

APPENDIX 9.2

**A GUIDE
UNDERSTANDING AND USING THE
STATE FIVE-YEAR CONSTRUCTION PLAN**

A GUIDE
Understanding and Using
The
State Five-Year Construction Plan
(5YCP)

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A Guide to Understanding and Using The State Five year Construction Plan (5YCP)

What is the Five Year Construction Plan?

The Five Year Construction Plan is a tool available to a District for measuring the utilization of facilities. Simply put, it compares the capacity of facilities to the demands created by the actual and projected enrollment of a college or center.

In addition to being a useful tool for the District, the Five Year Construction Plan communicates to the State legislature, through control agencies, the capital outlay needs of a community college district over a five year period. It also serves as the foundation for capital outlay funding applications by delineating the capacity to load ratios for five categories of space defined in Title V of the California Administrative Code: lecture, laboratory, office, library, and audio-visual/TV (media).

Capacity to Load Ratio

This ratio, expressed as a percent, is the product of the computed capacity of the category of space divided by the actual (or projected) usage. Ratios above 100% indicate an excess of space; ratios below 100% indicate a deficiency of space.

Submission of the Five Year Construction Plan is a mandatory requirement (Ed Code Section 81,800, et. al.). It is submitted to the State Chancellor's Office of the California Community Colleges each year.

The plan essentially merges five components into a "logical" and measurable statement of the District's projected facility needs:

- Educational plan statements
- Inventory of existing space
- Enrollments
- FTE instructional staff
- Proposed facility project

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EDUCATIONAL PLAN STATEMENTS

The educational plan statements define program requirements and directions for the district and for each of the campuses and centers; the statements in the Five Year Plan are much like executive summaries of the educational master plans and usually include the following:

A statement of PURPOSE

The CONTEXT OF THE COMMUNITY SERVED

Illustrative questions: Populations served?
Demographics changing?
Business community changing?
Emerging underserved populations?
Other unique situations?

The EDUCATIONAL APPROACH identifying the long range goals and the short term objectives (along with a short phrase explaining why)

Illustrative questions: New programs with timeline?
Terminating programs with timeline?
Changes in student services?
Changes in methods of instruction?
Other needs (library, AV, auxiliary services)?

Other statements concerning issues related specifically to FACILITY CONDITIONS or CIRCUMSTANCES that inhibit access or instruction in the manner in which it would best serve student learning

examples: The existing electrical systems cannot support the need for the implementation of computer assisted learning.

The mechanical systems are insufficient for the addition of needed biology and chemistry labs.

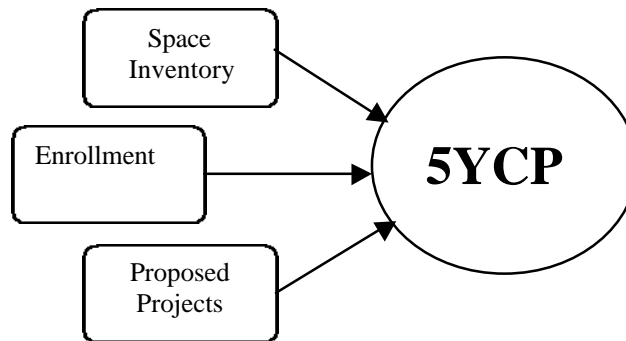
This statement is followed by an energy plan statement for the district or each site that describes the steps the district is taking to better use its energy resources.

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THE QUANTITATIVE COMPONENTS

The plan consists of three principal quantitative components: space inventory, enrollment and proposed projects.

Quantitative Components of the Five Year Construction Plan (5YCP)



The space inventory, which is updated October 1 of each year by each community college district, provides a room summary for each building plus identifying quantitative data related to each room and the building. The reports from the space inventory database provide detail on the age, condition and gross square feet of each building along with assignable square feet, number of stations and usage of the rooms within the building. The usage elements provide a basis of sorting by room type (lecture, lab, office, etc.) and TOPs/CSS (taxonomy of programs/classification of service and support).

