large enough to justify use of the space. The standard provides an incentive for efficient scheduling of appropriate numbers of enrolled students. Thus, larger class size and overall improvement of utilization are implied.

The calculation of the *Space Factor* for teaching laboratories is the same as for classrooms. It is the *Station Size* divided by the product of *Weekly Room Hours* and *Station Occupancy Ratio*.



Figure 8 shows the disciplines in each of four proposed categories, their UNC CIP discipline code classification, the CEFPI Station Size allowances and the proposed Station Size allowance. With Weekly Room Hours and Station Occupancy Ratio held constant, but ASF Station Sizes varying with the discipline groupings, the Space Factor will vary for each of the categories, and is also shown in Figure 8. Table 1 of Exhibit 7 (page EX-11) shows the data for the UNC CIP categories, the CEFPI ASF ranges, the 1996 UNC ASF ranges from Table 11 of the Inventory, and the targeted ASF Standards. Tables 2 and 3 of Exhibit 7 (pages EX-12 to EX-14) are the worksheets for grouping the programs within the approved category for the Fine Arts and Health Professions disciplines.

After review of the CEFPI ASF allowances and discussion, the *Ad Hoc* Task Force determined that the move to use of multi-media and computer information systems in Education requires more teaching lab space than is allowed under the CEFPI standards. Therefore, the *Ad Hoc* Task Force felt it appropriate to place Education in the Moderately-Intensive category even though the CEFPI ASF allowance would normally place Education teaching laboratories in the Non-Intensive category.

At present, UNC-Chapel Hill and East Carolina do not report *Student Clock Hours* for scheduled 210 teaching laboratories in Health Affairs, either for undergraduate programs or for the graduate/professional programs. Therefore, there is no basis at present for including Health Affairs at these institutions in the calculations. Given the highly specific nature of the teaching laboratory facilities for the graduate professional programs, it would be reasonable to exclude them from teaching laboratory *space planning standards*. However, it would seem appropriate to include the undergraduate Health Affairs programs at UNC-CH and ECU, along with those at other institutions.



#10:

Develop equivalent data capacity to project teaching laboratory space needs (vs. actual) by including Student Clock Hours for undergraduate Health Affairs programs at UNC-Chapel Hill and East Carolina in the database. Exclude the graduate/professional programs at these institutions (Medicine, Dentistry, and Pharmacy) from application of the teaching laboratory planning standards.

FIGURE 8 HEGIS 210 TEACHING LABORATORIES PROPOSED CATEGORIES OF DISCIPLINES, PROPOSED ASF ALLOWANCES AND SPACE FACTOR

Proposed Teaching Lab Category				CEFPI Proposed ASF Planni Allowances Standa		
	Discipline	UNC CIP		ASF per Station	Space Factor	
Highly Intensive	Engineering (including Textiles)	4	70 to 160	108	7.2	
	FA/Applied Design, Dance & Dramatic Arts	3	50 to 150	108	7.2 2.2 2.2 (1.2 (1.2 (1.2 (1.2 (1.2 (1.2 (1.2 (
Intensive	Agriculture	3	50 to 70	70	4.67	
C. C	Architecture	3	60 to 80	70	4.67	
	Biological Sciences	2	50 to 65	70	4.67	
	Health Professions	3	55 to 90	70	4.67	
	Library Sciences	3		70	4.67	
	Physical Sciences	3	50 to 90	70	4.67	
Moderately Intensive	Communications	2	40 to 50	50	3,33	
	Computer/Info Tech	3	40 to 60	50	3.33	
	Education	2	35 to 40	50	3,33	
	FA/Art		45 to 60	50	3.33	
	Home Economics	2	50 to 60	50	3,33	
	Law		40 to 50	50	3.33	
	Psychology	1	40 to 50	50	3.33	
Non-Intensive	Business	2	30 to 40	33	2.2	
	FA/Cinematography, Music, General	3	30 to 35	33	2.2	
	Language	2	30 to 40	33	2.2	
	Letters	1		33	2.2	
	Mathematics	1	20 to 30	33	2.2	
	Public Affairs	1		33	2.2	
	Social Sciences		20 to 40	33	2.2	

Note: Health Professions includes Environmental Health, Medical Lab Technology, Nursing, Physical Therapy, Health Services Management, and General. Medicine, Dentistry, and Pharmacy are excluded.

Currently the disciplines listed below are not reporting *Student Clock Hours* or Assignable Square Footage.

- > Area Studies
- > Conservation and Renewable Resources
- > Engineering-Related Technologies
- > Multi/Inter-disciplinary, and Liberal Studies
- > Parks, Recreation, and Leisure Studies
- Science Technologies.

Therefore, the Ad Hoc Task Force has not recommended a category classification or provided any Variance from Standard calculations for these disciplines. If, after further review, these disciplines are not covered under already covered disciplines, e.g. Textiles under Engineering, and if these disciplines add teaching laboratories, it will be necessary for the Task Force to recommend an appropriate category classification for them.

Some additional data issues were:

> Several institutions report 210 teaching labs but have no corresponding *Student Clock Hours* for the following:

 ECU-Academic Affairs 	Mathematics
 Appalachian State 	Fine Arts & Letters
◆ Fayetteville State	Mathematics
 NC Central 	Health Professions
♦ UNC-Pembroke	Languages
 UNC – Wilmington 	Communications
♦ Winston-Salem	Business & Management &
	Mathematics

Analysis of Variance from Standard



Tables 1 to 4 of Exhibit 8 (pages EX-15 to EX-23) show the *Average ASF*, *Student Clock Hours*, *Actual ASF*, and the calculations for the *Standard ASF* and *Variance from Standard* of teaching lab space, by category and disciplines, for each institution.



Figure 9 is a summary table that shows *Standard ASF* and ASF *Variances from Standards* totals for the four discipline categories and a grand total for teaching lab space for each institution. The table also shows calculations for the percent of institutional variance to the *Standard ASF* and the percent of institutional share of the system capacity.

The summary shows a mix of positive and negative variances of various degrees in teaching lab space among the 16 constituent institutions. Overall, on a system basis, based on Fall 1997 space and enrollment data, there is a calculated negative variance of lab space for the Highly Intensive and Intensive disciplines, and positive variances in space for the Moderately-Intensive and Non-Intensive disciplines. Some specific items for review (based on discipline-related details in Exhibit 8) are:

- ➤ There is a systemwide negative variance of teaching lab space for Engineering (46,461 ASF), with negative variances at three institutions, NC State, NC A&T and UNC-Charlotte. East Carolina and Western Carolina show positive variances of teaching lab space for Engineering.
- ➤ There is a systemwide negative variance of teaching lab space for Fine Arts (40,185 ASF) in the Highly-Intensive category

- with negative variances at UNC-Greensboro, East Carolina, UNC-Charlotte, and the NC School for the Arts.
- ➤ There is a systemwide negative variance of teaching lab space for Agriculture (4,738 ASF) in the Intensive category, with NC State showing a negative variance and NC A&T showing a positive variance of teaching lab space.
- ➤ There is a systemwide negative variance of teaching lab space for Architecture (3,288 ASF) in the Intensive category, with NC State showing a negative variance and UNC-Charlotte showing a positive variance of teaching lab space.
- ➤ There is a significant systemwide negative variance in the Biological Sciences (104,936 ASF) with all but one institution, NC A&T, showing a negative variance.
- > There is a negative variance of teaching lab space in the Health Professions at Fayetteville State and UNC-Charlotte, while Western Carolina and Winston-Salem show a positive variance of teaching lab space for the Health Professions.
- > There is a systemwide negative variance in the Physical Sciences (42,365 ASF). The majority of this negative variance is at NC State, NC A&T, UNC-Charlotte, and UNC-Wilmington. These four account for the entire net system of negative variance with more minor negative variances and some positive variances elsewhere.
- > There is a negative variance of teaching lab space for Communications (6,835 ASF) at UNC-Chapel Hill. The remaining institutions appear to be at or under capacity for teaching lab space in Communications, with the exception of East Carolina which shows a large positive variance.
- There is a systemwide negative variance of teaching lab space in Computer and Information Sciences (12,691 ASF) at four institutions, NC State, East Carolina, Western Carolina, and Elizabeth City State. NC State accounts for 91 percent of the systemwide negative variance.
- > There is a systemwide positive variance of teaching lab space for Education (28,185 ASF). Elizabeth City State shows the largest percentage of positive variance capacity. NC A&T and UNC-Wilmington show a large negative variance of teaching lab space for Education.
- > There is a large systemwide positive variance of Fine Arts teaching lab space (19,573 ASF) in the Moderately-Intensive category. Nine institutions, East Carolina, Appalachian State, Fayetteville State, NC Central, UNC-Pembroke, Western

Carolina, UNC-Asheville, and Winston-Salem showing varying amounts of positive variance, while NC A&T and UNC-Charlotte show a negative variance of teaching space for Fine Arts in the Moderately-Intensive category.

- ➤ There is a large systemwide positive variance of teaching lab space for Home Economics (13,292 ASF) with all institutions with this program reporting a positive variance of lab space.
- ➤ There is a systemwide negative variance of teaching lab space for Psychology (21,984 ASF), with UNC-Charlotte accounting for approximately 75 percent of this negative variance.
- > In the Non-Intensive category, the general result is an positive variance of teaching lab space in all programs with the exception of Letters, where East Carolina, NC Central State and Elizabeth City show a large negative variance of teaching lab space.

C Institutional Share of System Canaciv	(40.1)%	4.6)%	(12.4)%	6.4% 2.9% (11.7)% 5%	(33.7)% 3.9% (11.5)% 3.6%	4.0% 5.7% 0.1% (11.5)% 100.0%
Figure 9 ards, and Calculation of System Capacity Percentages for 210 Teaching Lab Space Moderately-Intensive Non-Intensive Total All Standard Standard From Standard From Standard ASF Standard Standard ASF Standard Standard ASF Standard Standard Standard Standard Standard Standard Standard Standard ASF Standard Sta	881)%	(12.2)%	(17.5)%	16.5% 20.7% (23.7)% 33.8%	(44.8)% 54.0% (30.7)% 15.6%	5.837 3,009 3,374 2,367 22,431 8,144 36,3% 4.0 5,085 12,909 9,391 (9) 26,287 11,579 44,0% 5.7 2,963 3,420 2,601 22,024 128 0.6% 0.1 245,997 8,903 5,590 99,537 (23,254) (11,57 245,997 152,376 19,032 1,202,511 (201,382) 100,00 Station Size and Space Factor for Highly-Intensive are 108 ASF and 7.2; Intensive are 70 ASF and 4.67; Moderately-Intensive 100,00
or 210 Teach IAII Variance In from Standard	(80.701)	(9.246)	(25,015)	12,958 5.813 (23,575) 9.971	(67,831) 7,819 (23,224) 7,271	8,144 11,579 128 (23,254) (201,382) tensive are 70 ASE
rcentages for 2 Total All Standard Asp			142,772			22,431 22,024 22,024 1,202,511 3 ASF and 7.2. In
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Figure 9 rid Calculation of Moderately-Intensive Variance Standard ASF Standard Standard	8 8		53,947		2) (3	5.837 5.085 1. 2.963 245,997 2.1
tandards, and sive Mo Variance from Standard A	9.371)		(23,337)	(9,795) (6,726) (4,564) 529	(32,196) 2,600 (17,177) (106)	
ces from Stand Intensive Standard Standard Stand	40.2422		46,438	32,949 20.697 27,043 15,143	67,793 10.082 53,986 25,242	12.3.13 11.8.11 19.061 1,923 536.041 (
dard ASF, Varianc Highly-Intensive Wariance from Standard Standard			(1,058)	673 (14,834)	(11,715) 760 (52) 6702	(28,285) (86,647)
Standard A Highly-J Standard ASF	62.636		22,536	31,468	24,631 302 454 6,152	88,711 268,096
Summary of Standard ASF, Variances from Stand Highly-Intensive Intensive Standard From Standard From Standard From Standard	niversities I.	UNC-Chapel Hill-Health Affairs Doctoral Universities I: UNC-Greensboro	East Carolina East Carolina-Health Affairs Masters/Comprehensive	State tare	UNC-Charlotte UNC-Pembroke UNC-Wilmingron Western Carolina Baccalaureate Colleges I:	UNC-Asheville 907 1,902 12,313 861 Baccalaureate Colleges II: 1,811 (1,321) Elizabeth City State 19,061 (5,893) Winston Salem State 19,061 (5,893) Specialized Institutions; 88,711 (28,285) NC School of Arts 88,711 (28,285) UNC System Totals 268,096 (86,647) (155,287) Notes: Weekly Room Hours are 20 hrs/wk, station Occupancy Ratio is 75%, for all 4 categories.
	Research Universities I: NC State NC State Vet UNC-Chapel Hill	UNC-Chapel Hill: Doctoral Univer UNC-Greensboro	East Carolina East Carolina-Health Affai Masters/Comprehensiv	Appalachian State Eayetteville State NC A&T State NC Central	UNC-Charlotte UNC-Pembroke UNC-Wilmington Western Carolina Baccalaureate Cc	UNC-Asheville Baccalaureate Colleges I Elizabeth City State Winston Salem State Specialized Institutions; NC School of Arts UNC System Totals Notes: Weekly Room Hours

Notes: Weekly Room Hours are 20 hts/wk, station Occupancy Ratio is 75%, for all 4 categories. Station Size and Space Factor for Highly-Intensive are 108 ASF and 7.2; Intensive are 70 ASF and 4.67; Moderately-Intensive are 50 ASF and 3.33; and Non-Intensive are 33 ASF and 2.2.

RESEARCH LABORATORY SPACE PLANNING STANDARDS

Definition of the Category

Research laboratories are HEGIS room use code 250. The related research support space is code 255. It is the industry standard in higher education to treat these two codes together in development and application of planning standards for research space. Therefore, in this analysis, the square footages reported and the planning standards applied are for a combination of 250 and 255 space.

In addition, space in HEGIS room use codes 250 and 255 appears in various NCHEMS PCS program codes. Only the space that is coded both HEGIS room use codes 250/255 **and** Program Code 20—Research is included in these considerations.

Format of Space Planning Standard and Units of Measure

Unlike HEGIS 110 classroom space and HEGIS 210 teaching laboratory space that are **scheduled** for regular use, research laboratories are unscheduled. For this reason, *utilization standards* such as *Weekly Room Hours* and *Station Occupancy Ratio* are not part of *planning standards* for research space.

Research space, however, does share in common with teaching labs the characteristic of varying greatly by discipline, in the types and amounts of space needed.



Table 3 of Exhibit 6 (page EX-8) summarizes other state standards for research space. There are many variations that include combinations of FTE faculty, graduate students, doctoral students, fellows, or "persons engaged in research."

In contrast, two of the state systems surveyed—Virginia and Texas—use average dollars of research expenditures, rather than FTEs, as the unit of measure for prediction of space needs for research.

Discussion

Use of FTEs or Dollars of Research Expenditures. An FTE-based measure does not permit any differentiation between institutional missions and for degrees of policy emphasis on research. A measure based on FTEs makes the assumption that all FTE faculty have sponsored research duties as part of their primary responsibilities, which is not necessarily the case. In the end, it was determined that the new UNC space planning standard for research should be based on the Texas and Virginia models as a point of

departure. It was agreed that the dollar volume of research performed is a better indicator of need than FTEs.

Texas Model. Texas applies a standard of 9,000 ASF of research space per \$1 million of research, averaged for the last three years of expenditures, for most disciplines. An exception is made for Veterinary Medicine, which is targeted at 11,700 ASF per \$1 million. Otherwise, there is no evidence that Texas differentiates the standard by disciplines. This model represents a very "rich" space allowance for research space.

