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BASELINE DESIGN GUIDELINES AND STANDARDS

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INTRODUCTION

This manual will cover baseline interior design standards for the following room uses and spaces:

Classroom, Laboratory, Office Space, Library, Assembly Use Areas, and Sanitary Use Facilities.

Each will address these major categories of design criteria:

- Design Standards
- Audio Visual Systems & Technology Design Criteria
- Mechanical, Electrical, and Plumbing Design Criteria
- Furniture & Equipment Standards

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

- LEED – Credit consideration see LACCD Sustainability Guideline.

CHAPTER 1. ROOM AND SPACE SPECIFIC GOALS AND STANDARDS

CATEGORY A. CLASSROOMS

1. INTRODUCTION

- a. This category includes general-purpose classrooms, lecture halls, recitation rooms, seminar rooms, and other rooms used primarily for scheduled non-laboratory instruction. Total classroom facilities include any support rooms that serve the classroom activity. A classroom may contain various types of instructional aids and equipment as long as these do not tie the room to instruction in a specific subject or discipline.
- b. Provide for appropriate and changing technology. Renovations and new construction should provide an infrastructure that is adaptable, flexible, and able to support future technologies. Instructional technology should be easily accessed and employed. There must be balance between standardization for easier use and maintenance, and the need to upgrade, update, and add new capacities as technologies evolve.
- c. The size of the room should be designed to accommodate the programmed number of occupants as well as provide for additional support space. The support space must take into consideration both the set up and use of audio-visual equipment, access for the disabled, layout of the instructor's materials, circulation space, and empty floor space needed to keep students from being seated too close to a whiteboard, projection screen, or video monitor.
- d. Promote pride in place. Classrooms should strive to be well designed, inspiring places that build pride and morale and help recruit the best faculty and students. Materials, products, and finishes should be selected for their durability and maintainability in addition to their style to assure the spaces age gracefully.
- e. Designing a space for teaching and learning requires careful planning and organization. It requires close collaboration between the architect, mechanical engineer, electrical engineer, lighting designer, audiovisual specialist, and instructor. A well-designed space is the result of careful coordination of information gathered from architectural and engineering disciplines as well as established instructional technology principles.
- f. All classrooms shall be designed with current technology to meet instructional needs. This includes an instructor station equipped with a computer, audiovisual equipment, and controls allowing the instructor to accommodate a variety of media and presentation modes. The goal is to standardize all multimedia electronic equipment in every classroom which allows faculty to have consistent technical controls and capability regardless of teaching location on the campus. Please refer to current Districtwide LACCD Audio Visual and Telecommunication standards for further details.
- g. All classrooms must be designed to comply with the American Disabilities Act (ADA) and Title 24 of the California Code of Regulations
- h. The Design team should verify with the individual campus if campus specific design criteria exist.

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2. CLASSROOM ASSIGNABLE SQUARE FEET

Designers shall use the following space guidelines for classrooms per the **California Community Colleges Space Planning Standards for Classrooms:**¹

Classroom Use

Classrooms and seminar room use shall be not less than 48 hours per 70-hour week for a campus of less than 140,000 weekly student contact hours per week, and not less than 53 hours per 70-hour week for a campus with 140,000, or more, weekly student contact hours.

Classroom Occupancy

Classroom and seminar room station occupancy shall be not less than 66 percent of capacity.

Classroom Space per station

The computed average space per station in both existing and future classroom, seminar room, and service areas shall be 15 square feet per student station.

Capacity of Future Assignable Space

The formula for determining the assignable space for future classrooms and seminar rooms per projected 100 weekly student contact hours is as follows:

Assignable square feet per station (ASF)

$$\frac{\text{-----}}{\text{Room use standard} \times \text{station occupancy standard}} \times 100$$

Abbreviations

ASF/STN = Assignable square feet per student station Classrooms:

Hrs./Wk. = Number of hours out of a 70-hour week, 8 a.m. to 10 p.m., a classroom, on the average, should be used

*STN. Occ. = The percentage of expected student station occupancy when rooms are in use
STN. Use = The number of hours per week (out of the 70-hour week for classrooms and class laboratories) which a student station, on the average, should be used*

WSCH = Weekly Student Contact Hours-8 a.m. to 10 p.m. WSCH for non-laboratory (lecture) and laboratory hours.