Selected Room Use Categories

110	Classroom	310	Office
115	Classroom Service	315	Office Service
210	Class Laboratory	350	Conference Room
215	Class Laboratory Service	410	Reading/Study Room
220	Special Class Laboratory	420	Stack
225	Special Class Lab Service	430	Open Stack Reading Room
230	Individual Study Laboratory	440	Processing Room
235	Individual Study Lab Service	455	Study Service
250	Non Clas Laboratory	530	Audio/Visual, Radio, TV
255	Non Class Lab Service	535	Audio/Visual, Radio, TV Service

Space Inventory Handbook, Chancellor's Office, California Community Colleges, 1994

Enrollment and WSCH (weekly student contact hour) forecasts are prepared annually by the Research and Analysis Unit of the Chancellor's Office of the California Community Colleges. These 15-year forecasts must be used in the preparation of the Five Year Construction Plan.

The forecasts are prepared using an econometric model in which enrollment is determined by the following independent variables:

1. real (price-adjusted) cost facing students, including fees and other direct costs
2. real operating budget expenditures (current expense of education) of colleges
3. population (focus on adult population and high school graduates)
4. unemployment
5. financial constraints, pre- and post-Proposition 13 (1978)

Once the enrollment forecast is complete, future WSCH are calculated using trends in academic loads as measured by WSCH per student. WSCH is calculated as the "average annual WSCH" of Fall and Spring (summer excluded). WSCH includes regular, daily, and positive hours (credit and non-credit) as reported by each district in its apportionment attendance reports (CCFS-320).

Using this "official" enrollment forecast a district then develops an enrollment and WSCH distribution that results in the definition of the details required for the Five Year Plan.

First, total enrollment and WSCH is distributed to each campus and center identified in the plan. Next, based on current and projected plans, the day graded enrollment is computed. The current day enrollment for each college also appears in the Chancellor's Office internet site in the MIS department records. This information is based upon information report by each District.

Day Graded Enrollment

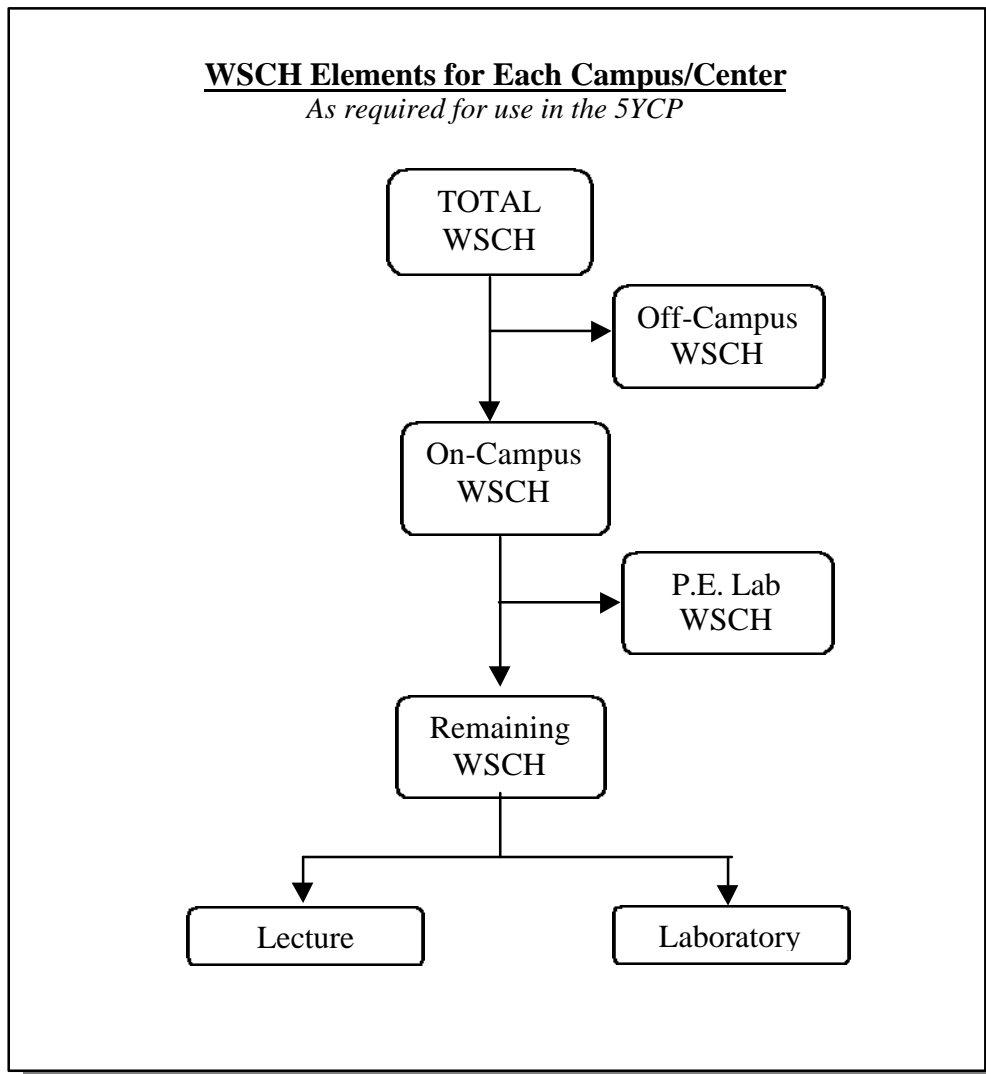
The number of students enrolled in day credit courses for an enrollment period. Day is considered to be any class beginning or in session between the hours of 8:00 a.m. and 5:00 p.m. For most colleges, the percentage of day students fluctuates between 55% and 75%.