Virginia Model. Virginia has two categories of disciplines. The higher of the two is allowed 8,000 ASF per \$1 million and the lower is allowed 4,500 ASF per \$1 million, both in constant 1993 dollars. Virginia's policy adds an increment of 10 ASF per annual FTE on-campus graduate students in all disciplines excluding Medicine, Dentistry, and Veterinary Medicine. Virginia's policy also seems to exclude Agriculture and Marine Sciences and certain disciplines that are funded separately in the State's General Fund. (As it was an important basis for these considerations, Virginia's policy on research space standards is provided as Exhibit 9, page EX-24.)



Analysis by Discipline Groupings. Virginia, and most systems that use an FTE-based formula, have ASF allowances for research space that vary by groupings of disciplines. Nonetheless, in an effort to achieve simplicity, UNC calculations were tested initially using a single ASF research space allowance for all disciplines, and for all institutions—like the Texas model. The result was unsatisfactory, in that it showed massive deficits of research space for nearly all of the UNC institutions, which is not logical. It was determined that this was due to the effect of not differentiating between the legitimately different space required for research for various disciplines, and also due to the effect of not accounting for differences in the scale of research space infrastructure requirements for institutions that have major research missions versus those that perform some funded research.

Therefore, in the next round of analysis, a method for disaggregating research space and dollars into categories of disciplines was attempted.

Models for grouping the disciplines that were taken into account for UNC's research space standards were:

- > CEFPI standards
- > UNC CIP program classification (for operating budget formula)
- > The four categories for teaching laboratory standards proposed (above) for UNC
- > Virginia's two categories of disciplines.



As with teaching laboratories, it was determined that existing UNC CIP discipline categories would not be entirely suitable. Specific new groupings of disciplines were developed, as shown in Figure 10.

Proposed Discipline	
Categories	Disciplines
lighly Intensive	"Production" Agriculture/Animal, Crop, Poultry, and Soil Sciences
ntensive	Agricultural Sciences (other than Production Agriculture)
	Architecture & Related Programs
	Conservation and Renewable Resources/Textiles, Forestry, Marine Sciences
	Engineering
	Health Professions
	Physical Sciences
Ioderately Intensive	Biological Sciences
	Home Economics
	Psychology
on-Intensive	Applied Math/Statistics
	Business
	Communications
	Education
	Fine Arts
Control of the Control	Languages
	Law
	Letters
	Library Sciences
e de la companya de	Public Affairs
	Social Sciences

The next step was to determine data availability.

Research Expenditures Data. It was concluded that research space ASF can be obtained from the *Facilities Inventory* by disciplines. However, there is no existing report or database that permits disaggregation of the dollars of research expenditures by the same categories.

Even without disaggregating by disciplines, the calculation of the *Standard ASF* and *Variance from Standard* for research space is complicated by differing definitions for counting dollars of "organized research" and differing sets of research expenditure data available. Members of the *Ad Hoc* Task Force and General Administration worked extensively with the consultants on providing data reports and interpretations of the data definitions. In the end, there remain some unresolved problems.

IPEDS-S Survey Data. The Task Force initially defined dollars of research expenditures as those reported under IPEDS Purpose Code 110 "Organized Research." The following is the definition:

110 Organized Research: This activity includes research efforts of a specified scope conducted for the primary purpose of achieving identified research outcomes, whether commissioned and sponsored by external agencies or separately sponsored within the institution. It includes individual research, project research, sponsored research, research institutes, and research centers. Also, it includes research project personnel but excludes research administrators and related support personnel (See Purpose Code 152 General Academic Support for reference to research administration.) It excludes departmental research that is not separately budgeted (see Purpose Code 100 Instruction) and the North Carolina Agricultural Research Service (which is defined in activity 120).

This means that some additional research activity reported under other Purpose Codes possibly are excluded. These are:

- Purpose Code 104 (Health Affairs instruction and departmental research);
- > Purpose Code 106 (Veterinary Medicine instruction and departmental research);
- > Purpose Code 120 (Agricultural Research Service)
- ➤ Purpose Code 401 (Educational Agreements) which UNC-Chapel Hill uses to code research that is performed under subcontract to other institutions of higher education.

Presumably it would be reasonable to exclude departmental research not separately budgeted (Purpose codes 104 and 106). In contrast, it may be useful to consider including all or portions of Purpose Code 120 and to examine the implications of including all or portions of Purpose Code 401 figures. For the present, use of only Purpose Code 110 would have the effect of understanding research expenditures of the institutions. The understatement would be greatest for NC State (Purpose Code 106 and 120) and for UNC-Chapel Hill and East Carolina University (Purpose Code 104).

If, in the future, it is decided that the IPEDS-S data will be used, these inclusion/exclusion decisions will need to be made.

NSF Survey Data. Another source of research expenditures is data from the National Science Foundation's (NSF) annual Survey of Research and Development Expenditures at Colleges and Universities. The NSF survey data typically are regarded as the primary source of national data on research program volume for universities. The drawbacks are that the NSF

survey data do not include all disciplines and they do not include all US institutions of higher education. Therefore, the NSF data do not include data for all UNC constituent institutions, although they do include most of the institutions with relatively larger research expenditures. Because NSF data are not available for all UNC institutions, they cannot be used if UNC decides to apply a research space standard to all institutions. Also, because some disciplines are excluded, the NSF data will understate research expenditures for all institutions. Table 1 of Exhibit 10 (page EX-25) provides the detailed NSF data for five years, by UNC institution. These data, however, were not used in calculations and analyses for this *Report*, for the reasons stated.



Application of Research Space Planning Standards to UNC

Institutions. The Task Force engaged in considerable debate about whether it was appropriate to use a *space planning standard* for research for all UNC institutions or only for those with major research missions/mandates. The consultants formulated several versions of recommendations and engaged in extensive dialogue with institutions in this question. Several alternatives were explored and proposed in the Task Force meetings and in various drafts of the *Report*, including:

- ➤ No space planning standard for research at all.
- > A space planning standard for research that applies only to the Research Universities I
- > A set of *space planning standards* for research in categories organized by Carnegie Classifications and only covering the classifications to the extent that the institutions included have some substantive level of research.
- ➤ A set of space planning standards for research in categories organized by dollar levels of research activity, independent of the formal Carnegie Classifications (as the dollar levels of research vary considerably within each category, based on mission emphasis).

Interim Conclusions. The following discussion has been added to this Report after consideration of a last round of commentaries on the final draft (August 1998) and taking into account both those recent commentaries and the original discussions of the Task Force.

The entire discussion of research space standards—both in the Task Force meetings and in commentaries on the circulated drafts of the Report—has revealed a range of expressed concerns. One strongly held view is that a space standard for Research Space, unlike standards for classrooms or libraries or offices, should be applied most properly only to **those** institutions that have sponsored research programs as a core element of their mission. A second view, equally strongly expressed, is that all 16 of the UNC institutions have legitimate needs for research space and that, therefore, the standard should be applied to all

of them. In this second view, there are a few UNC institutions that are particularly expressing their commitments to expand their research activities.

It has been the opinion of the consultants throughout this dialogue that the first view would reflect a better policy, given current missions and Board of Governors policy, as we understand it. In fact, Recommendation #2 of the Report states that standards should be developed and applied for space types that are "most commonly funded and built facility types, that are in use on all/most campuses, and for which comparative capacity is most logical to consider." Under that principle, which the Task Force adopted early on, one would make the argument that classrooms, teaching labs, office space, and study/library space fit the definition. One could make an argument that a special type of athletic facility or agricultural farm properties would not fit the definition. Having heard so many views and having considered this issue independently and exhaustively, we feel that the better conclusion is that Research Space is most commonly funded, is typically present on a large scale, and is a logical category for which to consider comparative capacity only at the two Research Universities I.

On the other hand, the consultants are sympathetic to the idea that other UNC institutions have some research space needs. We understand the views of those institutions about the interrelationship of available capacity and the ability to generate grants. We also appreciate the point made about the role of research or "discovery-based learning" in instruction. For these reasons, in iterations of the discussion and drafts, we have considered suggesting application of the standard to all institutions.

In developing these newly re-stated "Interim Conclusions," we are stating our opinion and referring the question to the Board of Governors for consideration. Our concluding opinion is that differences in formally approved missions, in related Carnegie Classifications, and in the intended scale and internationally competitive scope of research at the Research I institutions merits a different (and additional) way of analyzing the needs of these institutions, versus the needs of the other 14 institutions with different mission focus.

The consultants have stated consistently that, in all cases, any calculations relating to these space standards must only be used as one factor in justification of capital projects. Thus, having heard the varied views, we would prefer an outcome in which the calculation based on a quantitative standard is done only for the Research I universities and all other research space requests are justified on programmatic grounds. For example, growth in Engineering and/or approval of doctoral level programs in Engineering at UNC-Charlotte or ECU or NCA&T is programmatic grounds for related research space. As another example, the Marine Sciences graduate programs at UNC-Wilmington are programmatic grounds for justification of research space in Marine Sciences at that campus. We do not believe this approach would or should preclude institutions from making legitimate cases for research space needs, although such cases would need to be tied to specific program

and mission decisions of the Board of Governors, and on a case-by-case basis—not as a result of an overall *planning standard* calculation. This, of course, would mean that the use of the *space planning standard* would be extended to any other institution of UNC if/when the Board of Governors mandates a major emphasis on funded research for that institution.

More importantly, the consultants are aware that our consultative process has been unable to support development of a reasonable consensus on this issue. We recognize that the issue of Research *space planning standard* may not be possible to resolve in this *Report*, as the dialogue surrounding it has raised broader questions of mission than can be addressed responsibly in this analysis. We do not wish to have this study become an indirect means of taking responsibility for partial answers to mission-related questions that are beyond our study mandate and our authority.

We therefore have amended the following recommendation to include a suggestion that this is an issue that the Board of Governors may wish to address separately. Then, final resolution of the Research *space planning standard* may need to await further considerations by the Board of Governors, which would provide direction to the Task Force about the matter of to which institutions the standard will apply.

In the interim, the Task Force can continue work on development of the research expenditures database that would be required, in any case, for actual use of the proposed standard.



Recommendation

#11:

Adopt planning standards for Research Laboratory space based on either a three-year or a five-year average of actual research expenditures for "organized research," and not on the basis of faculty or student FTEs. Establish a different ASF allowance per \$1 million of average research expenditures for four discipline categories, as follows:

Highly Intensive Intensive Moderately-Intensive Non-Intensive

In connection with this recommendation, the Board of Governors may wish to consider refining its position on the role of research in institutional missions. At that time, a decision could be made on which institutions would have this standard applied. The research expenditures database will need to be created in order to test various ASF allowances and conclude what they should be.

Analysis of Variance from Standard – Interim Calculation

Actual calculations of variances cannot be performed until the disaggregated research expenditures and the ASF allowances are available, and until the Board of Governors determines application of the standard.

After the disaggregation of research expenditures has been accomplished, and as an initial starting point, the Task Force might try ASF allowances of 11,000; 9,000; 6,000; and 4,000 for the four proposed categories and then determine, when the analysis is done, whether the allowances need further adjustment upwards or downwards



Following the Texas model, and until the Board of Governors reaches further conclusions, a research space planning standard ASF allowance of 9,000 square feet per \$1 million of "organized research" expenditures could be calculated for the two research universities, as an interim way of looking at capacity in the two institutions where the issue is most central to mission. A calculation of the five-year average of IPEDS-S reported research expenditures for all UNC institutions is shown in Table 2 of Exhibit 10 (page EX-26). This interim calculation would show large negative variances of research laboratory space at the two research universities that might be overstated due to the richness of the Texas model formula. Interim calculations for this study, while they may not have been good proxies for a discipline-based calculation, indicated there are substantial research space deficiencies.

In summary, application of a space standard and calculations of ASF variances for Research space will not be possible until there is:

- > Disaggregation of the research expenditures by discipline
- Consensus on the ASF allowances (after some testing of calculations)
- > Determination by the Board of Governors as to application of Research space planning standards to all or some institutions, based on mission.

OFFICE SPACE PLANNING STANDARDS

Definition of the Category

Office space in the *HEGIS 300 room use code* series that is typically addressed in *planning standards* includes:

- 310 Offices (the primary square footage)
- 315 Office Service
- 350 Conference Rooms
- 355 Conference Service.



UNC's currently published *Space Criteria* provide for different ASF per station allowances, depending upon personnel category and also differentiating between academic and non-academic areas. Conference room and conference service space criteria are provided based upon the number of stations in the conference room. These data are shown in Figure 11. Table 4 of Exhibit 6 (page EX-9) provides a summary of other state standards for office space.

UNC P	FIGURE UBLISHED SPACE (FFICES	
	Aca	demic rtments	Non-Academic Departments	
Personnel Category	Single Occupancy ASF/station	Multiple Occupancy ASF/station	Single Occupancy ASF/station	Multiple Occupancy ASF/station
Administrator-President	N/A	N/A	300±50	N/A
Vice-President	N/A	NA	240±30	N/A
Dean	240±20	N/A	N/A	N/A
Chair	180±20	N/A	N/A	N/A
Professional	120±10	90±10	120±20	90±10
Secretarial-Clerical	120±10	90±20	120±40	90±20
Graduate Assistants	N/A	50±10	N/A	N/A
Conference Rooms and Conference	e Room Service Facili	ties		
Stations	ASF/Station	Conference Room ASF		
-01	25	30	±5	
15	22	30±5		
. 20 (20	30±5		
25	20	30±5		
30	15	30	±5	

Format of Space Planning Standard and Units of Measure

The unit of measure for office space needs is usually FTEs of office users, which state systems define in various ways. Office space 310 *planning standards* typically are expressed as an ASF allowance per FTE of a category of personnel.

Discussion

State systems vary in their treatment. Some provide office ASF standard allowances separately for many categories of job titles; some for a few broad categories; and some provide a single office ASF allowance for all personnel categories/titles.

Similarly, some provide specific additional allowances for office service and for conference rooms, while others incorporate gross-up factors for these indirectly into the basic 310 office space allowance.

For UNC, it was determined that a single ASF allowance should be developed that incorporates all four of the HEGIS office *room use codes*, as a means of simplifying the *planning standard* for office space. In this recommendation, the proposed *Standard ASF* allowances for 310 space is grossed up to include an allowance for the other related HEGIS *room use sub-codes*: 315 Office Service; 350 Conference Rooms; and 355 Conference Room Service. This is a simplification for planning purposes and does not permit fine distinctions for allocations of square footage between actual offices, the related service space, and the related conference space. This approach permits a good deal of variation among the institutions for how they actually allocate and configure office-related space—within an overall *planning standard* allowance.

Program and Program Sub-codes. After discussion, the Task Force determined that certain categories of office space were not appropriate for inclusion in the *Actual ASF*. These categories were NCHEMS PCS *program code* 52—Social and Cultural Development, which is student organization office space, all Physical Plant office space with the exception of NCHEMS PCS *program code* 71—Physical Plant Administration, and NCHEMS PCS *program codes* 91 and 92—Independent Operations. Exhibit 11 (pages EX-27 to EX-29) shows the *Actual ASF* for each of the four *room use sub-codes* by NCHEMS PCS *program codes* and total adjusted office space by institution.



FTE Employees. The Task Force also felt it was necessary to determine categories of FTE personnel for which different ASF allowances are appropriate. After extensive discussions, the Task Force decided to use the IPEDS-S PDF report which provides an FTE count of employees in the defined categories of Administrative, Instructional, Professional, Technical, Clerical, and Graduate Students (headcount only) for permanent (part-time or full-time, eligible for benefits) and temporary (part-time or full-time, not eligible for benefits) categories..

After further discussion and analysis, it was concluded that IPEDS-S PDF personnel categories would be combined into five categories that represent different levels of office space needs. These categories are Administrative, Instructional/Professional, Technical/Clerical, Graduate Assistants, and Student Employees.

