

NC State University Design and Construction Guidelines

Division 00 Planning & Design - Space Standards & Programming

1.0 Purpose

- A. These guidelines define the NC State space standards which are the basis of all programming documents. The NC State space standards assist in developing the space needs by space type. The program compares the space planning standards with existing inventoried space data and proposed space data. From this comparison, a surplus/deficit can be determined for the selected space categories. All space is evaluated using Assignable Square Footage (ASF).
- B. In addition to the UNC System space standards for “110”, “210”, “300s” and “400s” space, NC State has adopted a “250/255” Research Laboratory Standard and a “210/215” College of Design Studio and Studio Support Standard.

2.0 Space Standards

- A. Classroom Space Standard (110)
 - 1. A “110” classroom is defined as a room used for scheduled instruction that requires no special equipment or configuration. It includes general-purpose classrooms, lecture halls, seminar rooms, and other rooms used primarily for scheduled, non-laboratory instruction. Utilization is analyzed at a university level.
 - 2. Space Factor Calculation: $18 / (35 \times 65\%) = .79$
Space Factor =
$$\frac{\text{Avg Student Station Size [ASF]}}{(\text{Avg. Weekly Room Hrs}) \times (\text{Student Occupancy Ratio})}$$
 - a) Average Student Station Size: Assignable Square Feet (ASF) per student station. Standard is an average across campus of 18 ASF.
 - b) Average Weekly Room Hours: Total hours of instruction in classrooms divided by the total number of classrooms. Minimum standard of 35 hours.
 - c) Student Occupancy Ratio: Average percentage of student stations in room being occupied during assigned classes. Minimum standard of 65% filled.

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B. Class Laboratory Space Standard (210)

1. A “210” Class lab is defined as a room used primarily for formally scheduled classes that requires special purpose equipment or a specific room configuration for student participation, experimentation, observation or practices in an academic discipline. This does not apply to College of Design Studio Space. Utilization is analyzed on a college or academic unit level.

2. Space Factor Calculation

$$\text{Space Factor} = \frac{\text{Avg Student Station Size [ASF]}}{(\text{Avg Weekly Room Hrs}) \times (\text{Student Occupancy Ratio})}$$

- a) Average Student Station Size: Assignable Square Feet (ASF) per student station = varies (see below)
- b) Average Weekly Room Hours: Total hours of instruction in classrooms divided by the total number of classrooms. Minimum standard of 20 hours.
- c) Student Occupancy Ratio: Average percent of student stations in room being occupied during assigned classes = Minimum standard of 75%.
- d) Space Factor = varies (see below)

Category	Examples	ASF/ Station	Space Factor
Highly Intensive	College of Textiles COE: BME, BTEC, CCEE, ChBE, ISE, MAE, MSE, and NE Dramatic Arts	108	7.2
Intensive	CALS: Agricultural & Life Sciences CNR: All Natural Resources except GIS COS: All Sciences except Mathematics & Statistics College of Veterinary Medicine	70	4.67
Moderately Intensive	College of Education CHASS: Psychology & Communication COE: Dean’s Office, CSC, ECE, OR, & Solar Ctr CNR: GIS Music	50	3.33
Non-Intensive	CALS: Social Sciences CHASS: Social Sciences & Public Affairs COS: Mathematics & Statistics Poole College of Management	33	2.2

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C. Class Lab (210/215) College Of Design Studio Standard

1. This standard applies to “210” Class Labs and “215” Class Labs Service space assigned to the College of Design. They are defined as class laboratories/studios and are used primarily for individual or group instruction that is formally scheduled, unscheduled, or open.

2. Design Studio/Class Lab Space Factor Calculation:

$$\text{Total Studio ASF} = \frac{\text{ASF}}{\text{Station}} \times \text{Average Number of Enrolled Students: Studios}$$

- a) ASF/station = 100
 - b) Average Number of Students Enrolled: Studios = 90% X Total College of Design Enrollment.
 - c) Example: Total Studio/Class Lab 13,500 ASF = 100 x .9(150).
3. Design Critique (215 Class Lab Support) Space Factor Calculation:

$$\text{Total Critique/ Class Lab Service ASF} = \frac{\text{ASF}}{\text{Station}} \times \text{Average Number of Enrolled Students: Studios}$$

- a) ASF per station = 10
 - b) Average Number of Students Enrolled: Studio = 90% X Total College of Design Enrollment.
 - c) Example: Total Critique/Class Lab Service 1,350 ASF = 10 x .9(150).
Space will be used as 110 Classroom space when not in use for critiques (typically mornings).
4. Total College of Design Enrollment = Undergraduate Students + Masters Students (excludes PHD Students).