After the WSCH and day graded enrollment is computed and projected for each campus and center, the WSCH is further broken down into four elements: off-campus, physical education laboratory, on-campus lecture and on-campus laboratory. Existing WSCH information for the current year can be used as the base year.

Off-campus WSCH is that instructional activity that takes place in facilities other than those identified in the campus/center space inventory. These include such alternate delivery methods as hospitals, businesses, TV courses, internships, internet, high schools, senior and community centers.

Physical education lab WSCH is the total of the instructional activity of all non-lecture portions of those courses in fitness, sports, athletics and the like whether conducted inside or outside; it is defined by TOP (taxonomy of programs) code 0835.

Off-campus and physical education lab WSCH are deducted from the total for the site and the remaining WSCH is defined as either lecture or laboratory.



Before leaving the subject of enrollment, this may be the appropriate place for explaining the FTE staff number that is required in the preparation of the five year plan. FTE staff is the factor that is used to compute the space requirements for the office category in the Five Year Plan.

This component is prepared on the basis of the current staffing: the form to be completed for each site including the District Office (if appropriate) requires the following information:

Computation of FTE Instructional and Statutory Staff	Total Certificated Instructional And Statutory Staff FTE (b)	Non- Instructional Portion FTE (c)	Net Total Instructional and Statutory Staff (b) minus (c) FTE (d)
(a)			
Instructors:	_____	_____	_____
Counselors: Includes certificated special program coordinators, Economic Opportunity program coordinators, statutory And Title 5 required staff, et. al.	_____	_____	_____
Department Administrators:	_____	_____	_____
Librarians: Include certificated director of audio/visual, et. al.	_____	_____	_____
Institutional Administrators: Include certificated persons with responsibilities Covering the entire institution, such as Supt., Asst. Supt., Pres., Dean of Instruction, Director of Data Processing, et. al.	_____	_____	_____
TOTAL	_____	_____	_____

Column (b) is the total number of Column (a) distributed to categories.
Column © is the fraction of time expressed as full-time equivalents devoted to non-instructional work

Counselors, department administrators, and statutorily required staff are counted as if they had no non-instructional duties

Some other “guidelines” that can be used:

- Use college/campus instructional staff for ALL of a fall semester
- Include all certificated staff for day, extended day and adult education except those whose office is located off-campus.
- Be sure to include the FTE equivalency of all par-time certificated staff that fit within the categories listed above.

Finally, project descriptions provide details of all capital outlay projects, both state and non-state funded, that are currently a part of the district's facilities plan; with the exception of architectural barrier removal and energy conservation projects all projects in excess of \$250,000 are to be listed. The information required includes budget years and costs for each project phase (acquisition, preliminary plans, working drawings, construction, equipment), a brief project summary, an explanation of how the project supports the district educational and facility master plans and project assignable square feet (ASF), both primary and secondary.