Temporary Student Employees. The Student Employee FTE would be a combination of Temporary Student Wages and Work-Study Students. To determine the FTE count for temporary student wage employees, the student wage expenditures for each constituent institution, as reported to UNC General Administration in the NCHED-EXP(A) 1996-97 report as Object Code 1450, were divided by an estimated hourly rate of seven dollars to provide the number of hours worked; this number was then divided by 2,080 hours to determine the number of FTEs. Based upon a survey of several UNC institutions, it was determined that approximately 50 percent of this total of temporary student wage employees work in the Academic/Administrative areas and would require work space. The other 50 percent of temporary student wage employees who are employed in areas such as Athletics, Student Union, Library, and Residence Halls would not require work space. Thus, the FTE number was further divided by two to predict FTE temporary student wage employees requiring work space.

Work-Study Students. The Program Assessment Report provides data for the Work-Study students as a headcount. The Work-Study student headcount was multiplied by 30 percent to determine the FTE for Work-Study employees. The rationale is that Work-Study students generally are employed for 20 hours per week for 32 weeks, or 30 percent of an FTE (2,080 hours).



The employee count used in Table 12 includes all permanent and temporary FTEs, graduate assistants, and student employees as reported by the individual institutions through the IPEDS-S PDF, the Program Assessment Report, and NCHED-EXP(A).

Other FTE Employees. There are also employees on each campus that have offices on the campus but do not appear in the IPEDS-S PDF. An allowance of two percent of the initial calculation for *Standard ASF* has been added to accommodate this need for office space. Examples of this type of employee are ROTC instructors, *emeriti* professors, and service contractors.



Exhibit 12 (page EX-30 to EX-31) shows the data and the appropriate calculations to determine FTE counts for each of the personnel categories, based on Fall 1996 and Fall 1997 data.

Recommendations



Based on the above, the following is recommended for office space standards.

Include HEGIS 310, 315, 350, and 355 (office, office service, conference room, and conference service) in a single ASF allowance, rather than establishing allowances separately for each of the four HEGIS subcategories.

Establishing the standard in this way allows flexibility for the actual configurations and allocations of space between individual offices and related support or conference space. For the purpose of the *planning standard*, an aggregated calculation represents combined total needs for individual offices, related support space, and conference room and conference service space.



#13: Establish five ASF allowances for five categories of personnel as follows:

HEGIS Room Use Code	310	<i>355</i>	Total
Personnel Category			
Administrative	225	50	275
Instructional & Professional	140	50	190
Technical and Clerical	90	50	140
Graduate Assistants	60		60
Student Employees	25		25

The office space allowance includes a "base" allowance for 310 offices plus a gross-up of 50 ASF per employee for conference rooms, conference room service, and office support space for the first three categories. The actual office sizes then would be 225 ASF for Administrative, 140 ASF for Instructional and Professional (average of 120 ASF for Instructional and 160 ASF for Professional), and 90 ASF for Technical and Clerical. There are no conference room or office support gross-up allowances for graduate students or temporary student wage employees.

Analysis of Variance from Standard



Figure 12 provides a comparison of *Actual ASF* for UNC institutions with the *Standard ASF* needs based on the proposed *planning standard*, and shows the calculation of *Variance from Standard*. The table shows the FTE counts for each of the four categories—Administrative, Instructional and Professional, Technical and Clerical, and Temporary Student Employees; and the headcount for Graduate Assistants. The calculation shows the application of the differentiated standards for FTE categories above.

Based on these calculations:

- Eleven institutions, NC State, UNC-Greensboro, Appalachian State, Fayetteville State, NC A&T, NC Central, UNC-Pembroke, UNC-Wilmington, Western Carolina, Elizabeth City State, and Winston-Salem State have variances that indicate available capacity.
- ➤ Allowing for a plus or minus error factor of ten percent, four of these eleven institutions, NC State, UNC-Greensboro, UNC-Wilmington, and Western Carolina are at or below office space capacity. The remaining seven institutions would still have some excess office capacity.

- ➤ Five institutions, UNC-Chapel Hill, East Carolina, UNC-Charlotte, UNC-Asheville, and the NC School of the Arts have negative variances of office space.
- ➤ A possible factor for the significant negative variances at UNC-Chapel Hill and East Carolina may be the inclusion of large numbers of personnel at the hospitals who are in the FTE counts, but who do not require office space. This issue needs further exploration.
- > In reviewing positive variances it must be remembered that there are buildings in the UNC system that were designed in another era and may not be readily adaptable to today's standards for office configurations.

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	8.0%		31.0% 15.8% 24.3% 16.0% (115)% 27.0% 4.7%	(10.1)% 12.5% 49.9% (6.8)%	
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LIBRARY SPACE PLANNING STANDARDS

Definition of the Category

In the *HEGIS room use code* 400 series, the following *room use sub-codes* typically are included in Library *space planning standards*:

Study Rooms (study or reader space)
Stack Space
Open-Stack Study Room (combined stack and reader space)
Processing Room
Study Service.

In totality, campus Library Space includes central libraries, specialized libraries and Library Space in residence halls and other buildings. For this analysis, only the space that is coded under the five *room use sub-codes* above in the HEGIS 400 series that also was coded for NCHEMS PCS program code 41—Library Services is included.

Format of Space Planning Standard and Units of Measure

Planning standards for stack and open-stack study space are based on a unit measure of library volumes. Collection materials other than books must be converted into "volumes." Then the standard is expressed as an ASF allowance per volume, or as a number of volumes per ASF.

Study space (reading room space) typically is based on FTE users, using a formula that includes a percentage of faculty and a percentage of students. It often is expressed as a *Station Size* (of a reading station) multiplied by a percentage of FTEs.

Processing rooms (440 and service space (455) often are expressed as a percentage of the study and stack space.

Discussion

For study space, the survey revealed a range of approximately 5 to 9 ASF per FTE student and faculty. Many were expressed as 25 to 30 ASF per 25 percent of students only. Others were based on a combined percentage of FTE students and faculty. For example, Utah's standard is 26 ASF/station for 20% of FTE students and for 12.5% of FTE faculty.

Stack space standards ranged typically from 0.025 to 0.15 ASF per volume. Commonly given ranges were 0.07 to 0.10 ASF or 0.05 to 0.12 ASF. The average of the survey sample was 0.78 ASF per volume.



When carrel space standards were provided, they were given as station sizes of 25 to 30 ASF. Table 5 of Exhibit 6 (page EX-10) provides a summary of other state standards for Library Space. Exhibit 13 (page EX-32) shows the Actual ASF and calculations for study room, stack, service spaces, and the total Actual ASF, as well as FTEs for students and faculty.



UNC's Space Criteria currently provide detailed guidelines for Library Space types, as shown in Figure 13.

Figure 1 UNC Published Space Criteria fo		ble 11)
Type of Stack Area	Average Bound Volumes/ASF	Average ASF/Volume
Open-stack study rooms	8-10	0.125-0.10
Open stacks	10-12	0.10-0.083
Closed stacks	12-15	.0.083-0.067
High Density Compact Storage	40-60	0.025-0.017
Type of Reading/Study Station	ASF/Station	
Open tables and chairs	20-25	
Small carrels	25-30	
Research carrels (open)	30-35	
Enclosed studies (faculty)	40-70	
Microfilm and Audio/visual carrels	35-45	
Typing stations (Multiple stations in an enclosed room)	25:35	
Reading Lounge	25-30	
Conference rooms, seminar rooms, and small- group studies	20-25	

To perform this analysis, library materials statistics for UNC libraries were converted to "volumes" using CEFPI guidelines as follows:

Materials	# to Equal One Volume
Microforms	80
Audio-visual materials	5
Other flat materials	8



Exhibit 14 (page EX-33) provides the calculations of UNC library materials to arrive at the number of volumes for predicting library stack space needs.

Recommendations



The following recommendations are based on a general sense of the trend in the survey sample.

Establish space planning standards for "central libraries" only, excluding from the calculation Library Space that may exist in other facilities. This includes only Library Space reported under Program Code 41— Library Services.



Based on how Library Space is coded, law libraries at UNC-Chapel Hill and at NC Central are included, as are the separate libraries at NC State for Textiles, Natural Resources, and Veterinary Medicine. Health Affairs libraries at UNC-Chapel Hill and at East Carolina are coded as NCHEMS PCS program code 41 and are included in the standards and calculations.

#15: Establish the Study/Reading space standard at 25 ASF per station for 20% of FTE students plus 8% of FTE faculty. Use 410 Stack space plus half of 430 Open Stack/Study Room space

This allowance for Study/Reading space is within the ranges found in the survey of other states. In those data, 25 ASF per study station is a common standard, in cases where the ASF allowance is applied to a fractional percentage of students and faculty. Twenty percent of students and 8 percent of faculty also is within the norms.

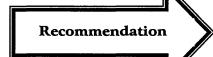
to represent actual Study/Reading space ASF.



#16: Establish the Stack space standard at 0.08 ASF per volume, and apply the volume calculations based on the CEFPI standards for determination of the number of volumes. Use

determination of the number of volumes. Use 420 Stack space plus half of 430 Open Stack/Study Room space to represent actual

Stack space ASF.



Establish the Service space standard at 15% of the combined predicted requirement for Study/Reading and Stack space.

Analysis of Variance from Standard



#17

Figure 14 provides the calculations for Standard ASF and Variance from Standard of Library Space based on these proposed planning standards. In Figure 14, from calculations shown in Exhibit 12 for Study Room space, 100% percent of student and faculty FTEs are shown, and the calculation for the Standard ASF for Study Room uses 20 percent and eight percent respectively, times the planning standard of 25 ASF for Study Room space. Also, Study Room space is 410 plus half of 430; Stack space is 420 plus half of 430. The Standard ASF for Stack space is calculated by multiplying the volumes times the planning standard of 0.08. Volumes are from the calculation shown in Exhibit 14. The Standard ASF for Service space is 15 percent of the Standard ASF for Study Room and Stack space.

These calculations indicate that:

Six institutions show significant negative variances of library facilities ranging from 13.7 to 52.9 percent. These are NC State, UNC-Greensboro, East Carolina, Appalachian State, UNC-Charlotte, and UNC-Wilmington.

- ➤ Five institutions fall within the plus or minus error factor of ten percent and therefore, might be considered in need of additional library space. These are UNC-Chapel Hill, NC Central, UNC-Pembroke, Elizabeth City State, and the NC School of the Arts.
- ➤ Five institutions show positive variances. These are Fayetteville State, NC A&T State, Western Carolina, UNC-Asheville, and Winston-Salem State.
- ➤ It was noted in discussions that several of the institutions currently showing significant negative variances have plans for, or are in the process of, building or expanding their current library facilities.
- > The need for library stack space will continue to grow each year as volumes are added to collections. However, the need for study space in central libraries is likely to remain static or even decline, as increased use of personal computers and Internet data access replace the need, in some cases, for faculty or students to physically use library reading space. The exact manner of impact of these trends for UNC institutions cannot be expressed at present. However, it is possible that some of these calculated deficits, therefore, are not serious problems, if technology resources on the campuses are adequate to allow students and faculty to do some study/research work without a physical presence in the libraries.
- > Space needs for processing and service also may change as (perhaps) fewer bound volumes are processed but greater needs for space in which to provide database access may emerge.

% Instit'1 Share of System Capacity	(47.7)% (6.5)% (10.6)%	(1922)% 2.3% 4.1% 0.4% (0.3)% (5.0)%	0.7% 2.0% (0.2)% 1.00%
% Inst'1 % Inst'1 Variance to Standard	(43.5)% (3.8)% (24.0)%	(52.9)% 20.4% 17.0% (46.0)% (3.1)% (13.7)% 33.9%	21.7%
FIGURE 14 FROM STANDARDS, AND SYSTEM CAPACITY PERCENTAGES FOR 400 STUDY FACILITIES Stack Stack Service Service Space Space Total Total Variance Space Space Space Standard Actual Standard Actual Standard from From O.08 15%	(167,863) (22,939) (37,460)	(67,599) 8,265 14,403 1,419 (68,629) (1,101) (17,476) 28,832	2,498 7,013 (801) (351,815)
(400 STUR	385,597 609,282	127,816 40,556 84,719 80,662 151,408 35,275 127,126 84,984	2
VYAGEES FOR	217,734 586,343 1118,503 173,881	60.217 48.821 99.122 82.081 81.779 34.174 109.630	28,934 39,384 1,879,449 fairs libraries a ents.
Service Space Standard ASF 15%	50,295 79,472 20,348	10,672 11,050 11,050 19,749 4,601 16,582 11,085	3,448 4222 2,433 291,034 ECU Health Af Isititution s graduate stud
Service Space Actual ASE 440/455	12,606 86,010 13,538		5,263 3,672 2,625 270,689 UNC-CH and hiversities by ir. H Health Affairn
FIGURE 14 ARDS, AND SYS k Stack c Space al Standard ASF 30 0.08	215,833 418,102 81,181	51.692 17.768 38.315 44.863 62.228 17.378 67.800 43,170	13,617 15,029 15,029 1,234,680 12,234,680 20leges and Ur CU and UNC-C faculty
FIGE STANDARDS Stack Space Actual ASF 420/430	378,597 84,130	29.328 15,455 45.953 40,602 32,922 26,122 50,314 53,049	0,209 10,386 13,617 5,263 3,448 28,934 26,436 7,857 16,332 15,029 3,622 3,448 28,934 26,436 7,857 16,352 15,029 2,021 2,432 2,433 17,852 1,234,680 2,021,034 1,879,449 2,231,264 997) in North Carolina Colleges and Universities by Institution at Vet Medicine and ECU and UNC-CH Health Affairs graduate students. Room Codes, Fall 1997, NC Commission on Higher Education Facilities
Volumes	2,697,918 5,226,270 1,014,762 1,349,232	646,149 222,099 478,932 560,788 777,856 217,227 847,504 539,625	City State 2,008 2,04 2,7430 13,746 300,072 20,301 20,070 13,121 0,393 0,1,100 49,0 City State 1,829 113 13,285 9,371 170,209 10,386 13,617 5,263 3,448 28,934 26,4 Scd Instruct 2,556 170 19,411 13,120 187,857 16,329 3,622 42,22 39,384 26,4 Acd Instruct 2,556 170 19,411 13,120 187,857 1,029 3,622 42,22 39,384 26,4 Act Instruct 2,556 170 19,411 13,120 187,834,97 1,045,572 1,234,680 270,689 291,034 1,879,449 2,231,20 Actual Noblemes are from Table 54: Library Resources (1986-97) and Services (Fall 1997) in North Carolina Colleges and Universities by Institution 1,879,449 2,231,20 Student FTEs are from Table 12, Facilities Inventory, 1997 and include Permanent and temporary faculty. 2,625 2,91,034 1,879,449 2,231,20 Student FTEs are from IPEDS-S Survey Categorie
CAUCULATIONS OF STANDARD ASP VARIANCES Study Student Faculty Room Room Student Faculty Actual Standard AI FTES 410/430 25 ASF	119,468 111,709 54,439	59,452 17,498 33354 25,278 69,431 13,296 42,744 30,729	9,371 13,120 13,120 705,550 Natural Resourc -97) and Service 1997 and incluc Fall 1997, and in
Study Study Room Actual ASE 410/430	56,434 129,011 20,836 59,321		13,285 19,411 576,727 576,727 Esources (1996 illities Inventory, rey Categories, of Assignable A
TONS OF FILE	2,227		1,829 113 2,556 170 137,192 9,795 des libraries for Vet Medicine are from Table 54: Library RTEs are from IPEDS-S Surviom Table 38: Distribution or
10.00 to 10	23,226	3,414 6,870 4,932 13.585 2,592 8,382 6,007	2,000 1,829 2,556 137,192 14des libraries for a are from Table e t FTEs are from I
HEGIS Room Use Code	NC State NC State Vec UNC State Vec UNC Chapel Hill UNC Groensborn Doctoral Univ. I: UNC Greensborn Doctoral Univ. II: East Carolina	Masters/Comp. Colleges/Univ. I: Appalachian State Fayetteville State NC A&T State NC Central UNC-Charlotte UNC-Pembroke UNC-Pembroke UNC-Wilmington Western Carolina Bac. Colleges I:	
HEG	NC State NC State Vet NC State Vet UNC-Chapel H UNC-Chapel H Doctoral Univ UNC-Greensby Doctoral Univ Esst Carolina -	Masters/Co Colleges/Ur Appalachian Fayetteville NC A&T St NC Central UNC.Charl UNC.Charl UNC.Charl UNC.Wilm Westem Ca	Bac. Co Elizabel Winsto Speciali NC Sd UNC-Sy Note: Sources:

EXHIBITS

EXHIBIT 1 – AD HOC TASK FORCE AND WORKING GROUP MEMBERS

UNC AD HOC TASK FORCE ON SPACE PLANNING STANDARDS

- Dr. J. Alan Boyette, Associate Provost for Academic Administration, UNC-Greensboro
- Ms. Clementine Cone, Vice Chancellor, Finance and Administration, Winston-Salem State University
- Mr. Bruce L. Flye, Facilities Planning, Design, and Construction, East Carolina University
- Ms. Brenda A. Freeman, Coordinator, Institutional Research, Fayetteville State University
- Mr. Robert E. Fry, Assistant to the Chancellor for Planning, and Director, Institutional Research, UNC-Wilmington
- Mr. R. Neil Hawk, Vice Chancellor, Business Affairs, UNC-Pembroke
- Ms. Kathleen McGaughey, Associate Provost for Finance, UNC-Chapel Hill
- Mr. Bob J. Wells, Associate Vice Chancellor, Facilities Management, UNC-Charlotte
- Mr. George Worsley, Vice Chancellor, Finance and Business, NC State University

UNC-GENERAL ADMINISTRATION WORKING GROUP

- Dr. Roy Carroll, Vice President, Academic Affairs
- Mr. Jeffrey R. Davies, Associate Vice President, Finance
- Mr. Henry Holmes, Associate Vice President, Finance
- Mr. D.G. Martin, Vice President, Public Affairs
- Mr. William McCoy, Vice President, Finance
- Mr. David McFadden, Assistant Director, Higher Education Facilities Commission
- Dr. Judith Pulley, Vice President, Planning

EXHIBIT 2 – HEGIS ROOM USE CODES & SUB-CODES

100	Classroom Facilities	640	Day Care
110	Classroom	645	Day Care Service
115	Classroom Service	650	Lounge
		655	Lounge Service
200	Laboratory Facilities	660	Merchandising
210	Class Laboratories	665	Merchandising Service
215	Class Laboratories Service	670	Recreation
220	Open Laboratory	675	Recreation Service
225	Open Laboratory Service	680	Meeting Room
250	Research/Nonclass Laboratory	685	Meeting Room Service
255	Research/Nonclass Laboratory Service	700	Construct Committee
	·	700	Support Services
300	Office Facilities	710	Central Computer or Telecommunications
310	Office	715	Central Computer or Telecommunications
315	Office Service	700	Service
350	Conference Room	720	Shop
355	Conference Room Service	725	Shop Service
		730	Central Storage
400	Study Facilities	735	Central Storage Service
410	Study Room	740	Vehicle Storage
420	Stack	745	Vehicle Storage Service
430	Open-Stack Study Room	750	Central Service
440	Processing Room	755	Central Service Support
455	Study Service	760	Hazardous Material
	·	765	Hazardous Material Service
500	Special Use Facilities	800	Health Care Facilities
510	Armory	810	Patient Bedroom
515	Armory Service	815	Patient Bedroom Service
520	Athletic or Physical Education	820	Patient Bethoom Service
523	Athletic Facilities Spectator Seating	830	Nurse Station
525	Athletic or Physical Education Service	835	Nurse Station Service
530	Media Production		
535	Media Production Service	840	Surgery Surgery Service
540	Clinic	845 850	Treatment/Examination
545	Clinic Service	855	Treatment/Examination Service
550	Demonstration	860	
555	Demonstration Service	865	Diagnostic Service Laboratory Diagnostic Service Laboratory Support
560	Field Building	870	Central Supplies
570	Animal Quarters	880	Public Waiting
575	Animal Quarters Service	890	Staff On-Call Facility
580	Greenhouse	895	Staff On-Call Facility Service
585	Greenhouse Service	073	Staff Off-Call Facility Service
590	Other (All Purpose)	900	Residential Facilities
600	General Use Facilities	910	Sleep/Study Without Toilet or Bath
		919	Toilet or Bath
610	Assembly	920	Sleep/Study With Toilet or Bath
615	Assembly Service	935	Sleep/Study Service
620	Exhibition	950	Apartment Service
625	Exhibition Service	955	Apartment Service
630	Food Facility	970	House
635	Food Facility Service	- • •	

EXHIBIT 3 – NCES CLASSIFICATION OF INSTRUCTIONAL PROGRAMS (CIP) CODES

- Agricultural Business and Production
 Agricultural Sciences (excludes 03 and 31)
 Conservation and Renewable Natural Resources
 Architecture and Environmental Design
 Area and Ethnic Studies
- O5. Area and Ethnic StudiesO8. Marketing Operations
- 09. Communications
- 10. Communication Technologies
- 11. Computer and Information Sciences
- 12. Personal and Miscellaneous Services
- 13. Education (excludes 21 and 41)
- 14. Engineering
- 15. Engineering-Related Technologies (excludes 41)
- 16. Foreign Languages and Literatures
- 19. Home Economics
- 20. Vocational Home Economics
- 21. Technology Education/Industrial Arts
- 22. Law
- 23. English Language and Literature/Letters
- 24. Liberal Arts and Sciences, General Studies and Humanities (excludes 05, 09, 16, 23, 38, 39, 42, and 45)
- 25. Library Science
- 26. Biological Sciences/Life Sciences (excludes 51)
- 27. Mathematics
- 29. Military Technologies
- 30. Multi/Interdisciplinary Studies
- 31. Parks and Recreation

- 38. Philosophy and Religion
- 39. Theology
- 40. Physical Sciences
- 41. Science Technologies (excludes 15)
- 42. Psychology
- 43. Protective Services
- 44. Public Administration and Services
- 45. Social Sciences (excludes 42)
- 46. Construction Trades
- 47. Mechanics and Repairs
- 48. Precision Production
- 49. Transportation and Material Moving
- 50. Visual and Performing Arts
- 51. Health Sciences and Allied Health Services
- 52. Business Management and Administrative Services (excludes 08)

Reserve Officers Training Corps (ROTC)

28. Reserve Officer Training Corps

Personal Improvement and Leisure Programs

- 32. Basic Skills
- 33. Citizenship Activities
- 34. Health-Related Knowledge and Skills
- 35. Interpersonal and Social Skills
- 36. Leisure and Recreational Activities
- 37. Personal Awareness and Self Improvement

EXHIBIT 4 -NCHEMS PROGRAM CLASSIFICATION STRUCTURE (PCS)

10 INSTRUCTION

- 11 General Academic Instruction (Degree-related)
- 12 Vocational/Technical Instruction (Degree-related)
- 13 Requisite Preparatory/Remedial Instruction
- 14 General Studies (Nondegree)
- 15 Occupational-related Instruction (Nondegree)
- 16 Social Roles/Interaction Instruction (Nondegree)
- 17 Home and Family Life Instruction (Nondegree)
- 18 Personal Interest and Leisure Instruction (Nondegree)

20 RESEARCH

- 21 Institute and Research Centers
- 22 Individual or Project Research

30 PUBLIC SERVICE

- 31 Direct Patient Care
- 32 Health Care Supportive Services
- 33 Community Services
- 34 Cooperative Extension Services
- 35 Public Broadcasting Services

40 ACADEMIC SUPPORT

- 41 Library Services
- 42 Museums and Galleries
- 43 Educational Media Services
- 44 Academic Computing Support
- **45** Ancillary Support
- 46 Academic Administration
- 47 Course and Curriculum Development
- 48 Academic Personnel Development

50 STUDENT SERVICE

- 51 Student Service Administration
- 52 Social and Cultural Development
- 53 Counseling and Career Guidance

- 54 Financial Aid Administration
- 55 Student Auxiliary Services
- 56 Intercollegiate Athletics
- 57 Student Health/Medical Services

60 INSTITUTIONAL ADMINISTRATION

- 61 Executive Management
- 62 Financial Management and Operations
- 63 General Administration and Logistical Service
- **64** Administrative Computing Support
- 65 Faculty and Staff Auxiliary Services
- 66 Public Relations/Development
- 67 Student Recruitment and Admissions
- 68 Student Records

70 PHYSICAL PLANT OPERATIONS

- 71 Physical Plant Administration
- 72 Building Maintenance
- 73 Custodial Services
- 74 Utilities
- 75 Landscape and Ground Maintenance
- 76 Major repairs and Renovations

80 STUDENT FINANCIAL SUPPORT*

- 81 Scholarships
- 82 Fellowships

90 INDEPENDENT OPERATION

- 91 Independent Operations/Institutional
- 92 Independent operations/External agencies

00 UNASSIGNED**

- 01 Capable of Use
- 02 Incapable of Use
- 03 Building Service
- The 80-Student Financial Support series is not used in institutional room inventories.
- ** Program series 00-Unassigned is not a Program Classification Structure category. It has been created exclusively for use in NC institutional room inventories.

EXHIBIT 5 – UNC'S CIP DISCIPLINE GROUPS FOR OPERATING BUDGET FORMULA

As of September 1997, UNC discipline groups that will be used in operating budget development are as follows:

Category 1			16	Foreign Languages/Literature
	3 3		19	Home Economics
23	Englis	sh Lang/Literature	22	Law & Legal Studies (non FP)
24		al Arts & Sciences	26	Biological Sciences/Life Sciences
27	Math	ematics	31	Parks, Recreation, Leisure & Fitness
29		ary Technologies		Studies
30		/Interdisciplinary Studies	52	Business Management & Admin Services
38 Philosophy & Religion				, and the second
39		ogical Studies	Cate	gory 3
42	Psych			8-7-
43		ctive Services	01	Agriculture Business & Production
44		Admin & Services	02	Agricultural Sciences
45		Sciences & History	03	Conservation & Renewable Natural
68		ulture Institute (NCSU only)	33	Resources
90	_	(including):	04	Architecture & Related Programs
	10	Communications Technology	11	Computer & Information Sciences
	11	Personal & Misc. Services	15	Engineering-Related Technologies
	20	Vocational Home Economics	25	Library Science
	46	Construction Trades	40	Physical Sciences
	47	Mechanics and Repairers	41	Science Technologies
	48	Precision Production Trades	50	Visual and Performing Arts
	49	Transportation & Material	51	Health Professions & Related Sciences
		Movement Workers	66	Nursing
Cate	gory 2		Cate	gory 4
05	Area :	Studies	14	Engineering
08	Mark	eting Operations		
09	Comr	nunications		
13	Educa	ation		
Exclu	ıded:	11.00		
	61	Law (FP only – NCCU & UNC-C	H)	
	62	Veterinary Medicine		. •
	63	Medicine		
	64	Dentistry		
	65	Pharmacy		
		<i></i> /		

EXHIBIT 6 – SUMMARY OF OTHER STATE SURVEY FINDINGS

TABLE 1						
SUMMARY OF CLASSROOM SPACE STANDARDS (110)						
State/ System Range	Weekly Room Hours (hrs/wk) 24 to 40	Station Occupancy Ratio (%) 60 to71%	Station Occupancy (hrs/wk) 18 to 35	Station Size (ASF) 14 to 22	Space Factor (ASF/ WSCH) 0.43 to 1.0	
Mean	31.7	63.43	22.3	16.6	0.85	
Arizona	30	60%	18.00	18	1.00	
California (CSU)	35	66%	35.00	15	0.429	
California (UC)	30	71.4%	25.00	15	0.55	
Colorado	30	67%	20.00	15	0.75	
Florida	40	60%	24.00	22	0.92	
Illinois	30	60%	30.00	14	0.778	
Kansas	30	60%	18	15	0.833	
Minnesota	30	65%	30	16	0.89	
Montana	31.5	67%	31.5	15	0.711	
Nebraska	30	65%	19.5	16	0.821	
New Hampshire	30	60%	18.0	16	0.889	
New Jersey	30	67%	20.0	16	0.80	
New York (CUNY)	30	60%	18.0	16	0.89	
North Carolina	30	65%	19.5	18	0.923	
Oregon	33	60%	19.80	16	0.808	
Pennsylvania	37.5	67%	25	20	0.796	
South Carolina	35	65%	18.0	16	0.923	
South Dakota	30	60%	18.0	16	0.889	
Tennessee	30	67%	20.0	16	0.75	
Texas	38	66.67	25.0	by program area		
Utah	33.75	66.7%	22.5	18	0.80	
Virginia	24	60%	24.0	by pro	gram area	
* Washington	30	60%	18.00	16	0.889	
* Wisconsin	33	60%	19.80	18	0.909	
* Wyoming	33	60%	19.80	18	0.909	

^{*} Survey data supplemented with data from The Enrollment Capacity of the Main Campuses of Washington's Public Four-Year Institutions of Higher Education, State of WA HE Board (6/97).

Table 2 Summary of Class Laboratory Space Standards (210)						
State/System Range Mean	ASF/ Station 15 to 244 75.7	Weekly Room Hours (hrs/wk) 20 to 27.5	Station Occupancy Rate (%) 44 to 85% 79.9%	Room Occupancy Rate (hrs/wk) 13 to 23.4	Space Factor (ASF/ WSCH) 1 to 10.4 4.23	
Arizona	53	22.5	80%	16.00	7.23	
California (CSU-LD)	45	27.5				
	40 to 90		85%	23.4	0 45	
California (UC)			aries by activity cat		2 to 4.5	
Colorado	25 to 200	20	80%	16.00		
Florida (LD)	20 to 155	24	80%	19.20		
Illinois	30 to 160	20	80%	16.0		
Kansas	49	20	80%	16.00	1.6 to 10.4	
Minnesota	16 to 244	20	80%	20.00	l to 8	
Montana			Varies by discipli	ne		
Nebraska	15 to 182	20	65%	13.00		
New Hampshire (LD)		24	70%	16.8		
New Jersey	25 to 110	20	44%	20.00	1.79 to 7.86	
New York (CUNY)	25 to 110	20	80%	16.00		
North Carolina (LD)		24	80%	19.20		
Oregon (LD)	35 to 110	22	80%	17.60		
Pennsylvania	50	23	70%	16.10	3.11	
South Carolina (LD)	30 to 160	22-24	85%	Varies		
South Dakota		20	85%	17.00		
Tennessee	60	24	80%	14.40	3.125	
Texas		25	80%	20.00		
Utah	65	22.5	60%	22.25	4.8	
Virginia	42.5 to 50	18	80%	18.00		
*Washington		20	80%	16.00		

Note: Survey data supplemented with data from The Enrollment Capacity of the Main Campuses of Washington's Public Four-Year Institutions of Higher Learning, State of Washington Education Board, June 1997.