Formula for Deriving the Standards

Example: For determining ASF/WSCH in Classrooms on an 8 a.m. to 10 p.m. basis:

ASF/STN. = 15

Hrs./Wk. = 53

¹ California Code of Regulations, Title 5: Education, Division 6: California Community Colleges, Chapter 8: Construction, Subchapter 1: Community College Construction Act

$$STN./Occ. = .66$$

$$((15) / (53.0 \times .66)) \times 100 = 42.9 \text{ ASF}/100 \text{ WSCH}$$

$$\frac{\text{ASF} / \text{STN}}{\text{Hrs.} / \text{Wk.} \times \text{Stn. Occ.}} \times 100 = \text{ASF} / 100 \text{ WSCH}$$

$$\frac{15}{53.0 \times .66} \times 100 = 42.9 \text{ ASF} / 100 \text{ WSCH}$$

ROOM 1. CLASSROOMS

Effective allocation and utilization of classroom space on any college campus depends on multiple factors. Key among these are²:

- Classroom Space Assignments and Utilization Analyses - Provision of adequate numbers and sizes of classrooms, in the appropriate locations, to serve academic needs. (How many large or medium-sized classrooms are needed, versus smaller seminar rooms, in what buildings, and available at what times?)
- Classroom Space per Station or Seat - Provision of correctly sized spaces per seat within any given classroom. (Are classrooms intended for 100 students in fact adequately sized to seat 100 students with the appropriate furniture?)
- Classroom Technology Support - Provision of technology. (Is the classroom capable of supporting the teaching needs of the faculty, even if it is large enough, in the right place, available at the right time, and with the appropriate space per student seat?)
- Flexibility of Classroom Space - Flexibility is a key factor in the design of classrooms. The configuration of the room and furniture layout should have the ability to change as the pedagogy evolves, and classroom designs should reflect this.

As these factors demonstrate, defining and allocating classroom space is a complex undertaking. The space planning guidelines in this document primarily address the second point noted above: guidelines for the appropriate amount of space provided in classrooms per seat, or per student station. The guidelines are most useful in helping to estimate the actual size of classrooms needed for new construction or for renovation projects which revamp existing classroom space. They also help to assess the efficiency of existing classroom space, when concerns arise about the adequacy of existing rooms to accommodate assigned numbers of students.

- Room proportions have an impact on the seating capacity, sight lines and ability for student and instructor to interact with one another.

² Stanford College Space Planning Guidelines, 7/07
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- Avoid spaces which are too wide. They make it difficult for instructor to make eye contact. Wide spaces also have poor sightlines -- especially in front rows. Wider spaces dedicate too much space to the instructor.
- Avoid spaces that are too deep. Deep spaces make it challenging for students in the last rows to communicate, hear and see the front of the room. Also, instructor space may be too narrow for screens and boards.
- Avoid creating seminar & conference rooms with long narrow tables that make it difficult for everyone to see each other. Long rooms typically make it difficult to see the projection screen and writing on boards. Rooms which are almost square or have a shape based on viewing angles are best.