Primary and Secondary Assignable Square Feet (ASF)

Primary ASF represents the desired new spaces required to meet a demand; secondary ASF represents changes to existing space that are effected or required as a result of the completion of the primary ASF. (example: A new health occupations building is proposed. The ASF of the new building is the primary ASF. As a result of the project, health occupation programs will move out of spaces in the science building. The vacated spaces are converted into science laboratories. The science labs represent secondary ASF.)

Note: Certain types of community college spaces referred to in the California Code of Regulations, Title 5, Section 57015, as "revenue generating facilities" are not eligible for the use of State construction funds. Included are parking lots and structures, bookstores, dormitories, student unions, and athletic stadiums (except physical education facilities).

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COMPUTING CAPACITY

The space inventory reports provide a district with a summary of capacity spaces by classroom (lecture), laboratory, office, library and audio-visual/TV; this space is expressed in assignable square feet.

Assignable Square Feet (ASF)

ASF is the square footage of a space (or room) for assignment to occupants for a specific functional purpose. Gross square footage (GSF) is the total area of a building within the exterior walls including all ASF plus corridors, stairwells, rest rooms, wall thickness (interior and exterior), and mechanical, electrical, janitorial or other service areas, as well as one-half of the total square footage of outside overhang (beyond 12”).

Title 5 of the California Administrative Code requires the use of specific standards in the computation of the five categories of capacity space. These standards are to be used consistently by all districts in determining the capacity of existing facilities. The following explanation of the five categories that follows includes some additional statements regarding the particular type of space that is being addressed.

TEACHING SPACES

Teaching spaces are identified as either lecture or laboratory depending on the nature of the student’s participation in the instructional process. If the student requires the regular use of special equipment in the class it is usually considered a laboratory activity; a room designed to accommodate laboratory activity is classified as laboratory even if lecture takes place in the room more often than lab.

Computation of lecture and laboratory space requirements is based on weekly student contact hours (WSCH) for a 70 hour week (Monday through Friday, 8:00 a.m. to 10:00 p.m.). The total projected WSCH enrollments are separated into lecture and laboratory. Pure one hundred percent (100%) utilization of all rooms and all stations is not considered reasonable for a number of reasons:

No guarantee that class enrollments will necessarily match the size of teaching areas available;

The need for a safety net to provide spaces for classes anticipated but are dependent on enrollments;

Human behavior patterns dictate some hours will be more popular (thereby requiring more teaching spaces) than others; e.g., lunch/dinner and local industry work hours can affect the hours people are willing to be in class;

Occasional uses of the “public” facilities for purposes other than the teaching program;

Laboratory (and sometimes lecture room) preparation/setup and breakdown time;

Potential for allowing a class to proceed or spill over beyond its usual hours to complete an issue or activity underway at the time;

Provide time when the room is empty to perform on-going maintenance, repair, cleaning, or painting;

Provide alternatives for cases where a room may become unusable due to an unexpected breakdown in the heating/cooling/ventilation systems, lighting, electrical, or other utilities, or a broken window, door, spill or other disruption;

The need for some lecture spaces adjacent to laboratories where this location limits its general use due to inconvenience, noise, safety, or the adjacent activities (fumes in a paint shop, hazards involved with people traveling in or around the laboratory area);

Laboratories with specialized equipment that can only be used for a single purpose regardless of enrollment (e.g., x-ray rooms, dental hygiene stations, auto mechanics, morgues);

Special scheduling needs (e.g., 3-hour block Monday night instead of 1-hour block Monday, Wednesday, and Friday).

Lecture Classrooms (room types 110-115)

This standard is used for determining space allocations for Lecture (Room Type 110) and Lecture Service (Room Type 115)

Lecture space allocations usually vary from 11.5 to 25.0 ASF/station depending on floor space; room configurations, type of seating and room service requirements (projection rooms, A.V. storage, maps storage, etc.) State standards provide for an average of 15 ASF/station. For college's with an enrollment less than 140,000 WSCH, a room must be in use 48 hours of the 70 hour week; for college's with an enrollment of 140,000 WSCH or more, a room must be in use 53 hours of the 70 hour week. Since it is most often the case, the details of the computation of the standard are illustrated for those college's with less than 140,000 WSCH.