SUMMARY	TAI OF RESEARCH FAC	BLE 3	NDARDS (25)	0/255)
State/System Range	Research Labs (ASF)	ASF/ Faculty 20 to 500	ASF/Grad Student	ASF/Post- Doc 50 to 250
Mean		240	120	100
Mean	+	240	120	100
Arizona	CEFPI ranges			
California (CSU)	CEFPI ranges			
California (UC)		50-500	50-250	50-250
Florida		Ranges by di	scipline	
Illinois	Based on FTE re	search staff and	factors for each	discipline
Kansas	Ranges by disciplin	e for faculty and	d students for lab	s and offices
Minnesota		20-250	20-250	
Montana		Ranges by di	scipline	
Nebraska		Ranges by di	scipline	
New Hampshire		Ranges by di	scipline	
New Jersey		Ranges by di	scipline	
New York (CUNY)		Ranges by di	scipline	
Oregon	50-500 ASF/Researcher based on type of lab			
Pennsylvania	.5 x FTE faculty x 150-300 ASF based on type of module course			
South Carolina	ASF is determined by conducting research, technician HC, facult	masters HC, do	octoral HC, facult	
Texas	9,000 ASF for every 3 minimum of 3 ASF/F		ge 3 year research	expenditures,
Utah	ASF/FTE faculty prov	ided for 7 disci	pline groups (und	ler review)
Virginia	450-800 ASF per \$100,00 in annual research expenditures		Plus 10 ASF/FTE student	

				able 4				,
S	UMMARY (OF OFFICE	SPACE STA	ANDARDS	(310, 315	5, 350, ani	355)	
State/System	Executive & Admin	Faculty/	Prof. Staff	Sec/ Clerical Staff	Students/ Grad Assts	All Faculty & Staff Employees	Conference Rooms	Office Support Space
Range	140-480	110-195	110-190	35-170	40-170	125-190	15-50	6-40
Mean	234	162	143	112	79	143		
Arizona (CEFPI)	140-150	110-140	110-150	90-120	40-70		40-50 per FTE	20-40
California (CSU)	150-300	110	110	80-160	60		30-50	6-10
(000)	10000			00 100			per FTE	0.10
California (UC)		195 per acad FTE						
<u> </u>	150 000	100						
Colorado	150-300	120		80	60		15/station +30	11-30
Florida	,					145		

Illinois		135+30 sr. faculty	135		•••		Included in Support	15
Kansas	 					125-140		25
Kansas						123-140		25
Minnesota						120	Inc in Supp.	30
Montana						140		
Nebraska	195-315	135	135	35	75		18-25	
								
New Hampshire	290	160	160		55		18-22	
New Jersey					***	160		
Tren jeroey						100		
New York(CUNY)	180-480	120	120	80-120		80-120	18-25	
North Carolina	240-300	120-180	120	120	50		15-25 <u>+</u> 35	
Oregon						190		
Pennsylvania	190	190	190	150	120-140			
South Carolina	200-280	130-180	130-190	110-160	40-70			
Tennessee		9.33SF x total FTE						
Texas	170	190	170	170	170	170		
1 CA45	170	1 70	170	170	170	170		
Utah						130	40	
	L		l <u></u>	l		<u></u>		l

Notes: 1. All ASF except conference rooms are per FTE employee, except Tennessee, which is per FTE student enrollment.

^{2.} All conference room square feet are per station, except where noted.

^{3.} Virginia includes office space in "Instruction and Academic Support Space." Therefore, no standards are provided.

^{4.} For states that also have "multiple occupancy" office standards, these are omitted.
5. "Means" were derived by taking the mid-point of ranges, for those standards expressed as ranges.

State/System	Reading Space	Stack Space ASF/volume	Carrel Space
Range		0.025 to 0.15	
Mean		.078	
Arizona	seating capacity is 25% of student FTE		
California (CSU)	20% of projected FTEs, general purpose stations: 88% of total at 25ASF/station	.02510	10% of general purpose stations at 35 ASF/station
Colorado	Max of 25% of FTSE, 25 ASF for regular stations, 30 ASF for stations equipped for electronic use	.02510	
Florida	25 ASF for 25% of UG FTE	.0710	30 ASF/ station but varies by graduate, law, and science
Illinois	FTE UG x 5.25 NASF	.0310	
Kansas	25% of FTSE at 30 ASF/station	.087	
Minnesota	25 ASF/station for 25% of FTSE and Faculty FTE	.02	
Montana**	13.5 NASF/FTSE & FTE faculty	.15	
Nebraska	30 ASF/station for 15% of FTSE and 5% of faculty FTE	.0710	
New Hampshire	25 ASF/station for 25% of FTSE and faculty FTE	.0710	
New Jersey	8 NASF/FTE students and faculty	.10	30 NASF/station
New York (CUNY)	25 ASF/station for 15% of FTSE & 5% of faculty FTE	.0710	
New York (SUNY)**	5.32% of stack space	.0595085	
Oregon (LD)	25% of FTE & 25 NASF/FTE-UG & 30 NASF-grad	.0512	
Pennsylvania	15% (FTSE +FTE faculty) x 30 ASF	.0512	
South Carolina	15% (FTSE +FTE faculty) x 30 ASF	.0512	
Tennessee	9.0625 ASF x On-campus, daytime FTSE	.0710	
Texas	6.25 ASF/FTE + 3.0 ASF/FTE Faculty	.0310	
Utah	26 ASF/station for 20% of FTSE and for 12.5% FTE faculty	.0710	
Virginia		.0710	

EXHIBIT 7 WORKSHEETS FOR TEACHING LABS

								F	Table 1 for 210 Teaching Laboratories	r 210 T	Pachin	de I o	prator	ine											ſ
			>	Vorks	heet f	or Pro	pose	d Disc	Worksheet for Proposed Discipline Groupings and ASF Station Size Ranges and Actual ASF	roupin	igs and	1 ASF	Statio	n Size	Range	es and	Actual	ASE							
	H-I (4)			Inten	Intensive (3)					Moderately Intensive (2)	ly Intens								Non-In	Non-Intensive (I)	(1				
	Engnr.	Arch	Fine Arts		Health Lib Prof Sci	Phys Sci	Avg.	ΥK	Bio	Comp & Info	Educ	Fine Arts	Home Econ	Avg	Bus	Сотт	Fine Arts	Lang.	Law	Lett	Math	Psych	Pub Affrs	Soc	Avg.
UNC CIP Category	4	3	3	3	3	က	-	-	2	3	2	3	2	1	7	2	8	2	l	\vdash	⊢	-	-	-	
CEFPI ASF Ranges	70-160	08-09	50-150		0	20-90	79.3		20-65	40-60	35-40	45-60	20-60	51.8	30-40	40-50	30-35	30-40	40-50	<u> </u>	20-30	40-50		5 0	36.5
UNC ASF Ranges (Table 11)	40-70	40-50	50-80	25-50	H		Ц	30-40	30-40			30-50			20-30		15-20			15-25					
Target ASF Standard	108	70	70	70	70	70		20	50	20	20	20	20		33	33	33	33	33	33	33	33	33	33	
Research Universities I:					-		_																		
NC State	57.9	45.5			-	53.7	4	51.5	35.0	24.5	91.0			43.0	34.1		28.7			29.2	49.9	20.9	33.8	29.0	32.2
NC State Vet				136.1	-		_						7						1						
UNC-Chapel Hill	,			 -	4	20.1	4	1	39.3	38.3	69.3	48.4		48.8		41.6			18.8	1	\dagger	20.8	1	31.1	28.1
UNC-Chapel Hill-Health Attairs Ave-Research Univ I	63.4	45.5	\perp	102.3	4 6	51.9	49.9	51.5	37.2	31.4	65.2	48.4	T	67.3	34.1	41.6	28.7	T	18.8	29.2	49.9	20.9	33.8	30.1	30.2
9		L			-		L																		T
Doctoral Universities I:					Ц		Ш																		Γ
UNC-Greensboro				55	55.3	37.2	46.3		33.0		40.6	52.4	49.3	43.8									40.0	34.3	37.2
																							Ħ	H	
Doctoral Universities II:	,			1	-	_	4	\downarrow	0	000	3	ļ	-	,	!	ì			\dagger		100	i	Ì	,	Ş
East Carolina	7.78				1.70		20.0		23.7	27.3	770	07.0	777	40.7		31.0			†	31.1	38./	21.9	1	2	30.2
East Carolina-ricalth Alians				1	+	\downarrow					T	1	1	113.4	T			T	\dagger	1	\dagger		Ī	\dagger	T
Masters/Comprehensive				_	_		L				I		T	Ī	Ī			T		l	T			1	
Colleges/Universities I:					L		L																	T	
Appalachian State			L			34.8		_	34.7		57.1	26.7	46.8	48.8	15.1					20.6	23.3	40.3		41.2	28.1
Fayetteville State				L	L	25.4					36.6	41.1		37.3	42.1					42.2	55.2			17.0	39.1
NC A&T State	47.4	34.8		23	23.5	33.1		41.2	26.0		51.5		45.9	41.2	28.4		29.9			22.2		18.4		18.6	23.5
NC Central				72	5.5	37.0			Ц		46.2		42.4	40.0	39.1	54.1	35.3	25.7				25.8			36.0
UNC-Charlotte	43.4	51.2		٢	16.9	31.2	_		28.4		32.3			30.4			33.1	23.5				15.1		29.8	25.4
UNC-Pembroke				33	33.7	33.5	_		31.1			40.3	1	35.7				27.6		20.1	1			1	23.9
UNC-Wilmington					-	22.8	25.8		2.10		41.1	9	102	21.2	1		34.4	1	2 2 3	1	2.6.7	73.1	1	25.0	25.4
Western Caronna	925	43.0		44	44 6 69 1	4	┸	412		226	48.1	48 1	46.2	48.6	284	420	33.9	956	27.7	979	366	24.1	T	97.0	7.17
8		L				L	L	L															Ī	+	
Baccalaureate Colleges I:				L	L																_				
UNC-Asheville				Ц	H	37.5	37.5		34.3	34.7		49.6		39.5	47.5						32.9	20.2		37.7	34.6
**			\perp	4	+	\downarrow	\downarrow	\downarrow		T			1	1	1	T	T	1	+	1	1		1	1	
Baccalaureate Colleges II:	\downarrow			\downarrow	+	1,5	_	-		100	3		1	1	1	T		1	†	1	-	1	1	1	
Elizabeth City State					+	35.5	_		39.6	29.3	90.9		1	53.3	31.8	1	22.6	25.1	+	19.5	32.6	1	1	22.0	25.6
Winston Salem State	1			#	48.6	33.2	40.9		29.6	26.7	27.0		1	27.8	32.6	T	29.1	1	†	\dagger	15.1	7	1	7	25.6
Specialized Institutions:	1			\downarrow	+	\downarrow	\downarrow	1	\int	T	T		T	T	\dagger	T	T	T	\dagger	\dagger	\dagger	T	1	†	T
NC School of Arts			72.1	1	+	36.1	54.1	$oldsymbol{\downarrow}$	25.5		Ī	T	T	25.5	T			T	\dagger	T	\dagger	Ī	\dagger	\dagger	
					H		L	L	L															T	Ī
UNC-System Averages	55.4	47.1	52.5		72.4 62.1	43.9		49.5	45.1	27.5	58.4	52.5	46.4		31.5	41.8	52.5	25.6	23.3	27.9	30.3	21.1	40.0	30.0	

					Table ?	Table 2 for 210 Teaching Laboratories Worksheet for Fine Arts	Teachin	for 210 Teaching Labor Worksheet for Fine Arts	atories						
	Ap	Applied Design	ign		Dance		Dr	Dramatic Arts	rts		Totals			Art	
	Avg. ASF	SCH	Total ASF	Avg. ASF	SCH	Total ASF	Avg. ASF	SCH	Total ASF	Avg. ASF	SCH	Total ASF	Avg. ASF	SCH	Total ASF
NC State															
UNC-Chapel Hill							55.5	624.0	6,444	55.5	624.0	6,444			
UNC Greensboro				114.5	2,340.0	10,344	41.5	1,244.0	5,205	78.0	3,584.0	15,549			
East Carolina	70.1	582.0	2,104				57.3	2,418.0	17,897	63.7	3,000.0	20,001	63.9	8,097.0	28,035
Appalachian State							22.4		673	22.4	0.0	673	74.5	3,049.5	17,403
Fayetteville State													177.0	238.0	6,195
NC A&T State													33.2	945.0	1,992
NC Central										0.0	0.0	0	34.9	0.066	6,050
UNC-Charlotte				37.0	1,113.0	2,651	33.5	0'661	1,543	35.3	1,312.0	4,194	47.7	5,532.0	11,974
UNC-Pembroke	56.2	45.0	295						-	56.2	42.0	562	49.1	0.606	4,866
UNC-Wilmington							20.1	63.0	405	20.1	63.0	405	26.7	148.0	1,068
Western Carolina							59.3	231.5	2,135	59.3	231.5	2,135	77.4	1,076.0	6,105
UNC-Asheville	8.69	126.0	2,814							8.69	126.0	2,814	48.5	748.5	6,394
Elizabeth City State															
Winston-Salem													29.1	263.0	2,811
	1						i								
NC School of Arts	115.7	5,038.0	33,084	51.1	4,430.5	14,356	51.3	2,852.5	12,986	72.7	12,321.0	60,426			
Source: Data supplied by the NC Commission on Higher Education Facilities based on Fall 1997 Facilities Inventory.	I by the NC	Commissi Commissi	ion on Higl	her Educatic	on Facilitie	s based on	Fall 1997 <i>I</i>	Facilities Inv	entory.						

							£	hle 2 60	Pable 3 for 910 Teaching Laboratories	naching	Yohors	torios									
								Worksh	Worksheet for Health Professions	Health 1	Professi	ions									
	En	Environmental	ntal	W	Medical Lab	Lab										Health	Health Services.	ces.			
		Health	_	Τ̈́	Technology	Sy	F-4	Nursing		٦	General		Physic	Physical Therapy	apy	Man	Management	nt		Totals	
	Avg. ASF	SCH	Total ASF	Avg. ASF	SCH	Total ASF	Avg. ASF	SCH	Total ASF	Avg. ASF	SCH	Total ASF	Avg.	SCH	=	Avg.	SCH	le H	Avg.	SCH	Total ASF
NC State															+	+		┿			
UNC-Chapel Hill	154.5		2,365				41.2		2				52.3		836						
UNC Greensboro							55.3	459.0	2,211								-		55.3	459.0	2,211
East Carolina				33.4		1,666	104.8		1,677	44		2,222	42		2,498		-		56.0	0.0	8,063
																	 				
Appalachian State																					
Fayetteville State							26.6	634.5	1,914								-		26.6	634.5	1,914
NC A&T State							23.5	317.0	939										23.5	317.0	939
NC Central							46.3		1,665										46.3	0.0	1,665
UNC-Charlotte							23.7	2,010.0	2,546										23.7	2,010.0	2,546
UNC-Pembroke														-							
UNC-Wilmington														-					<u> </u>		
Western Carolina				36.8	461.0	1,470	46.3	357.0	2,065	33		525	46		3,110	53.6	135	804	43.1	953.0	7,974
																	-				
UNC-Asheville							-														
Elizabeth City State														<u> </u>							
Winston-Salem				31.3	169.0	1,413	83.2		866										57.3	169.0	2,411
NC School of Arts													-								
Source: Data supplied by the NC Commission on Higher Education Facilities	d by the	NC Con	unission	on High	er Educ	ation Fac		sed on Fa	based on Fall 1997 Facilities Inventory.	^c acilities I	nventory.										

EXHIBIT 8 -STANDARD ASF AND VARIANCES FROM STANDARD-TEACHING LABS

				TABLE 1						
CALCULATIONS OF STANDARD	ARD ASF /	IND VARIA	NCES FROM	A STANDAR	DS FOR 210	TEACHIN	3 LABS: H	[IGHEY-IN]	ASF AND VARIANCES FROM STANDARDS FOR 210 TEACHING LABS: HIGHLY-INTENSIVE CATEGORY	EGORY
			Engineering	5,0				Fine Arts	8	
	Avg.	nJo	Actual	Standard	Variance from	Avg.	нээ	Actual	Standard	Variance from Standard
Research Universities I:										
NC State	46.9	8,699.5	30,697	62,636	(31,939)					
NC State Veterinary Medicine										
UNC-Chapel Hill						55.5	624.0	6,444	4,493	1,951
UNC-Chapel Hill-Health Affairs										
Doctoral Universities I:										
UNC-Greensboro						78.0	3,584.0	15,549	25,805	(10,256)
Doctoral Universities II:										
East Carolina	82.1	130.0	1,477	936	541	28.7	3,000.0	20,001	21,600	(1,599)
East Carolina-Health Affairs										
Masters/Comprehensive										
Colleges/Universities I:										
Appalachian State						22.4	0.0	673	0	673
Fayetteville State										
NC A&T State	45.9	4,370.5	16,634	31,468	(14,834)					
NC Central										
UNC-Charlotte	53.3	2,109.0	8,722	15,185	(6,463)	35.3	1,312.0	4,194	9,446	(5,252)
UNC-Pembroke						56.2	42.0	562	302	260
UNC-Wilmington						20.1	63.0	402	454	(52)
Western Carolina	63.6	623.0	10,719	4,486	6,233	59.3	231.5	2,135	1,667	468
Baccalaureate Colleges I:										
UNC-Asheville						8.69	126.0	2,814	206	1,907
Baccalaureate Colleges II										
Elizabeth City State										
Winston Salem State										
Specialized Institutions:										
NC School of Arts						72.7	12,321.0	60,426	88,711	(28,285)
UNC-System Averages	55.4		68,249	114,710	(46,461)	1.69		113,200	153,385	(40,185)
Notes: 1. Proposed Standards: Station Size is 108 ASF, Weekly Room Hours(WRH) is 20, Station Occupancy Ratio is 75%, and the Space Factor is 7.20	n Size is 108	ASF, Weekly	Room Hours(VRH) is 20, St	ation Occupanc	y Ratio is 759	6, and the Sp	ace Factor is	7.20	

^{2.} Fine Arts included under "Highly Intensive" are Applied Design, Dance, and Dramatic Arts.
Source: Student Clock Hours, Average ASF/Station Size, and Actual ASF supplied by NC Commission on Higher Education Facilities based on Fall 1997 Facilities Inventory.