a. **CLASSROOM - DESIGN STANDARDS**

1. Classroom - Ceilings

- a. Minimum ceiling height for classrooms is 10 feet clearance from finished floor to finished ceiling or bottom of the light fixtures. Consider accommodating classroom lighting and technology requirements. For example, a projection screen must be large enough to display images of an adequate size. It must be placed high enough from the floor to provide unobstructed sight lines. This usually requires a height higher than the standard 8 feet. For larger rooms, the ceiling needs to be proportionally higher. In large, sloped or tiered classrooms, the ceiling height is directly related to the distance to the last row of seats.
- b. The surface of the ceiling must be designed to accommodate the required acoustical properties of the room. Concern for proper acoustics should prevail in selection of ceiling materials. For acoustic tile ceilings, the overwhelming preference is for suspended lay-in ceilings, 2x2 or 2x4. Concealed-spline ceilings should not be specified, unless there is a special condition that must be accounted for; review with LACCD before including concealed-spline ceilings in a project. Generally, concealed spline ceilings are appropriate only in locations without ceiling access requirements.
- c. With the increasing importance of A/V and data systems in classrooms (and the emergent nature of the technologies involved), the Designer is encouraged to create terminal points that are as flexible as possible. Serious consideration should be given to under-floor access for boxes serving A/V, data, and power at locations such as lecterns. If the classroom is above grade level, this access can be provided from the ceiling below, provided the ceiling is not constructed with fine finishes which cannot be disturbed.
- d. Access for the maintenance of technology, power, etc. must be included where applicable.

2. Classroom - Finishes³

- a. Architectural materials specified should be chosen primarily with durability, maintainability, and acoustical properties in mind. Acoustic control between classrooms

³ Princeton University Facilities Department Design Standards Manual (Release 7.0 March 2008)

is also important, so that sound transmission classification (STC) ratings of structural components and finishes should be taken into account when selecting materials and systems.

b. Floors

In smaller classrooms, it is common to use luxury vinyl plank and tile, vinyl composition tile, carpet tile or finished (polished) concrete. Proximity to the building entrance and out-off doors may affect the choice between carpet tiles or vinyl tile. Vinyl composite tiles are common in lecture rooms. The Designer must detail material interfaces where carpet meets wall transitions to other materials, where carpet runs to or under seating, and at fixed equipment such as lecterns (with A/V and power outlet receptacles), etc. The Designer must make an informed decision based on the use of the space, anticipated traffic patterns, type of substrate, frequency of cleaning and maintenance and ease of replacement. All of these factors must be taken into consideration. In larger spaces, detail the location of carpet seams carefully to avoid the possibility of ragged edges and subsequent problems with upkeep and excessive wear. If a section of the carpet must be replaced, the seaming should not be immediately obvious.

c. Walls and Doors

There is no ‘standard’ wall material or finish, but the Designer must remember that the facility needs to be finished in a way that allows for normal cleaning, upkeep, and maintenance. Chair rail trim is encouraged where moveable tablet-arm chairs are to be used, or where stacking chairs provide extra seating in a room. The Designer should attempt to incorporate breaks, reveals, or other architectural details to divide large expanses of painted surface, particularly in the vertical direction. This is especially true in high traffic areas, areas using high pigment paints, or locations that are especially subject to abuse. Doors into classrooms should be provided with vision panels to allow students to see if room is in use. Be sure to address any light pollution from the hallway that could affect the media viewing.

d. Reflectance Values

The color of the ceiling, walls, floor, and furniture has a major impact on the effectiveness of the daylighting and electric lighting strategy. Select light colors for interior walls and ceilings to increase light reflectance and increase the effectiveness of the lighting and daylighting systems.

Location	Minimum Reflectance
Walls above 7 ft.	70%
Ceiling	80%
Light wells	80%
Floors	30%
Furniture	50%
Walls below 7 ft.	50%

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3. Classroom - Acoustics⁴

- a. Classrooms should be spaces where listening conditions are excellent so that students can learn. Three factors are important in achieving a good listening environment. The first is correct room acoustics, specifically avoiding the speech blurring effects of reverberation. The second is good isolation of sounds from elsewhere, so as to avoid distraction from competing conversations in adjacent classrooms or interfering sound from street or air traffic. The third factor is adequately low levels of background sound from HVAC equipment. Especially for students farthest from the teacher, ventilation-system noise often masks the intelligibility of the spoken word. All three factors are addressed in good classroom designs.
- b. Reverberation time is the time it takes sounds to die down in a room. Speech intelligibility is better in a room with a lower reverberation time. Reverberation is reduced through use of sound-absorbent finishes such as acoustical ceilings and wall finishes. Requirements for maximum reverberation times (500, 1000, and 2000 Hz octave band average) for unoccupied classrooms are .6 seconds for classrooms under 10,000 cubic feet and .7 seconds for classrooms from 10,000 to 20,000 cubic feet.
- c. Speech intelligibility, critical for an effective presentation, is directly related to the acoustics of the room and the NC rating (background noise in the room). The best sound system cannot improve upon poor acoustics so it is essential to start with a relatively quiet room and good acoustics. LACCD has established the following maximum NC for classrooms on campus.⁵
 1. NC 25 A-weighted for new construction
 2. NC 30 A-weighted for renovations
 3. The Design team should use ANSI standard S12.60-2002 titled —Acoustical Performance Criteria, Design Requirement, and Guidelines for Schools as a guideline. (see LACCD Sustainability Guidelines)