Formula components: Room Use = 68.6% (48 out of 70 hrs)
Station Use (when room is in use) = 66%
ASF/station (average) = 15.0

Computing the standard:

$$\text{ASF} = \text{WSCH} \times (15 \text{ ASF per station} / (66\% \times 48 \text{ hrs per week}))$$
$$\text{ASF} = \text{WSCH} \times 0.473$$

To compute the WSCH capacity of space, the formula is:

$$\text{WSCH} = \text{ASF} / 0.473 \quad \longleftarrow$$

Laboratories (room types 210-255)

This standard is used for determining space allocations for Laboratories (Room Types 210, 220, 230, 250) and Laboratory Service (Room Types 215, 225, 235, 255). Until 2001, 230-255 spaces were typically used to identify lab type spaces that were not directly related to instruction or non-WSCH generating facilities. In 2001, the state created a software that incorporated these non-WSCH generating spaces into the computation of capacity for WSCH generating Laboratory space. It is now important for districts to assess the categorization of its non-WSCH generating spaces accordingly.

Laboratory space allocations vary depending on the equipment used, the instructional mode, and the activities that the student performs. The allocations for laboratories vary depending on the subject grouping since some programs require larger station sizes than others. State standards generalize the utilization rates as follows:

Formula components: Room Use = 39.3% (27.5 out of 70 hrs)

Station Use (when room is in use) = 85%
ASF/station (vary) = 30 – 200

Computing the standard:

$$\text{ASF} = \text{WSCH} \times (\text{ASF per station} / (85\% \times 27.5 \text{ hrs per week}))$$
$$\text{ASF} = \text{WSCH} \times \text{Factor, where factor} = \text{ASF}/100 \text{ WSCH (see next page)}$$

To compute the WSCH capacity of space, the formula is:

$$\text{WSCH} = (\text{ASF} / \text{Factor}) \times 100 \quad \leftarrow$$

Example: Computation of laboratory allocation

A laboratory and its supporting service spaces is to be constructed to accommodate a projected 1000 WSCH in the Biological Sciences subject area. What is the computed space requirement?

For biological sciences (see TOP code 0400 on next page):

Factor = 55 ASF/station or 235 ASF per 100 WSCH

Therefore,

$$\text{ASF} = 1000 \text{ WSCH} \times 55 \text{ ASF per station} / (85\% \times 27.5 \text{ hours per week})$$

$$\text{ASF} = 2350 \text{ assignable square feet (ASF)}$$

Or,

$$\text{ASF} = \text{WSCH} \times \text{Factor, where factor} = 235 \text{ ASF per 100 WSCH}$$

$$\text{ASF} = 1000 \text{ WSCH} \times 235 \text{ ASF per 100 WSCH}$$

$$\text{ASF} = 2350 \text{ assignable square feet (ASF)}$$

LABORATORY STANDARDS

<u>TAXONOMY</u>	<u>SUBJECT GROUP</u>	<u>ASF/100 WSCH</u>	<u>ASF per STATION</u>
0100	Agriculture and Natural Resources	492	115
0115	Agricultural & Forestry Power/Machinery	856	200
0200	Architecture and Environmental Design	257	60
0400	Biological Sciences	235	55
0500	Business and Management	128	30
0600	Communications	214	50
0700	Computer and Information Science	171	40
0800	Education	321	75
0936	printing and Lithography	342	80
0937	Tool and Machine	385	90
0945	Mechanical Technology	556	130
0947	Diesel Technology	856	200
0948	Automotive Technology	856	200
0950	Aeronautical and Aviation Technology	749	175
0952	Construction Crafts/Trades Technology	749	175
0954	Chemical Technology	556	130
0956	Industrial Technology	285	90
All other 900s	(Engineering)	321	75
1000	Fine and Applied Arts	257	60
1100	Foreign Language	150	35
1200	Health Services	214	50
1300	Consumer Education/Home Economics	257	60
1400	Law	150	35
1500	Humanities	150	35
1700	Mathematics	150	35
1800	Military Studies	214	50
1900	Physical Sciences	257	60
2000	Psychology	150	35
2100	Public Affairs and Service	214	50
2200	Social Sciences	150	35
3000	Commercial Services	214	50
4900	Interdisciplinary	257	60

Reference: California Code of Regulations, Title 5, Section 57028

Library (room types 410-455)

This category of space provides for traditional library spaces such as reading, study, circulation, processing, and stacks. However, the increased use of the computer as teaching/learning tool has added to the types of spaces that make up libraries. Traditional reference materials are going onto the computer reference files and CD-ROM is being utilized more extensively. To some extent microfilm is still being used to store some materials. Study stations are being equipped with computers and “writing” labs are being established for student use in class research or writing projects. Research is utilizing the internet. Because of these changes in the technology related to learning resources, a precise interpretation of the language associated with the standards will not make any sense.