							TARIE 2								
	CALC	ULATIONS	OF STANDA	CALCULATIONS OF STANDARD ASF AND VARIANCES FROM STANDARDS FOR 210 TEACHING LABS: INTENSIVE CATEGORY	ID VARIANG	CES FRO	M STANDA	ARDS FOR	210 TEACH	ING LABS:	INTENSI	VE CATE	GORY		
			Agriculture	ure				Architecture	ire				Biological Science	Science	
	Avg.	· SCH	Actual	Standard ASF	Variance from Standard	Avg.	ноя	Actual	Standard	Variance from	Avg.	5	Actual	Standard	Variance
Research Universities I:	1	4								Cantagara	100	CAR	100	ASS	Stationard
NC State	40.3	3 4,556.0	14,668	21,261	(6,593)	47.6	6,816.0	25,989	31,808	(5,819)	34.2	4,936.0	15,381	23,035	(7,654)
NC State Veterinary Medicine															
UNC-Chapel Hill	_										40.4	5,322.0	13,669	24,836	(11,167)
UNC-Chapel Hill-Health Affairs	-														
Doctoral Universities I:	_														
UNC-Greensboro	L										38.2	3,678.0	10,316	17,164	(6,848)
Doctoral Universities II:						ļ									
East Carolina											33.9	7,195.0	11,584	33,577	(21,993)
East Carolina-Health Affairs	_														
Masters/Comprehensive															
Colleges/Universities I:	_														
Appalachian State	_										34.7	4,546.5	10,227	21,217	(10,990)
Fayetteville State											44.1	2,694.0	6,138	12,572	(6,434)
NC A&T State	41.2	2 1,055.0	6,779	4,923	1,856	34.8	212.0	834	686	(155)	26.0	0.806	4,622	4,237	385
NC Central											29.7	2,130.0	4,796	9,940	(5,144)
UNC-Charlotte	_					51.2	2,757.0	15,552	12,866	2,686	28.4	4,593.0	8,438	21,434	(12,996)
UNC-Pembroke											31.1	1,507.0	9/8/9	7,033	(157)
UNC-Wilmington											48.3	6,160.0	19,128	28,747	(619'6)
Western Carolina											34.5	2,439.0	7,188	11,382	(4,194)
Baccalaureate Colleges I:															
UNC-Asheville											34.3	1,549.5	5,472	7,231	(1,759)
Baccalaureate Colleges II:															
Elizabeth City State											39.6	1,302.0	5,014	9/0/9	(1,062)
Winston Salem State											27.6	2,077.0	4,475	69'6	(5,218)
Specialized Institutions:															
NC School of Arts											25.5	172.0	715	803	(88)
S	49.5	5	21,447	26,185	(4,738)	47.I		42,375	45,663	(3,288)	45.1		134,039	238,975	(104,936)
Note: Proposed Standards: Station Size is 70 ASF, Weekly Room Hours (WRH) is 20, Station Occupancy Ratio is 75%, and the Space Factor is 4.67 Source: Student Clock Hours, Average ASF/Station Size, and Actual ASF sumplied by NC Commission on Higher Education Facilities hased on Fall 1907 Eacilities Inventors	ation Siz	ze is 70 ASF,	Weekly Room	Hours (WRH)	is 20, Station (Occupancy ion on Hig	Ratio is 759 her Education	6, and the Sp.	tee Factor is 4.6	7 7 Facilities Inv	entony				
	0								2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 acmirico min	Carren y:				

						TAI	TABLE 2								
CALCU	JLATION	IS OF ST	ANDARD	CALCULATIONS OF STANDARD ASF AND	VARIANCES FROM STANDARDS FOR 210 TEACHING LABS: INTENSIVE CATEGORY	FROM S	TANDA	UDS FOR	210 TEAC	HING LABS	: Inter	NSIVE CAT	FEGORY		
			Health Professions	ofessions			I	Library Sciences	iences				Physical Sciences	iences	
	Avg. ASF	SCH	Actual ASF	Standard ASF	Variance from Standard	Avg. ASF	всн	Actual	Standard ASF	Variance from Standard	Avg. ASF	SCH	Actual	Standard ASF	Variance from Standard
Research Universities I:															
NC State											62.0	9,779.0	26,330	45,635	(19,305)
NC State Veterinary Medicine															
UNC-Chapel Hill											55.4	3,515.5	15,147	16,406	(1,259)
UNC-Chapel Hill-Health Affairs															
Doctoral Universities I:															
UNC-Greensboro	55.3	459.0	2,211	2,142	69						40.8	1,987.0	10,246	9,273	973
Doctoral Universities II:															
East Carolina						36.9	84.0	923	392	531	40.8	2,672.0	10,594	12,469	(1,875)
East Carolina-Health Affairs															
Masters/Comprehensive															
Colleges/Universities I:	_														
Appalachian State											34.8	2,514.0	12,927	11,732	1,195
Fayetteville State	26.6	634.5	1,914	2,961	(1,047)						37.3	1,741.0	7,833	8,125	(292)
NC A&T State	23.5	317.0	626	1,479	(540)						33.I	3,303.0	9,305	15,414	(6,109)
NC Central	46.3				1,665						31.1	1,115.0	9,211	5,203	4,008
UNC-Charlotte	23.7	2,010.0	2,546	088'6	(6,834)						29.7	5,167.0	190'6	24,113	(15,052)
UNC-Pembroke											33.5	653.5	5,806	3,050	2,756
UNC-Wilmington											46.0	5,408.5	17,681	25,240	(7,559)
Western Carolina	43.1	953.0	7,974	4,447	3,527						40.4	2,017.0	9,974	9,413	561
Baccalaureate Colleges I:															
UNC-Asheville											36.8	1,089.0	7,702	5,082	2,620
Baccalaureate Colleges II:															
Elizabeth City State											35.5	1,229.0	5,476	5,735	(259)
Winston Salem State	57.3	169.0	2,411	682	1,622						33.2	1,838.5	6,282	8,580	(2,298)
Specialized Institutions:															
NC School of Arts											36.1	240.0	649	1,120	(471)
UNC-System Averages	72.4		19,660	21,198	(1,538)	62.1					43.9		164,224	206,589	(42,365)
Note: Proposed Standards: Station Size is 70 ASF, Weekly Room Hours (WRH) Source: Student Clock Hours, Average ASF/Station Size, and Actual ASF supplied by	Size is 70 e ASF/Stat	ASF, Wee ion Size, a	kly Room H		i is 20, Station Occupancy Ratio is 75%, and the Space Factor is 4.67 by NC Commission on Higher Education Pacilities based on Fall 1997 Facilities Inventory	ccupancy on on Hig	Ratio is 7.	5%, and the	e Space Facto	r is 4.67	ties Inven	, i			

						E	6								
CALCUIATIONS OF STANDARD ASF AND VARU	S OF ST	ANDARI	ASF A	ND VARIAN	TABLE 3 ANCES FROM STANDARDS FOR 210 TEACHING LABS: MODERATELY-INTENSIVE CATEGORY	IA TANDA	LABLE 3 VDARDS FOR	210 TE	ACHING LA	BS: Model	RATELY-	Intensi	WE CATE	GORY	
			Commu	Communications			Comp	uter and l	Computer and Information				Education	ion	
	Avg. ASF	SCH	Actual ASF	Standard ASF	Variance from Standard	Avg. ASF	SCH	Actual ASF	Standard ASF	Variance from Standard	Avg. ASF	SCH	Actual	Standard ASF	Variance from Standard
Research Universities I:	L														
NC State						24.1	4,308.0	2,802	14,360	(11,558)	71.4	972.0	5,438	3,240	2,198
NC State Veterinary Medicine															
UNC-Chapel Hill	42.7	4,776.0	9,085	15,920	(6,835)	41.1	252.0	902	840	92	146.3	110.0	2,925	367	2,558
UNC-Chapel Hill-Health Affairs															
Doctoral Universities I:															
UNC-Greensboro											40.6	474.0	1,217	1,580	(363)
Doctoral Universities II:															
East Carolina	56.4	402.0	2,558	1,340	1,218	29.3	536.0	703	1,787	(1,084)	47.3	5,576.0	18,738	18,587	151
East Carolina-Health Affairs															
Masters/Comprehensive															
Colleges/Universities I:															
Appalachian State											26.8	5,412.5	27,689	18,042	9,647
Fayetteville State											36.3	368.0	2,641	1,227	1,414
NC A&T State											51.5	7,033.0	19,289	23,443	(4,154)
NC Central	54.1	413.0	1,352	1,377	(25)						45.9	649.0	7,994	2,163	5,831
UNC-Charlotte											42.5	1,984.0	6,010	6,613	(603)
UNC-Pembroke															
UNC-Wilmington	21.7		672	0	672						30.0	1,482.0	3,578	4,940	(1,362)
Western Carolina						15.8	667.5	009	2,225	(1,625)	17.4	522.0	1,147	1,740	(293)
Baccalaureate Colleges I:															
UNC-Asheville	12.4	135.0	572	450	122	34.7	178.5	1,172	595	577					
Baccalaureate Colleges I:															
Elizabeth City State						29.3	937.0	2,923	3,123	(200)	6.06	588.5	15,071	1,962	13,109
Winston Salem State						28.2	545.0	2,951	1,817	1,134	27.0	81.0	621	270	351
Specialized Institutions:															
NC School of Arts															
UNC-System Averages	41.8		14,239	19,087	(4,848)	27.5		12,056	24,747	(12,691)	58.4		112,358	84,173	28,185
Note: Proposed Standards: Station Size is 50 ASF, Weekly Room Hours (WRH) is 20, Station Occupancy Ratio is 75%, and the Space Factor is 3.33 Source: Student Clock Hours. Average ASE/Station Size and Actual ASE sumplied by NC Commission on Higher Education Bacilities based on Fall 1997 Bacilities Inventory	Size is 50 ASE/Stati	ASF, Wee	kly Room I	Hours (WRH) is	s 20, Station C NC Commissi	ccupancy	/ Ratio is 75	5%, and the	Space Factor is based on Fall	s 3.33 1 1997 Facilitie	s Invento	ž			
שמורכי הוחתרוו היסתר דוסחוה) יויבייהפר	I MAL I June	ole cier,	III I moremen	my supplement	INC COMMISSION	מון מון ביו	Bailte granden	JOIL A SCALLES	Dance on a m	I I / / I A deciment	ALIVOIDO	اخ			

						TABYE 2	2 2								
CALCULATIONS OF STANDARD ASF AND VARIANCES FROM STANDARDS FOR 210 TEACHING LABS: MODERATELY-INTENSIVE CATEGORY	OF STA	NDARD	ASF AND	VARIANCE	S FROM ST	ANDAR	DS FOR 2	10 TEAC	HING LABS	:: Moder	ATELY-I	NTENSIA	Æ CATE	GORY	
			Fine Arts	Lrts			H	Home Economics	omics				Law	×	
	Avg. ASF	SCH	Actual	Standard ASF	Variance from Standard	Avg.	SCH	Actual	Standard	Variance from Standard	Avg.	SCH	Actual	Standard ASF	Variance from Standard
Research Universities I:															
NC State															
NC State Veterinary Medicine															
UNC-Chapel Hill											18.8	397.0	1,316	1,323	(7)
UNC-Chapel Hill-Health Affairs															
Doctoral Universities I:															
UNC-Greensboro						49.3	387.0	5,176	1,290	3,886					
Doctoral Universities II:															
East Carolina	63.9	8,097.0	28,035	26,990	1,045	37.1	1,376.0	7,151	4,587	2,564					
East Carolina-Health Affairs															
Masters/Comprehensive															
Colleges/Universities I:															
Appalachian State	74.5	3,049.5	17,403	10,165	7,238	44.6	1,195.0	6,034	3,983	2,051					
Fayetteville State	177.0				5,402										
NC A&T State	33.2			3,150)	45.9	267.0	2,203	068	1,313					
NC Central	34.9		9'020	3,300	2,750	30.8	151.0	1,734	503	1,231					
UNC-Charlotte	47.7	5,532.0	11,974	18,440	(6,466)										
UNC-Pembroke	49.1	0.606	4,866	3,030	988'1										
UNC-Wilmington	26.7	148.0	1,068	493	225										
Western Carolina	77.4	1,076.0	6,105	3,587	2,518	0.92	290.0	3,214	296	2,247					
Baccalaureate Colleges I:															
UNC-Asheville	48.5	748.5	6,394	2,495	3,899										
Baccalaureate Colleges II:															
Elizabeth City State															
Winston Salem State	29.1	263.0	2,811	877	1,934										
Specialized Institutions:															
NC School of Arts															
UNC-System Averages	52.5		92,893	73,320	19,573	46.4		25,512	12,220	13,292	23.3		1,316	1,323	(7)
Notes: 1 Promosed Standards: Station Size is 50 ASE Weekly Room Hours	Size is 5	O ACE W.	Jacky Room	Jours (MDH)	(MPH) is 30 Station Occurred Datio is 750% and the Succe Brater is 3 23	7000000	T. Datio ic 7	70% ond th	Chaca Banto	3. 9.99					

Notes: 1. Proposed Standards: Station Size is 50 ASF, Weekly Room Hours (WRH) is 20, Station Occupancy Ratio is 75%, and the Space Factor is 3.33

2. Fine Arts included under Moderately-Intensive is Art.

Source: Student Clock Hours, Average ASF/Station Size, and Actual ASF supplied by NC Commission on Higher Education Facilities based on Fall 1997 Facilities Inventory.