4. Classroom - Casework

All built-in casework must be compliant with the Americans with Disabilities Act Standards (ADAS), and California Building Code (CBC) latest editions.

- a. Refer to program information

5. Classroom – Lighting

- a. The objective is to provide an optimum visual environment for both student and instructor that is supportive of today's learning environment. The goal of effective lighting in the classroom is to attract and hold attention, stimulate

⁴ BOM Editorial Staff, and R. Kring Herbert. "Meeting The Acoustical Standard for Schools." www.facilitiesnet.com. July 2005. Building Operation Management. 21 Oct. 2008 <<http://www.facilitiesnet.com/bom/articleprint.asp?id=3182>>

⁵ University of California San Diego. "UCSD DESIGN GUIDELINES." [Special Program Requirements](http://fdc.ucsd.edu/documentation/designguidelines.html). University of California San Diego. 21 Oct. 2008 <<http://fdc.ucsd.edu/documentation/designguidelines.html>>.

learning, and influence behavior in a positive way. An effective lighting system must incorporate controls that will provide maximum flexibility in utilizing the classroom. These controls must be easy to use, offering clearly labeled control of individual lighting zones throughout the classroom and should be standardized in classrooms throughout the campus.

- b. The instructor should be able to control the lights, sound levels, the projection screen, and the slide projector in a convenient location at the front of the room. The control panel should be positioned in a cluster at a height in compliance with the accessibility standards.
- c. Minimum maintained lighting intensity of 50 foot-candles in accordance with the latest IES Lighting Hand Book.
- d. Lighting should be even across the room, with a maintained light levels per Illuminating Engineering Society Handbook on the work surface. A combination of lighting zones, dimmable fixtures, and controlled daylight in the room is ideal. Fixtures should control glare and should not produce veiled reflection in the room or on equipment. Indirect/direct fixtures are favored. If a room is multi-functional, take into account in the lighting design the various tasks that are to occur in the different sectors of the room. If a space has a ceiling above 12' in height, the project team shall review all access requirements for light fixture maintenance and incorporate any fixed requirements such as access panels, cat walks, etc. into the documents. Due to fire and safety codes, emergency lights must be installed in each classroom with occupancy of more than 50 people. It must stay on at all times, even when the lights are shut off.
- e. Occupancy sensors shall be provided in all classrooms. The occupancy sensor shall be ceiling mounted and shall be dual technology (combination passive infrared/ultrasonic) and shall be tied in with the low voltage lighting controller such that all room lighting will be de-energized when rooms are not occupied. f. Zoning⁶
 1. All classrooms should have at least two lighting zones and no more than three lighting zones. Each classroom shall have separate circuits; not sharing with circuits of other loads outside the classroom.
 - a. Main classroom lighting (student seating area): One zone should control the classroom's general use of LED lights.
 - b. Projection Area: One zone should control low-level lights that will not shine on the screens and will not reflect in the audience's eyes.
 - c. Instructor Workstation (front of classroom and lectern area): Optionally, a zone can control "platform lights" that highlight the instructor and demonstration area. The light direction above the instructor workstation should be switched separately whenever

⁶ University of California San Diego. "UCSD DESIGN GUIDELINES." Special Program Requirements. University of California San Diego. 21 Oct. 2008 <<http://fdc.ucsd.edu/documentation/designguidelines.html>>.

possible to allow the instructor to see their materials while conducting a class with the rest of the lights off for projection.