Therefore, in using the planning guidelines provided, one should be reminded that the definitions used are only for the convenience of computing a reasonable allocation for learning resource space – NOT TO BE USED TO DEFINE OR LIMIT THE DESIGN OF THE SPACES.

The State of California standard is used as a planning basis:

The TOTAL DISTRICT SPACE REQUIREMENT is computed on the basis of day graded enrollment (DGE), with 3,795 ASF considered a minimum working base. This base is for each campus in the District (e.g., two campuses would have a base of 7590 ASF = 2 x 3795 ASF per campus). The total space for the district is computed as follows:

Initial increment = 3795 ASF per campus

Additional increments:

For each of the first 3000 DGE:	ASF = 3.83 x DGE
For each additional DGE between 3000 and 9000:	ASF = 3.39 x DGE
For each additional DGE over 9000:	ASF = 2.94 x DGE

The resulting total space is then distributed to the campuses usually by prorating based on proportional enrollment activity. However, consider adjustments if the district operates an acquisition or processing system that utilizes one of the campuses as the lead.

Audio-Visual (a.k.a. MEDIA; room types 530-535)

Traditionally, this category provides for media production, storage, and distribution systems including control and sound rooms, media storage, and spaces for operation of equipment for the communication of these materials. Such areas used primarily for class instructional purposes are to be included in the computation of lecture and/or laboratory space.

The State of California standard is used as a planning basis:

The TOTAL DISTRICT SPACE REQUIREMENT is computed on the basis of day graded enrollment (DGE), with 3,500 ASF considered a minimum working base. This base is applied only once for each District. The total space for the district is computed as follows:

Initial increment = 3,500 ASF per District

Additional increments:

For each of the first 3000 DGE:	ASF = 1.50 x DGE
For each additional DGE between 3000 and 9000:	ASF = 0.75 x DGE
For each additional DGE over 9000:	ASF = 0.25 x DGE

The resulting total space is then distributed to the campuses usually by prorating based on proportional enrollment activity. However, consider adjustments if the district operates a centralized distance learning studio or conducts other centralized functions that utilizes one of the campuses as the lead.

Office (room types 310-355)

Office space is a function of many factors; however, the major ones are the number of persons, number of persons per office or office area, financial resources, organizational pattern and program/functional needs. Planning for office space requirements can best be done by addressing each basic type of office. It is advisable for districts to establish their own guidelines to be applied on a uniform basis to avoid overbuilding in this category.

State standards provide for an overall allocation of office space at 140 ASF per “FTE Instructional and specifically mandated staff”; for small colleges (less than 35,000 WSCH) 160 ASF per “FTE Instructional and specifically mandated staff” is used.

The resulting computation is the allocation for all office and office service spaces for a campus including FACULTY AND COUNSELOR OFFICES, STUDENT GOVERNMENT OFFICES, CONFERENCE ROOMS, REGISTRATION AREAS, BUSINESS OFFICE, ADMINISTRATION, AND ALL OTHER OFFICE FUNCTIONS.