						TAB	TABLE 4				ı				
CALCULA	TIONS O	F STAND	ARD AS	CALCULATIONS OF STANDARD ASF AND VAR	IANCES FR	OM STA	NDARDS	FOR 210	JANCES FROM STANDARDS FOR 210 TEACHING LABS: NON-INTENSIVE CATEGORY	LABS: No	N-INTE	NSIVE (CATEGOR	ιχ	
		Busin	ess and M	Business and Management				Fine Arts	rts				Lan	Language	
	Avg.	HJS	Actual	Standard ASF	Variance from	Avg.	HJS	Actual	Standard	Variance from	Avg.	нээ	Actual	Standard	Variance from
Research Universities I:										The state of the s				YOU	Standard
NC State	53.4	1,296.0	2,001	2,851	(820)	28.8	3,062.0	7,556	6,736	820					
NC State Veterinary Medicine															
UNC-Chapel Hill						38.2	5,489.5	15,861	12,077	3,784					
UNC-Chapel Hill-Health Affairs															
Doctoral Universities I:															
UNC-Greensboro						2.09	7,493.0	19,083	16,485	2,598					
Doctoral Universities II:															
East Carolina						29.6	3,677.5	066'9	8,091	(1)101)					
East Carolina-Health Affairs															
Masters/Comprehensive															
Colleges/Universities I:	,														
Appalachian State						29.5	4,327.0	9,642	615'6	123					
Fayetteville State	55.7	1,250.0	4,440	2,750	069'1										
NC A&T State	28.4		2,829	1,377	1,452	25.0	1,389.0	3,200	3,056	144					
NC Central	36.6	534.0	686	1,175	(186)	15.0	1,663.5	2,290	3,660	(1,370)	23.0	57.0	1,012	125	887
UNC-Charlotte						25.4	1,164.0	2,859	2,561	298	21.9	875.0	1,161	1,925	(764)
UNC-Pembroke						24.7	274.0	3,225	603	2,622	27.6		248	0	248
UNC-Wilmington	23.1	0.069	1,195	1,518	(323)	30.3	1,072.5	3,708	2,360	1,349					
Western Carolina						25.5	3,020.5	4,773	6,645	(1,872)					
Baccalaureate Colleges I:															
UNC-Asheville	56.7	0'92	089	191	213	11.4	292.5	2,285	644	1,642					
Baccalaureate Colleges II:															
Elizabeth City State	31.8	352.5		922		22.6	1,650.0	3,180	3,630	(450)	25.1	132.0	802	290	512
Winston Salem State	32.6		2,073	0	2,073										
Specialized Institutions:															
NC School of Arts						\vdash	4,047.0	14,493	8,903	5,590					
UNC-System Averages	31.5		15,577		4,963	52.5		99,145.0	84,968	14,177	25.6		3,223	2,341	882
Notes: 1 Proposed Standards: Station Size is 33 ASF Weekly Room Hours (WRH)	Size is 33	ASF. Weel	kly Room H		s 20. Station	Occupancy	Ratio is 7	5% and the	is 20. Station Occupancy Ratio is 75% and the Space Factor is 2.20	2.20				+	

Notes: 1. Proposed Standards: Station Size is 33 ASF, Weekly Room Hours (WRH) is 20, Station Occupancy Ratio is 75%, and the Space Factor is 2.20
2. Fine Arts included under Non-Intensive are Cinematography, General, and Music
Source: Student Clock Hours, Average ASF/Station Size, and Actual ASF supplied by NC Commission on Higher Education Facilities based on Fall 1997 Facilities Inventory.

						TARIE 4									
CALCULATIONS OF STANDARD ASF AND	ONS OF S	TANDAR	D ASF A		VARIANCES FROM STANDARDS FOR 210 TEACHING LABS: NON-INTENSIVE CATEGORY	STANDA	RDS FOI	210 TE	ACHING L	BS: Non-	Intens	IVE CAT	FEGORY		
			Letters	ırs				Mathematics	ıtics				Public Affairs	fairs	
	Avg. ASF	SCH	Actual ASF	Standard ASF	Variance from Standard	Avg. ASF	SCH	Actual	Standard	Variance from Standard	Avg.	SCH	Actual	Standard	Variance from Standard
Research Universities I:														1	
NC State															
NC State Vet											<u> </u>				
UNC-Chapel Hill															
UNC-Chapel Hill-Health Affairs											T				
Doctoral Universities I:															
UNC-Greensboro											40.0	402.0	800	884	(84)
Doctoral Universities II:															
East Carolina	29.4	3,749.0	2,954	8,248	(5,294)	38.7		813	0	813					
East Carolina-Health Affairs															
Masters/Comprehensive															
Colleges/Universities I:	I														
Appalachian State	20.6		557	0	255	23.3	1,130.0	3,724	2,486	1,238					
Fayetteville State	42.2		2,248	1,305		55.2		1,988	0	1,988					
NC A&T State	22.2		3,515	1,693	1,822										
NC Central	30.5	763.5	670	1,680	(010'1)						23.7	110	1,073	242	831
UNC-Charlotte															
UNC-Pembroke	20.1	204.0	702	449	253										
UNC-Wilmington	32.4	783.0	608	1,723	(914)	26.7	3,330.0	3,547	7,326	(3,779)					
Western Carolina															
Baccalaureate Colleges I:				-									1		
UNC-Asheville						32.9	750.0	986	1,650	(664)			l		
Baccalaureate Colleges II:															
Elizabeth City State	19.5	1,262.0	1,560	2,776	(1,216)	25.9	714.0	1,810	1,571	239					
Winston Salem State						15.1		528	0	528					
Specialized Institutions:															
NC School of Arts											-		-		
UNC-System Averages	27.9		13,015	17,873	(4,858)	30.3		13,396	13,033	363	40.0		1,873	1,126	747
Note: Proposed Standards: Station Size is 33 ASF, Weekly Room Hours (WRH) is 20, Station Occupancy Ratio is 75%, and the Space Factor is 2.20 Source: Student Clock Hours, Average ASF/Station Size, and Actual ASF supplied by NC Commission on Higher Education based on Fall 1997 Facilities Inventory.	Ize is 33 AS ASF/Station	F, Weekly Size, and /	Room Hour Actual ASF	s (WRH) is 20 supplied by NC	Station Occup	pancy Rat	io is 75%, Education	and the Spa	te Factor is 2.	20 es Inventory					
				,		٥		200							

EXHIBIT 9 - VIRGINIA RESEARCH SPACE PLANNING STANDARDS

Space Need Guideline for Research Space

Definition: Space used primarily to perform activities specifically organized to produce research outcomes, whether commissioned by an agency external to the institution or separately by an organizational unit within the institution. This includes institute and research centers and individual and project research. This guideline does not apply to space for research that is directly supported by the state from the general fund, such as for agriculture at Virginia Tech and Virginia State or marine science at William and Mary.

The Guideline:

Senior institutions: 800 assignable square feet per \$100,000 (in constant 1993 dollars) of annual research expenditures in the following disciplines:

- > Agriculture and Natural Resources
- > Engineering
- > Computer Science
- ➢ Biological Sciences
- Applied Mathematics and Statistics
- > Physical Sciences
- > Architecture and Environmental Design
- > Fine and Applied Arts
- ➤ Home Economics
- Psychology
- > Communications
- > Health Professions (except Medicine, Dentistry, and Veterinary Medicine)

Plus

450 assignable square feet per \$100,000 (in constant 1993 dollars) of annual research expenditures in the following disciplines:

- Education
- > Area Studies
- > Business and Management
- > Foreign Languages
- Letters
- ➤ Library Science
- ➤ Mathematics
- > Public Affairs and Services
- ➤ Law
- ➤ Social Sciences

Plus

Ten (10) assignable square feet per annual full-time-equivalent on-campus graduate student in all disciplines excluding medicine, dentistry, or veterinary medicine.

Source: Guidelines for Higher Education Fixed Assets for Educational and General Programs, Council of Higher Education for Virginia, March 3, 1997

EXHIBIT 10 - RESEARCH EXPENDITURE DATA

			Table 1				
		Research Expe	Research Expenditure by Institution Five-Year History	titution			
	6 2	Source: NSF Academic Institutional Profiles	lemic Institutio	nal Profiles			
	Five-Year	Five -Year					
Institution	Average	Total	FY96	FY95	FY94	FY93	FY92
Appalachian State University	478,000	1,912,000	511,000	549,000	494,000	358,000	
East Carolina University (1)	7,252,200	36,261,000	6,817,000	7,772,000	8,245,000	7,360,000	6,067,000
Elizabeth City State University	665,000	3,325,000	1,098,000	418,000	418,000	1,050,000	341,000
Fayetteville State University	367,400	1,837,000	503,000	437,000	437,000	273,000	187,000
North Carolina A&T University	13,881,200	69,406,000	15,991,000	15,774,000	13,637,000	12,090,000	11,914,000
North Carolina Central University	640,600	3,203,000	869,000	835,000	409,000	335,000	755,000
North Carolina School of the Arts	0	0					
North Carolina State University	168,595,600	842,978,000	190,748,000	180,191,000	173,407,000	155,624,000	143,008,000
UNC-Asheville	0	0					
UNC-Chapel Hill (1)	191,995,000	959,975,000	208,529,000	209,118,000	201,622,000	179,157,000	161,549,000
UNC-Charlotte (2)	15,269,946	30,539,892	11,220,371	5,116,358	4,680,357	4,798,806	4,724,000
UNC-Greensboro	2,252,000	11,260,000	2,026,000	2,437,000	2,309,000	2,360,000	2,128,000
UNC-Pembroke	0	0					
UNC-Wilmington	0	0					
Western Carolina University	0	0					
Winston-Salem State University	0	0					
UNC General Administration	0	0					
Total	401,396,946	1,960,696,892	438,312,371	422,647,358	405,658,357	363,405,806	330,673,000
Source: NSF Survey of Research and Development Expenditures in Colleges and Universities.	Development Expend	litures in Colleges an	d Universities.				

Notes:

⁽¹⁾ ECU and UNC-CH Health Affairs are included in the totals.

(2) Research dollars for UNC-Charlotte for FY 1993 to 1996 were provided by the institution as they were not available from the NSF Academic Institutional Profile

			Table 2				
		Research Expen	Research Expenditures by Institution Five Year History	itution			
	Five-Year	Source: 1r	TEDS Summaries	8			
Institution	Average	Five-Year Total	1996-97	1995-96	1994-95	1993-94	1992-93
Appalachian State University	828,180	4,140,899	1,061,521	956,486	792,793	460,416	89,698
East Carolina University	6,003,277	30,016,384	5,663,398	5,817,583	6,708,575	6,841,531	4,985,297
Elizabeth City State University	440,702	2,203,511	931,021	720,253	276,977	223,561	51,699
Fayetteville State University	491,059	2,455,296	776,801	602,254	546,234	328,392	201,615
North Carolina A&T University	11,540,026	57,700,132	12,786,200	12,447,152	12,762,228	10,394,872	9,309,680
North Carolina Central University	1,103,942	5,519,712	1,625,998	1,444,833	1,168,233	561,589	719,059
North Carolina School of the Arts	0	0	0	0	0	0	0
North Carolina State University	133,332,160	008'099'999	145,663,908	141,698,614	139,500,574	128,643,627	111,154,077
UNC-Asheville	450,652	2,253,260	460,873	461,704	479,660	482,531	368,492
UNC-Chapel Hill	146,897,000	734,485,000	152,478,000	156,034,000	154,817,000	140,586,000	130,570,000
UNC-Charlotte	4,368,477	21,842,387	4,456,235	4,678,441	4,733,142	4,319,934	3,654,635
UNC-Greensboro	9,705,309	48,526,546	10,921,743	11,334,185	11,134,444	9,250,603	5,885,571
UNC-Pembroke	101,435	507,177	110,135	183,075	159,659	41,910	12,398
UNC-Wilmington	5,375,351	26,876,757	5,415,335	5,937,189	5,887,039	4,674,898	4,962,296
Western Carolina University	1,191,177	5,955,886	1,305,198	1,243,984	1,332,192	1,143,486	931,026
Winston-Salem State University	855,934	4,279,671	963,548	1,299,571	800,730	980,107	514,736
UNC General Administration	543,717	2,718,586	0	0	0	205,417	2,513,169
Total	322,684,684	1,613,423,418	344,619,914	344,859,324	341,099,480	308,654,436	274,190,264
Note: Organized research dollars supplied by UNCGA IPEDS Summaries. For purpose code 110	by UNCGA IPED	S Summaries. For pur	pose code 110.				
NC State Vet, ECU and UNC-CH Health Affairs are included in the totals	Health Affairs are	included in the totals.					
UNC General Administration research dollars are not included in the UNC total	ırch dollars are not	included in the UNC	total.				

EXHIBIT 11 - FTE OFFICE SPACE CALCULATIONS

Works	sheet for C	Calculatio	n of Off	ice Space	by HEC	SIS Roon	n Use Co	des	
Description			Public	Academic	Student	Minus S & C	Inst'l	Physical	Total Ofc. Space
	Instruction	Research	Service	Support	Service	Devpt.	Admin	Plant	Adjusted
Program Code	10	20	30	40	50	52	60	71	
Research Universities I:									
NC State	227.224	105.005	24.45		12.222				
310	335,986	195,995	96,465	146,002	68,939	14,312	101,818	9,714	940,607
315	31,851	24,229	20,516	28,492	10,427	2,190	19,700	4,693	137,718
350	19,979	14,270	16,081	14,804	5,101	1,350	6,846	1,017	76,748
355	605	412	708	685	86		87		2,583
NC State Totals	388,421	234,906	133,770	189,983	84,553	17,852	128,451	15,424	1,157,656
NC State Vet									,
310	17,057	2,118	2,053	8,328	154		770	998	31,478
315	1,592	419	60	565			87		2,723
350	413		2,200	891					3,504
355									0
NC State Vet Totals	19,062	2,537	4,313	9,784	154	0	857	998	37,705
NC State & Vet Totals	407,483	237,443	138,083	199,767	84,707	17,852	129,308	16,422	1,195,361
UNC-Chapel Hill									
310	276,015	43,815	32,228	182,026	101,228	24,557	127,847	14,597	753,199
315	18,525	3,057	3,068	36,082	16,730	2,091	25,669	3,332	104,372
350	12,558	3,640	3,542	16,191	2,613	1,093	5,009	1,575	44,035
355	298		115	668	54	45	53	469	1,612
UNC-Chapel Hill Totals	307,396	50,512	38,953	234,967	120,625	27,786	158,578	19,973	903,218
UNC-Chapel Hill-HA									
310	112,515	145,114	62,368	154,448	2,207	444	2,895		479,103
315	14,443	8,257	4,566	25,222	267		189		52,944
350	18,889	12,149	3,540	21,359			165		56,102
355	474	381	12	1,262	15				2,144
UNC-Chapel Hill-HA Totals	146,321	165,901	70,486	202,291	2,489	444	3,249	0	590,293
UNC-CH & HA Totals	453,717	216,413	109,439	437,258	123,114	28,230	161,827	19,973	1,493,511
Doctoral Universities I:									
UNC-Greensboro									
310	125,988	16,445	1,154	39,258	40,128	11,250	50,932	5,927	268,582
315	12,441	1,409	101	11,612	7,621	2,490	11,882	1,207	43,783
350	10,505	1,438		5,341	4,118	1,491	5,339	1,154	26,404
355	62	40		474	40	-/	427	-,	1,043
UNC-Greensboro Totals	148,996	19,332	1,255	56,685	51,907	15,231	68,580	8,288	339,812
Doctoral Universities II:			-,		//	,	,	-,-35	
East Carolina									
310	160,803	4,388	4,590	37,131	52,828	15,857	55,788	4,764	304,435
315	23,242	718	1,399	5,038	12,543	4,293	9,640	1,230	49,517
350	10.758		3,861	3,999	7,961	3,418	3,186	467	26,814
355	484		47	60	243	103	38	197	769
East Carolina Totals	195,287	5,106	9,897	46,228	73,575	23,671	68,652	6,461	381,535
East Carolina-HA	170,207	5,200	-,0.7		,5.5		,002	3,101	
310	20,910	31,709	52,314	31,038	1,511		7,957	987	146,426
315	1,649	997	6,186	2,842	43		2,547	10,	14,264
350	4,534	857	7,562	12,041	- 13		879		25,873
330	7,557	037			 		- 0,7		
१८८			461	यय ।				1	74
355 East Carolina-HA Totals	27,093	33,563	46 66,108	45,954	1,554	0	11,383	987	79 186,642