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D. NC State Research Laboratory Standard (250/255)

1. The “250” Research Lab and “255” Research Lab Service spaces are defined as rooms used primarily used for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity within a specific program.

2. Calculation of Research Lab Standard:

$$\text{Total Required Research Space ASF} = \frac{\text{Total Research Units}}{\text{Average ASF per Research Unit}} \times$$

3. Research Unit Calculation:

Research Units: (Headcount)		
Research Faculty	X 1.0	=
Research Staff (EPA, SPA)	X 1.0	=
PhD Students	X 0.8	=
Masters Students (Thesis)	X 0.6	=
Total Research Units		=

- a) Research Faculty: Unduplicated faculty headcount whose salary includes research funding (110 or 122), and principal and co-investigators of a sponsored program or grant.
- b) Research Staff: Headcount of professional EPA and SPA staff who are paid in whole or in part from research funding, including appropriated research and externally funded research sources. Positions are selected using EPA title codes and SPA class codes that are deemed to engage in direct use of research lab space.
- c) Master Students (Thesis) Degrees: Headcount is based on an average of the last four full years of degrees awarded from master’s programs with thesis.
- d) Research unit data provided by the Office of Institutional Research and Planning.

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4. Average Assignable Square Feet (ASF) per Research Unit (Includes Research Lab, Shared Lab and Equipment/ Support Spaces).

Categories	per Research Unit	College
Highly Intensive	Avg of 225 ASF	CALS: Agricultural & Life Sciences COE: BME, BTEC, CCEE, ChBE, ISE, MAE, MSE, and NE CNR: All Natural Resources except GIS COS: All Sciences except Mathematics and Statistics College of Textiles College of Veterinary Medicine
Intensive	Avg of 125 ASF	College of Design CHASS: Psychology
Moderately Intensive	Avg of 60 ASF	COE: Dean's Office, CSC, ECE (except cleanrooms), OR, and Solar Center CNR: GIS CHASS: Sociology & Anthropology
Non-Intensive	Avg of 15 ASF	CALS: Social Sciences College of Education CHASS: All CHASS except Psychology, Sociology and Anthropology COS: Mathematics and Statistics Poole College of Management

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E. Office Facilities Standards (300s)

1. This category includes spaces that are used for office and office support. This includes: workspace as individual, multi-person or open-office workstation space as well as service support rooms for reception, suite circulation, break, file, storage, print /copy, departmental mail, conference and their service/support rooms. This standard applies to all spaces coded as the following: "310" Office; "315" Office Service; "350" Conference Room and "355" Conference Room Service.

Personnel Category	Description/Definition	Programming ASF (a) (c) for Office & Support	Target "310" ASF (b) for Desk/Office
Administrative	Vice Chancellor	275	300
	Dean		250
	AVC/Vice Provost/		200
	Dept Head		170
Instructional and Professional	Faculty	190	130
	Professional Staff	155	115
	Post Doc	100	70
Technical & Clerical	Technicians, Technical Support, Clerical & other Office Support	140	50
Graduate Students	Research/Teaching/Grant Assistantship	60	36

- a) Programming ASF for planning purposes: the Assignable Square Footage (ASF) amount per position from which all office and office support space shall be allocated; includes Personal Workspace (310), departmental suite circulation, Office Services (315), Conference Rooms (350) and Conference Room Services (355).
- b) Target "310" ASF for desk or office space: the target ASF for a typical workspace per position.
- c) The total Programming ASF is the maximum ASF allowed for all Office Facilities 300 space.