Examples:

For a college with 85,000 WSCH:	Assume records show and FTE staff of 200 Office space = 200 FTE x 140 ASF = 28,000 ASF
For a SMALL college with 34,000 WSCH	Assume records show an FTE staff of 100 Office space = 100 FTE x 160 ASF = 16,000ASF

DEFINITIONS

ASSIGNABLE SQUARE FEET (ASF)	The square footage of a space (or room) for assignment to occupants for a specific functional purposes.
GROSS SQUARE FEET (ASF)	The total area of a building within the exterior walls including all ASF plus thicknesses (interior and exterior), and mechanical, electrical, janitorial or other service areas, as well as one-half of the total square footage of outside overhang (beyond 12”).
BUILDING EFFICIENCY	ASF divided by GSF expressed as a percent. The diagram on the following page illustrates the components of assignable and gross square feet. Typical net-to-gross percentages (%) range from 60-85% depending on the type of building and weather conditions.
STUDENT STATION OR STATION	The seat or workspace for <u>each</u> student in a lecture classroom or laboratory.
WEEKLY STUDENT CONTACT HOURS	The number of hours a week students actually occupy a station or seat for time associated with a officially recognized program. WSCH may be identified as credit or noncredit and in California is based on programs eligible for State funding. In California, the annualized average of fall and spring semesters is used as the planning base. Summer sessions are not included. Positive attendance hours are included as average WSCH equivalency over the time period.
FTE STUDENT	The total number of contact hours carried by all students divided by the number of weeks in the counting period and then divided by 15 weekly student contact hours.
HEADCOUNT ENROLLMENT	The total number of enrolled students regardless of the number of credit hours each carries. It is the number of individuals enrolled. No one person is counted twice.

DEFINITIONS

(continued)

DAY GRADED ENROLLMENT

The number of students enrolled in day credit courses for an enrollment period. Day is considered to be any class beginning or in session between the hours of 8:00 a.m. and 5:00 p.m.

WSCH CAPACITY

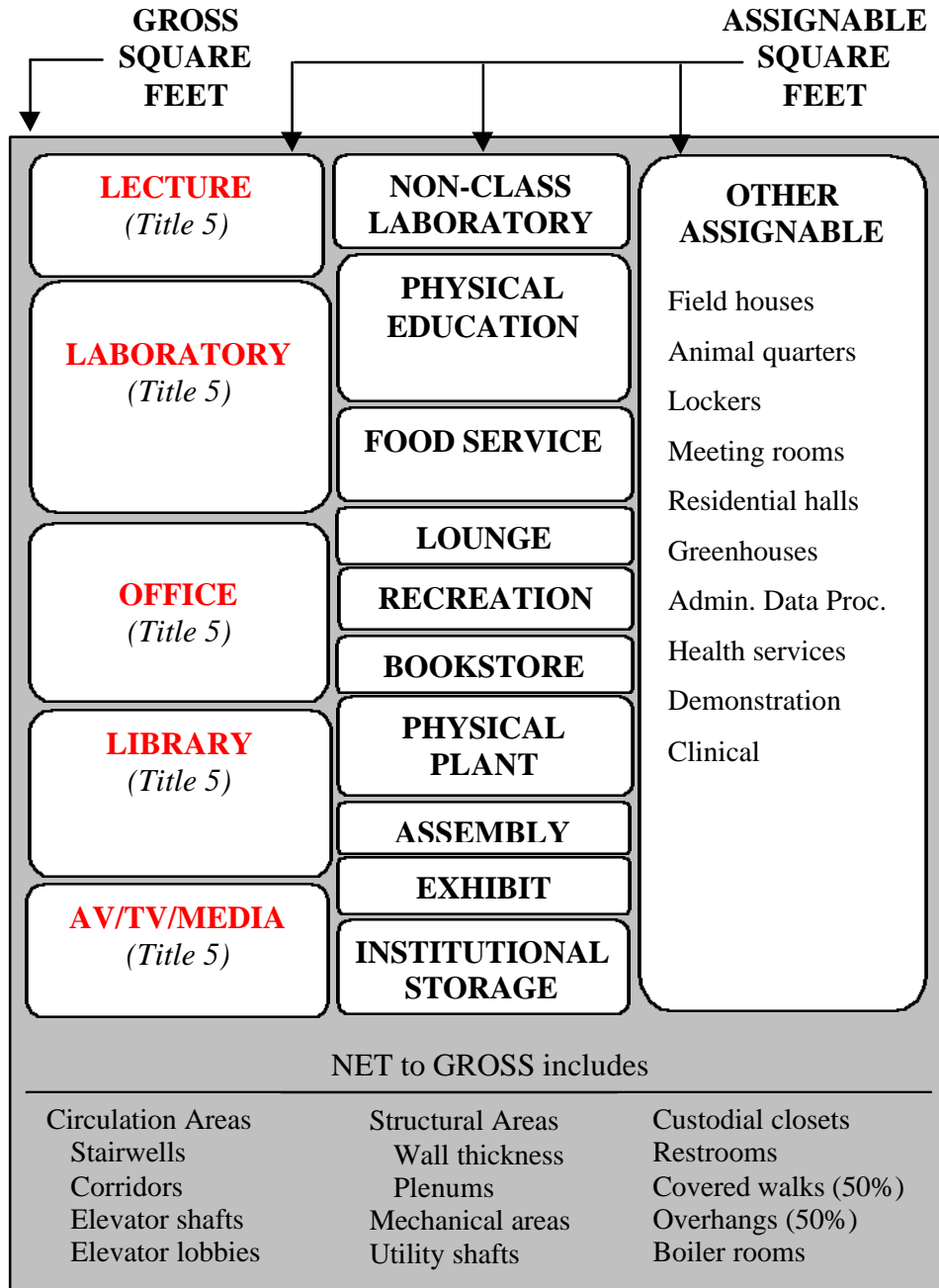
The enrollment level of lecture and/or laboratory space expressed in weekly student contact hours (WSCH) that can be reasonably supported by the available ASF of those categories of space.