	ksheet for	1			T	Minus	Ī	1	Total Ofc.
Description	Instruction	Research	Public Service	Academic Support	Student Service	S & C Devpt.	Inst'l Admin	Physical Plant	Space Adjusted
Program Co	le 10	20	30	40	50	52	60	71	
Masters/Comprehensive									
Colleges/Universities I:									
Appalachian State									
3	0 122,61	336	8,671	47,831	49,151	11,165	44,638	3,376	265,45
3	5 25,195		2,438	8,991	13,511	4,150	26,697	1,924	74,60
	0 11,652	2	1,341	3,010	4,401	362	4,756	537	25,33
3.	5 19		99	71	701				1,06
Appalachian State Totals	159,654	336	12,549	59,903	67,764	15,677	76,091	5,837	366,45
Fayetteville State									
3.		2	1,778	22,685	12,939	1,654	18,536		91,26
3				1,936	2,397	336	2,757		11,06
	5,589			2,353	525	256	1,192		9,40
3.				38					3
Fayetteville State Totals	46,883	0	1,778	27,012	15,861	2,246	22,485	0	111,77
NC A&T State									
3		27,424	7,690	44,745	25,582	4,253	49,872	1,684	226,68
3	5 8,294		98	6,143	4,642	1,088	8,034		32,09
	7,13	2,143		4,276	2,645	1,504	3,501	259	18,45
35				179			168		51:
NC A&T State Totals	89,534	35,536	7,788	55,343	32,869	6,845	61,575	1,943	277,74
NC Central									
3	0 55,037	924	3,565	29,141	20,507	5,329	32,056	1,146	137,04
3			695	3,824	3,442	743	6,881	250	21,49
35		135	716	4,022	3,038		1,423	371	17,43
35			32	31	139	119	49	12	62
NC Central Totals	69,410	2,048	5,008	37,018	27,126	6,191	40,409	1,779	176,60
UNC-Charlotte									
3				30,211	28,862	9,486	40,262	2,601	262,26
31				5,711	5,294	3,231	13,486	46	39,69
35				4,156	7,261	996	928		23,83
35				13			<u> </u>		38
UNC-Charlotte Totals	185,311	15,743	0	40,091	41,417	13,713	54,676	2,647	326,172
UNC-Pembroke		<u> </u>						<u> </u>	
31		·	1,712	10,592	9,612	3,565	19,165	1,550	65,270
31			485	1,715	3,066	1,256	7,585	1,082	16,986
35				1,607	1,697	1,697	1,586	238	6,252
35					56	56	142		198
UNC-Pembroke Totals	33,390	0	2,197	13,914	14,431	6,574	28,478	2,870	88,700
UNC-Wilmington		<u> </u>	L						
31	0 61,769	4,157	547	31,920	25,542	7,172	37,384	3,098	157,245
31			163	3,244	9,366	1,766	8,578	249	28,314
35				1,108	4,022		4,831	554	15,762
							30		357
UNC-Wilmington Totals	74,830	5,150	710	36,272	38,930	8,938	50,823	3,901	201,678
Western Carolina									
31			767	23,264	28,267	8,262	30,275	2,662	143,030
31			522	6,214	5,837	1,713	3,655	474	28,140
35				4,714	869		1,524		12,122
35				638					638
Western Carolina Totals	83,487	736	1,289	34,830	34,973	9,975	35,454	3,136	183,93

Work	sheet for C	alculatio	n of Off	ice Space	by HEG	IS Roon	ı Use Co	des	
Description	Instruction	Research	Public Service	Academic Support	Student Service	Minus S & C Devpt.	Inst'l Admin	Physical Plant	Total Ofc. Space Adjusted
Program Code	10	20	30	40	50	52	60	71	
Baccalaureate Colleges I:									
UNC-Asheville (1)									
310	32,005	570	808	7,420	11,211	2,922	14,671	1,615	65,378
315	3,014		1,031	1,544	1,785	155	1,802	133	9,154
350	2,797			1,003	320		208	191	4,519
355	363			10					373
UNC-Asheville Totals	38,179	570	1,839	9,977	13,316	3,077	16,681	1,939	79,424
Baccalaureate Colleges II:									
Elizabeth City State						+.			
310	23,382		2,267	6,662	8,720	2,837	15,602	547	54,343
315	4,861		143	832	2,712		4,637	537	13,722
350	2,851			2,203	226		2,239		7,519
355				161			184		345
Elizabeth City State Totals	31,094	0	2,410	9,858	11,658	2,837	22,662	1,084	<i>75,929</i>
Winston Salem State									
310	30,792	750	2,021	17,090	14,916	3,648	22,485	1,259	85,665
315	10,093		1,685	4,945	4,852	499	5,080	111	26,267
350	6,625		1,065	3,284	6,339	5,095	759		12,977
355				413	70	70			413
Winston Salem State Totals	47,510	<i>750</i>	4,771	25,732	26,177	9,312	28,324	1,370	125,322
Specialized Institutions:									
NC School of Arts									
310	20,949		1,096	5,477	2,972	280	9,093	183	39,490
315	3,746		35	335	125		1,371	22	5,634
350	1,853		156		894		566		3,469
355	78						68	,	146
NC School of Arts Totals	26,626	0	1,287	5,812	3,991	280	11,098	205	48,739
UNC-System Totals	2,118,484		366,408	1,141,654	_	170,649	888,506	78,842	5,659,341
Source: Data supplied by the N	C Commission of	on Higher Educ	ation Facilit	ies from the Fa	acilities Inve	ntory based o	n Fall 1997 d	lata.	

EXHIBIT 12 - FTE OFFICE USER CALCULATIONS

	Fall 1997	Clerical	Total Perm. Temp. Total T&C GAs	134 323 457 375	284 1,030 1,314 705	54 92 4 96 150	37 124 10 134 171 27	41 319 319 360 260	71 225 18 243 314 36	12 72 84 27	1,303 868 2,171 2,082	99 46 46 145	1,128 2,310 2,310 3,438 2,713	143 351 1 352 495 347	141 345 1 346 487 557	34 105 105 139 6	118 229 347 181	66 236 236 302 240	34 97 97 131	3 699 6 772 34 6 806 10 505 7 556
	tudents from IPEDS	Technical	& Prof. Perm. Temp.	878 134	1,799 284	160 53	302 35	694 41	432 69	154 12	3,157 1,302	281 95	3,820 1,128	1,063 143	866 141	204 34	616 118	518 66	274 34	15 218 3 689
,	Table 1 ployees and Graduate Students from IPEDS-S Data, Fall 1997	Professional	Perm. Temp. Total	167 10 177	556 6 562	44 3 47	84 4 88	184 8 192	117 6 123	32 32	1,371 117 1,488	76 1 77	1,588 5 1,593	298 12 310	216 8 224	36 36	195 4 199	144 27 171	104	5 919 911 5 493
	Calculations for FTE Emp	Instructional	Perm. Temp. Total P	536 165 701	1,163 74 1,237	105 8 113	210 4 214	437 65 502	293 16 309	121 1 122	699'1 001 695'1	161 43 204	2,206 21 2,227	625 128 753	593 49 642	140 28 168	387 30 417	295 52 347	159 11 170	9 000 795 9 795
	Ü	Administrative	Perm. Temp. Total	59 29	255 2 257	29 29	31 31	55 5 60	68 2 70	33 33	173 1 174	42 42	860 3 863	105 105	141 141	32 32	30 30	42 14 56	32 32	1 987 27 2 014
		Inst't		ASU	ECU	ECSU	FSU	NCA&T	NCCU	NCSA	NCSU	UNC-A	UNC-CH	UNC-C	UNC-G	UNC-P	UNC-W	MCU	WSSU	Total

			Ta	Table 2			
		Calculation	ons for FI	Calculations for FTE Student Employees	mployee	S	
	Tei	Temporary Student Wages	lent Wages		Work	Work Study	
	Object Code		FTEs by				
	1450	Hourly	2,080	Adjusted		FTEs by	Total Student
	Expenditures	Rate \$7	Hours	FTEs by 2	IPEDS-S	30%	Employees (FTE)
ASU	2,933,084	419,012	201	101	452	136	236
ECU	3,492,042	498,863	240	120	493	148	268
ECSU	260,902	37,272	18	6	892	268	277
FSU	253,722	36,246	17	6	431	129	138
NCA&T	1,082,146	154,592	74	37	486	146	183
NCCU	534,402	76,343	37	18	231	69	88
NCSA	155,587	22,227	11	5	136	41	46
NCSU	5,972,903	853,272	410	205	999	200	405
UNC-A	601,201	82,886	41	21	98	26	46
UNC-CH	9,481,000	1,354,429	651	326	691	207	533
UNC-C	2,784,437	397,777	191	96	172	52	147
UNC-G	2,471,806	353,115	170	85	340	102	187
UNC-P	56,881	8,126	4	2	179	54	99
UNC-W	3,388,711	484,102	233	116	184	92	172
MCU	1,362,553	194,650	96	47	450	135	182
WSSU	298674	42,668	21	10	409	123	133
Total	35,130,051	5,018,579	2,413	1,206	6,297	1,889	3,095
Sources: Progr. expe.	rogram Assessment Report for Work-Study students, Fall 19 expenditures for Fall 1996 for temporary student employees.	ort for Work-S 196 for tempora	tudy student ry student en	s, Fall 1997 and nployees.	NCEH EX	P(A) Report	Sources: Program Assessment Report for Work-Study students, Fall 1997 and NCEH EXP(A) Report for Object Code 1450 expenditures for Fall 1996 for temporary student employees.

EXHIBIT 13 - CALCULATION OF ACTUAL LIBRARY SPACE AND FTES

Worksh	neet for St	Worksheet for Study Facilities:	S	ations fo	r Study, St.	culations for Study, Stack, and Service Space; Student and Faculty FTEs	rvice Spa	ice; Studen	nt and Fac	ulty FTEs		
		Study	Total		Stack	Total			Total	Total		
	Study	Room	Study	Stack	Space	Stack	Open	Service	Service	Actual	Student	Faculty
	Room	Adjusted	Room	Space	Adjusted	Space	Stack	Space	Space	ASF	FTEs	FTES
HEGIS Room Use Code	410			420			430	440/455				
Research Universities I:												
NC State	33,281	166'05	56,434	127,896	145,606	150,337	35,419	10,964	12,606	217,734	23,226	1,669
NC State Vet	712	5,443			4,731		9,462	1,642		11,816		
UNC-Chapel Hill	78,383	117,294	129,011	309,941	348,852	378,597	77,821	78,735	86,010	586,343	21,451	2,227
UNC-Chapel Hill-Health Affairs	10,553	11,718		28,581	29,746		2,329	7,275		48,738		
Doctoral Universities I:												
UNC-Greensboro	12,699	20,836		75,993	84,130		16,273	13,538		118,503	10,631	642
Doctoral Universities II:												
East Carolina	4,723	47,818	59,321	17,329	60,424	77,494	86,190	37,066	41,688	173,881	16,423	1,237
East Carolina-Health Affairs	7,710	11,503		13,277	17,070		7,586	4,622		33,195		
Masters/Comprehensive												
Colleges/Universities I:												
Appalachian State	2,250	25,776		5,802	29,328		47,051	5,114		60,217	11,610	701
Fayetteville State	10,597	26,052			15,455		30,910	7,314		48,821	3,414	214
NC A&T State	8,396	42,551		11,798	45,953		68,309	10,619		99,122	6,870	502
NC Central	1,347	31,743		10,206	40,602		60,791	9,737		82,081	4,932	309
UNC-Charlotte	7,058	23,672		16,308	32,922		33,227	25,186		81,779	13,585	753
UNC-Pembroke	3,729	4,967		24,884	26,122		2,475	3,086		34,174	2,592	168
UNC-Wilmington	36,553	39,014		47,853	50,314		4,922	20,322		109,650	8,382	417
Western Carolina	3,964	49,929		7,084	53,049		91,930	10,838		113,816	200'9	347
Baccalaureate Colleges I:												
UNC-Asheville	6,448	27,456		5,573	26,581		42,016	13,121		67,158	2,668	204
Baccalaureate Colleges II:												
Elizabeth City State	3,840	13,285		941	10,386		18,890	5,263		28,934	1,829	113
Winston Salem State	5,477	19,411		2,418	16,352		27,867	3,622		39,384	2,556	170
Specialized Institutions:												
NC School of Arts	2,815	7,273		3,496	7,954		8,916	2,625		17,852	755	122
UNC-System Totals			576,727			1,045,572			270,689	1,879,449	134,467	9,795
Sources: Library Space and student FTE data supplied by the NC Commission on Higher education Facilities based on Fall 1997 Facilities Inventory and include graduate students for NC State	t FTE data su	polied by the N	JC Commissi	on on Highe	r education Fa	acilities based c	n Fall 1997	Facilities Inven	utory and incl	ude graduate s	tudents for N	C State

Sources: Library Space and student FTE data supplied by the NC Commission on Higher education Facilities based on Fall 1997 Facilities Inventory and include graduate students for NC State Vet, UNC-Chapel Hill and East Carolina Health Affairs.

Faculty FTE data is supplied by UNC General Administration from IPEDS PDF report and includes both permanent and temporary employees.

EXHIBIT 14 - CALCULATIONS OF LIBRARY VOLUMES

	Worksh	Worksheet for Study Facilities:	dy Facilit		ary Vol	Library Volumes and	d Calcula	Calculations for		CEFPI Standards	r a		
												Subtotal	Total
	Books	Micro- forms	Micro Adj.	AV Materials	AV Adj.	Carto- Materials	Gov't Docs	Graphic Materials	Mach Read	Other Materials	Serial Subscript	Others Adj.	All
Research Universities I:													
NC State	2,618,615	4,630,696	57,884	10,016	2,003	36,059		87,401	10,229		21,639	19,416	2,697,918
NC State Vet	10101	000000	1007	021.031	700 10	101 100	000 001 1	00.702	2000	170 001	700 01	120 000	10000
UNC-Chapel Hill	4,819,185	4,189,938	52,374	159,179	31,836	304,525	1,589,238	536,199	5,209	103,945	43,886	322,875	5,226,270
UNC-Chapel Hill-Health Affairs													
Doctoral Universities I:					Ī								
UNC-Greensboro	914,914	889,953	11,124	9,395	1,879	16,532	661,142	10,242	1,326	201	5,317	86,845	1,014,762
Doctoral Universities II.					1								
East Carolina	1,199,697	1,686,538	21,082	42,212	8,442	98,157	848,072		990'9		7,788	120,010	1,349,232
East Carolina-Health Affairs													
Masters/Comprehensive													
Colleges/Universities I:													
Appalachian State	605,774	1,336,120	16,702	30,963	6,193	6,520	107,300	1,738	756	17,459	6,075	17,481	646,149
Fayetteville State	206,370	823,603	10,295	4,194	839	2,246	26,177	5,023	302		3,016	4,596	222,099
NC A&T State	430,892	932,182	11,652	23,767	4,753	5,040	240,004	1,078	3,234		3,722	31,635	478,932
NC Central	525,854		15,527	2,493	499	3,193	137,130	2,660	2,441	23	5,826	18,909	560,788
UNC-Charlotte	643,024	1,282,854	16,036	9,296	1,859	48,156	850,545	29,796	2,094	145	4,757	116,937	777,856
UNC-Pembroke	200,000	596'015	6,387				85,194				1,529	8,340	217,227
UNC-Wilmington	799,568	941,408	11,768	8,203	1,641	14,844	227,061	16,517	2,130	11,476	4,193	34,528	847,504
Western Carolina	496,735	1,301,316	16,266	5,023	1,005	113,274	81,618	4,269	1,116	2,023	2,651	25,564	539,625
Baccalaureate Colleges I:													
UNC-Asheville	349,638	718,197	8,977	6,652	1,330	300		2,700	1,491	006	2,016	976	360,872
Baccalaureate Colleges II:													
Elizabeth City State	163,555	486,460	180'9	1,650	330		59		82		1,804	243	170,209
Winston Salem State	181,275	82,146	1,027	18,017	3,603		-		006	13,017	1,694	1,951	187,857
Specialized Institutions:													
NC School of Arts	118,220	24,669	308	39,734	7,947	281		30,625	10	46,365	490	9,721	136,197
UNC-System Totals	14.273.316	21.079.168	263.490	370.794 74.159	74.159	649.127	4.833.540	728.248	36.948	195.554	116.403	819.978	15.430.942
Source: Table 54, Library Resources (1996-97) and Services (Fall 1997) in North	(1996-97) and Ser	vices (Fall 1997)	in North Car	Carolina Colleges and Universities.	and Unive								