- g. Classroom lighting systems must support multiple conditions and to provide the necessary balance and control separate lighting zones are required. Classrooms require sufficient lighting for student work areas as well as illumination of smart whiteboard and demonstration benches. 50 Foot Candles at the work surface is recommended; however, to maintain the “darkness level” on the projection screen necessary for good image contrast, light spillage onto the projection screen must be minimal. 10 Foot Candles maximum at the projection screen surface is recommended.
- h. Lighting fixtures and lamps should be specified for minimum light spillage to projection screen, for energy efficiency, low heat generation, and easy maintenance. General guidelines would include the use of recessed lamps in deep cans to provide controlled lighting with minimal light spillage back to the projection screen.

6. Classroom - Openings

a. Windows

- 1. Windows should be installed in every classroom. The windows should be on the side or rear wall. In larger rooms as well as sloped or tiered rooms, it is often desirable to install motorized shades and blinds. Be certain to design in sufficient depth the window and wall to allow for motorized installations.

Tinted, “Low-E” rated glass is preferred for all windows. Window coverings can be manual if they are easily accessible. If windows are too high to reach and/or are too numerous, the window treatments should be motorized and capable of being controlled by the AV touch panel. This will allow ease of use for instructors to control the lighting from the windows. Use of light diffusing shades on a roller is recommended. All window treatments in the building should coordinate with each other and have a non-reflective matt finish.

If manual chain control is used to operate window shades, they must extend minimum 12” into the accessible reach range. All manual window shade controls must be operable with maximum 5 lbs. of force.

b. Doors

- 1. Doors should be located at the back of the classroom so that students entering and exiting the space will not disrupt instruction. Exceptions to this rule would be large tiered classrooms and auditoriums that require multiple doors located at the front and rear of the space. Doors should have quiet operation. Minimize noise transmission into classrooms from corridors. Consider special access to the room.
- 2. Recess out-swinging doors into the room to avoid projecting into corridor circulation.

3. Entrance doors to have a vision panel to allow students to see if room is in use.
7. Classroom - Signage / Wayfinding
 - a. Building signage should be designed such that the user is directed to classrooms from the major entrances and circulation areas of the building, including elevator lobbies and stairwell landings. All signage should employ easily changeable paper inserts, if required by the College, and be ADA and California Accessibility code compliant.
 - b. Classroom Number Signs: Room number signs must include a display bar to post announcements. They should not require tape or thumbtacks. Instruction on the mounting location and height of room signs shall be taken from the more stringent of ADA Standards, and the latest edition of CBC.
 - c. Classroom Data Sheets: Data sheets should be posted inside the classroom, preferably near the instructor station or near the room entrance. Data sheets include a photo of the room set-up to help assist the custodial crew in setting the room configuration correctly at the start of each day. Other information listed on the sign includes: type and quantity of furniture, room configuration, audio-visual level, audio visual equipment, and phone numbers for reporting problems with the facility or requesting assistance with the audio visual equipment.
 - d. Classroom Contact Sign: Contact signs should also be included near the instructor station (if an issue arises in the classroom).
 8. Classroom - Storage / Closet
 - a. Consider adequate storage space located in close proximity to classroom for media equipment. Consider a small storage for classroom supplies separate from media equipment. Provide sufficient space to store board supplies, lecterns, and additional chairs. This space requires a lockable door a few shelving units for small supplies and no window.
 - b. CLASSROOM - AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA
 1. The goal is to provide simple and intuitive systems for teaching and collaboration with tools for video, audio and recording. Where classrooms are standardized to provide consistent learning environments and are adequately maintained and supported for optimum operation and maximum utilization. Distance learning and internet access should be available for all classrooms.
 2. These guidelines are intended to be minimum requirements for all classrooms. All classrooms and lecture rooms shall be considered "Smart Classrooms". No difference should be made between classrooms and lecture rooms.
 3. All Classrooms shall provide:
 - a. Wireless access
 - b. Data cabling for instructor
 - c. 2-port voice and 2-port data information outlet for instructor.
 - d. Power supply for students