CAPACITY:LOAD RATIO

The computed capacity of a type of space divided by the actual usage (usually expressed as a percentage). Over 100% indicates an overbuilt status.

BUILDING EFFICIENCY

Definition Diagram



Assignable spaces

Spaces that make up the difference between net and gross square feet

What Makes Up the Library Formula?

The library formula is based on the cumulative derivatives of the following components:

$$\text{Stack space} = 0.1 \text{ ASF} \times \text{Number of bound volumes}$$

Number of volumes is computed as follows:

Initial increment = 16,000 volumes

Additional Increments:

- (a) Under 3,000 DGE = + 8 volumes per DGE
- (b) 3,000 – 9,000 DGE = + 7 volumes per DGE
- (c) above 9,000 DGE = + 6 volumes per DGE

$$\text{Staff space} = (140 \text{ ASF} \times \text{number of FTE staff}) + 400 \text{ ASF}$$

Number of FTE staff is computed as follows:

Initial increment = 3.0 FTE

Additional Increments:

- (a) Under 3,000 DGE = + .0020 FTE staff per DGE
- (b) 3,000 – 9,000 DGE = + .0015 FTE staff per DGE
- (c) above 9,000 DGE = + .0010 FTE staff per DGE

$$\text{Reader station space} = 27.5 \text{ ASF} \times \text{number of reader stations}$$

Number of reader stations is computed as follows:

Initial increment = 50 stations

Additional Increments:

- (a) Under 3,000 DGE = + .10 stations per DGE
- (b) 3,000 – 9,000 DGE = + .09 stations per DGE
- (c) above 9,000 DGE = + .08 stations per DGE

Examples: *Computing Library Space*

For a district with 2,500 DGE (one campus)

Stacks = $0.1 \times (16,000 + 2,500 \times 8)$	3,600 ASF
Staff = $140 \times (3 + (2500 \times 0.002)) + 400$	1,520 ASF
Reader = $27.5 \times (50 + (2500 \times .10))$	<u>8,250 ASF</u>
TOTAL	13,370 ASF

Using the “total” formula:

Initial increment	3,795 ASF
Additional increments = 2500×3.83	<u>9,575 ASF</u>
TOTAL	13,370 ASF

For a district with 8,500 DGE (two campuses)

Stacks = $0.1 \times ((2 \times 16,000 + (3,000 \times 8) + (5,500 \times 7)))$	9,450 ASF
Staff = $140 \times ((2 \times 3) + (3,000 \times 0.002) + (5,500 \times 0.015)) + (2 \times 400)$	3,635 ASF
Reader = $27.5 \times ((2 \times 50) + (3,000 \times .10) + (5,500 \times .09))$	<u>24,613 ASF</u>
TOTAL	37,698 ASF

Using the “total” formula:

Initial increment = $3,795 \times 2$	7,590 ASF
Additional increments = $(3000 \times 3.83) + (5,500 \times 3.39)$	<u>30,135 ASF</u>
TOTAL	37,725 ASF