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- F. Study Facilities (400s)
1. This standard applies to those rooms assigned to the Central Library only and have a Program Code 41: Library Services. It includes room use codes: “410” Study rooms, “420” Stack rooms, “430” Open-Stack Study rooms, “440” Processing rooms and “455” Study Services rooms.
 2. Study Space Factor Calculation
 - a) Space Factor = “410” Study Rooms + 50% of “430” Open Stack Room space
 - b) Study Space ASF Standard is 25 ASF per station for (20% of FTE Students + 8% of FTE Faculty).
 3. Stack Space Factor Calculation
 - a) Space Factor = “420” Stack Space + 50% of “430” Open Stack Study Room space.
 - b) Stack Space ASF Standard is .08 ASF per (# of Volumes by category) / (Adjustment Factor)

# of Volumes =	<table border="1" style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="text-align: left;">Category</th> </tr> </thead> <tbody> <tr><td>Books</td></tr> <tr><td>Microforms</td></tr> <tr><td>AV Material</td></tr> <tr><td>CartoMaterials</td></tr> <tr><td>Govt Materials</td></tr> <tr><td>Graphic Materials</td></tr> <tr><td>Mach Read</td></tr> <tr><td>Other Materials</td></tr> <tr><td>Serial Sub.</td></tr> </tbody> </table>	Category	Books	Microforms	AV Material	CartoMaterials	Govt Materials	Graphic Materials	Mach Read	Other Materials	Serial Sub.	<table border="1" style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="text-align: left;">Adjustment Factor *</th> </tr> </thead> <tbody> <tr><td>1</td></tr> <tr><td>80</td></tr> <tr><td>5</td></tr> <tr><td>8</td></tr> <tr><td>8</td></tr> <tr><td>8</td></tr> <tr><td>8</td></tr> <tr><td>8</td></tr> <tr><td>8</td></tr> </tbody> </table>	Adjustment Factor *	1	80	5	8	8	8	8	8	8
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* Category is divided by Adjustment Factor

4. Service Space
 - a) This category includes “440” Processing Room and “455” Study Service Space.
 - b) Service Space ASF Standard is 15% of (Study Space ASF + Stack Space ASF).

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3.0 Space Programming

- A. Space programming shall be provided in the NC State spreadsheet format for the Program Summary and Detailed Space Program. See Appendix for examples.
- B. Program Space Summary
 - 1. Total Assignable Square Footage (ASF) shall be provided for each group (i.e. department, building service function, shared space, classroom, commons, etc.)
 - 2. Columns indicate the following -
 - a) Headcount quantities for existing full and part time staff.
 - b) Quantity of existing ASF for each space type.
 - c) Quantity of ASF required per NC State Space Standard calculations.
 - d) Headcount quantities for proposed full and part time staff.
 - e) Quantity of proposed ASF required per NC State Space Standard calculations.
 - f) Quantity of space requested for each space type.
 - g) Quantity of space proposed as the final program (reconcile the space needs/requests with actual limitation of the project, budget, etc.).
 - h) Quantity of ASF in SD design for each space type.
 - i) Quantity of ASF in DD design for each space type.
 - j) Quantity of ASF in CD design for each space type.
 - 3. Total Gross Square Footage (GSF) required for the following columns; Request, Program, SD, DD, and CD.
 - 4. NC State shall provide space need calculations for all space standards.
 - 5. Rows indicate the total ASF per space type by use code for each department or group.
- C. Detailed Space Program
 - 1. Separate spreadsheets shall be provided for the following -
 - a) Each department
 - b) Classrooms
 - c) Shared Spaces
 - 2. Use code, location, capacity, and ASF of existing space being vacated or relocated as part of project to be included.
 - 3. Spaces shall be grouped by use code.

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4. ASF of each programmed space shall be included.
5. Classroom Programming:
 - a) Use the following guide for classroom furniture types (see below for averages).

Auditorium (fixed seating w/ tablet)	Moveable Chair w/ Tablet	Fixed Tables w/ Pedestal Chairs	Fixed Tables w/ Moveable Chairs	Moveable Tables & Chairs
10 ASF	16 ASF	20 ASF	22 ASF	24 ASF

- b) Classroom spreadsheets shall indicated ASF, seat count, type (110 vs. 110D), and department with scheduling priority.
6. Room data sheets depicting characteristics of the room types shall be included as needed.

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- D. Programming document shall include compiled information from the designer, department, and NC State.
 - 1. Designer shall provide the following information -
 - a) Programming spreadsheets
 - b) Executive Summary.
 - c) Written description of specialized spaces.
 - d) Written description of adjacency requirements.
 - e) Photos of existing or proposed conditions/ characteristics.
 - 2. Department(s) shall provide the following information -
 - a) Current departmental organizational charts.
 - b) Identify what is not included in project (positions, programs, and spaces).
 - c) Personnel and laboratory names and locations that are included in project.
 - 3. NC State may provide Profile Summary Sheets which include space need calculations for all space standards.