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- e. Structured cable configurations
- f. Voice data and Video services
- g. Support facility for multimedia generated display
- h. Control system for instructor to allow control of lighting, audio, video, projection screen, and video. It should be a simple and intuitive system, consistent throughout all campuses.
- i. Data projector
- j. Document camera
- k. Loudspeakers
- l. Cable TV connection
- m. Smart whiteboards
- n. At minimum, capability to audio record lecture. Video recording capability will be optional.
- o. Space for securing technologies within classroom.
- p. Americans with Disability Act (ADA) compliant equipment
- q. Power and data connections for portable Assistive Listening System (ALS), or permanently fixed system where required by CBC.

Device / Location	Requirements	Notes
Ceiling Projector	(1) 110VAC duplex 15A outlet (2) data RJ45 ports (1) HDBT RJ45 port*	Co-locate near projector pole for shortest cable distance. *Note: Ceiling HDBT cable to be shielded CAT6 running back to corresponding RJ45 port at the instructor station floor box or wall plate.
Projection Screen	(1) 110VAC 15A hard-wired	On (house) left of screen.
Flat Panel Display	(1) 110VAC duplex 15A outlet (2) data RJ45 ports	Locate services within in-wall combination recessed multi-compartment enclosure (with cover). Box to be located in center of display (coordinate with mount and structural backing).
Instructor Station, Wall	(1) 110VAC quad 20A outlet (6) data RJ45 ports (1) HDBT RJ45 port*	Co-locate on wall with AV box – all to be within a horizontal 18” span and hid be side of desk against wall. Mount at +18” AFF. *Note: Station HDBT cable to be shielded CAT6 running back to corresponding RJ45 port at the ceiling projector.
Instructor Lectern, Floor	(1) 110VAC quad 20A outlet (6) data RJ45 ports (1) HDBT RJ45 port*	Locate services within combination recessed multi-compartment large capacity floor box or poke-through (with flip cover). *Note: Station HDBT cable to be shielded CAT6 running back to corresponding RJ45 port at the ceiling projector.

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Wireless Access Point	(3) data RJ45 ports	Locate in center of room.
Audiovisual Rack, Large (Cabinet, Free Standing)	(1) 110VAC quad 20A outlet (8) data RJ45 ports	Co-locate on wall with AV box – all to be within a horizontal 18” span and hid be side of desk against wall. Mount at +18” AFF.
Audiovisual Rack, Small (Credenza, Free Standing)	(1) 110VAC quad 20A outlet (6) data RJ45 ports	Co-locate on wall with AV box – all to be within a horizontal 18” span and hid be side of desk against wall. Mount at +18” AFF.
Table Connection (Well)	(1) 110VAC duplex 15A outlet (1) data RJ45 port	Extend power and data to floor connection plate(s) through table leg. (confirm data if needed by program)
Wall Clock IP Speaker	(1) data RJ45 port	New construction. Locate in front of classroom at +96” AFF.
Ceiling IP speaker	(1) data RJ45 port	Renovation projects. Locate in ceiling near room center.
Wall Telephone	(1) data RJ45 port	Locate at +46” AFF within 36” of entry door.

4. Considerations:

- a. Security – (a) theft prevention and (b) with emergency notification (IP based)
- b. Separation of user equipment vs. "operation" equipment. This can be accomplished with a rack and podium combination, or wall plate with content on IP. User equipment should be easily accessible, labeled, and integrated where at all possible. Operation equipment should be locked with limited access.
- c. Maintenance – on-campus response team, replacement hardware inventory, preventative maintenance
- d. Help Desk – access to "live person" phone support (can set up button on control panel to connect to help desk)
- e. Projection screen and/ or Smart board (capable of direct capture to electronic devices) placement – placement should provide access to both surfaces simultaneously (can offset the projector onto one side of smartboard).
- f. Voice reinforcement (Microphones) where room size warrants.

5. Input from the field:

- a. Lighting should be installed in zones, with preferably separate zones for the whiteboard vs. the projector screen.
- b. Remote management capabilities for the campus/ District over IP
- c. I-pod connectivity (video and audio)

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- d. Student Response Systems (hardware integrated in rooms, students provided handheld appliances)
 - e. Student collaboration software – to encourage students to share their work with teacher and classmates.
 - f. Provide document camera with built in preview monitors (if no dedicated computer is available).
- c. CLASSROOM - MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA
- 1. Mechanical Systems (Ventilation, Temperature, Noise, etc.)⁷
 - a. The classroom needs to maintain a comfortable air temperature and adequate air circulation. It is important to keep the audience fresh and interactive. Provide an environmentally controlled temperature and humidity) learning environment which is conducive to the learning process and a mechanical system which is virtually undetectable to the students and staff.
 - b. Mechanical design should conform to: International Mechanical Code, ASHRAE Fundamentals latest Edition
 - c. All classrooms should have adequate ventilation for the main classroom and the projection booth, if any.
 - d. The thermostats should be non-adjustable or just use sensors.
 - e. The classroom environment must be habitable and healthy with all the doors and windows closed in the heat of summer. The minimum ventilation for all classrooms shall include both supply and exhaust air systems.
 - f. Classroom systems shall use the following criteria as a basis for design:
 - 1. Indoor design temperature (winter): 68 degrees F
 - 2. Summer indoor design temperature (for rooms with air-conditioning):78 degrees F
 - 3. Minimum outdoor air ventilation rates shall be as specified per the most recent edition of the California State Building Code.
 - 4. System components (fans, ductwork and diffusers) shall be selected to meet the following sound criteria:
 - a. New Classrooms: NC 20 to NC 25
 - b. Renovations: NC 25 to NC 30
 - 5. Diffuser locations shall be selected to distribute ventilation air uniformly in the classroom at velocities as recommended by applicable ASHRAE design standards. Supply diffusers shall be equipped with opposed

⁷ University of California San Diego. "UCSD DESIGN GUIDELINES." Special Program Requirements. University of California San Diego. 21 Oct. 2008 <<http://fdc.ucsd.edu/documentation/designguidelines.html>>.

blade dampers. Balancing dampers shall be provided of ductwork brand connections.

2. Classroom - Electrical⁸
 - a. All electrical equipment (including contactors, lighting fixtures, dimmers, etc.) should be of selected brands, models, and specifications to conform to campus standards.
 - b. Provide occupancy sensor with two circuit override switch so occupant may select a preferred lighting level.
 - c. Conduits
 1. All conduits should be of continuous EMT type material where possible.
 2. In areas and situations where EMT is not possible, junction boxes or flexible conduit should be installed, up to 6'-0" maximum length, only by prior approval of the College.
 3. Junction boxes should not be located in hidden or inaccessible corners and shall be accessible in compliance with CEC.
 4. All conduit for class II wiring shall be at least 1" diameter or larger. Larger conduit is usually installed to ensure room for future expansion.
 5. Separate conduits shall be provided in each classroom for data circuits and video Local Area Network (LAN).
 6. Low voltage cables (e.g. audio, video, and control cables) are each required to run in a separate conduit.
 7. All conduit and electrical circuits should have the same ground reference.
 - d. Circuits
 1. All audio, video, and control electrical circuits should be fed from "clean" legs from the transformer free of high inductive loads. There may be no elevator motors, compressor motors, blower motors, etc. on the side of the power transformer that feeds the media equipment.
 2. All electrical control circuits should come to a single location.
 - a. This location should be large enough for the contactor cabinet and an 18" x 18" x 6" NEMA type 12 box that contains the low voltage media control system. This NEMA box must be fitted with internal threaded studs to accept the panel that the control modules are mounted on.

⁸ University of California San Diego. "UCSD DESIGN GUIDELINES." Special Program Requirements. University of California San Diego. 21 Oct. 2008 <<http://fdc.ucsd.edu/documentation/designguidelines.html>>.

- b. The location should also be convenient for maintenance and secure from vandalism.
 - c. If possible this location should be isolated from the classroom, as contactors tend to be noisy.
3. Utility AC outlets on separate circuits from the media equipment should be provided inside the classroom for overhead projectors, computer terminals, vacuum cleaners, coffee pots, etc.
- a. There should be at least one duplex outlet on each wall (consideration must be given for added duplex outlets sufficient enough to accommodate electronic devices such as lap top computers in order to reduce extension cords), on the front of the projection booth, and in the center of the room under the first or second row of seats.
 - b. The duplex outlet on the sending wall will be within two feet of the centerline of the wall.
- d. CLASSROOM - FURNITURE AND EQUIPMENT STANDARDS

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

Classroom furniture shall be selected with attention to layout and capacity of the room, accessibility, student comfort, appearance, durability and maintenance, and exchange with other classrooms. Specialization in general use classrooms should be avoided.

1. Seating

- a. Seating should be relatively comfortable, should be durable and easily maintained, and should be replaceable, without extraordinary effort. Seminar seating may be armchairs or be armless, depending on space constraints and departmental preference. Fixed lecture seating will typically include retractable tablet arms, preferably oversized. Seating should satisfy the requirements of Uniform Building/Fire Codes, cost, appearance/finish and performance over time.
- b. Student seats should comfortably accommodate the tallest and smallest persons. Choose all seating with good ergonomic principles. Seating should have backs that allow for articulating movement.
- c. Accommodate wheelchair users per ADA, and latest editions of CBC.

2. Instructor Lectern

- a. Teaching classrooms should be equipped with proper instructor lectern. In providing this equipment, attempts should be made to maintain aesthetic and functional compatibility with the overall décor of the room. The lectern should

accommodate audio-visual systems, presentation computer other commonly used audio-visual components and control devices.

- b. The lectern must serve its function. Lecterns shall be oriented to allow instructors to maintain eye contact with students while using keyboards and allow students to see projected media.
- c. In rooms with one screen, an instructor workstation on the left side of the instructor area, marker boards in the center, and a screen in the right corner usually works well.
- d. Lectern audio-visual components shall not block views of screens and marker boards
- e. Lectern shall accommodate instructors who stand, sit, or use a wheelchair
- f. PC keyboard/mouse/controls within easy reach of instructors
- g. Control panel for A/V system in easy reach of instructors
- h. Height of instructor's seat easily adjusted
- i. Security system must be provided to prevent theft of lectern components.

3. Student Tables

- a. Tables may be fixed or movable, depending on the way any required power or data connections are to be handled. Tables that integrate power and data must be thoroughly reviewed by the LACCD and approved prior to inclusion in a project. Method of delivering power and data to tables, and the distribution details involved, must also be reviewed with LACCD.
- b. Accessible Tables: At least 5% of each type of table, for each functional area must be accessible and usable by the wheelchair users. Table heights, floor space, knee space, toe space and approach clearances must comply with ADAS, and latest editions of CBC.
- c. Each classroom should be equipped with a table to allow for wheelchair access. In areas where there are a large number of classrooms, heavier tables are desirable to discourage people from removing them from the rooms. Lightweight tables are easier to maneuver in the classroom, but are prone to being removed without permission for reasons other than an accommodation. At lecture halls with fixed seating a free standing permanently fixed post with folding writing tablet should be provided adjacent to each wheelchair space. Folding tablet size to be comparable to other writing tablets within the room at regular seats.

4. Whiteboards

Electronic whiteboards can provide copies of everything written on the board for the entire class. Whiteboards that interface with computers make it possible to distribute presentation notes electronically and, with conferencing software, to engage audience members. Some whiteboards can serve as interactive computer projection screens, allowing presenters to move naturally through a concept-mapping application, mark up documents with student's input and

deliver a truly interactive computer-based presentation or demonstration. White board shall be installed in a manner to provide a usable area within accessible reach ranges.

5. Clocks, Trash and Recycling

- a. Clocks should be provided in each classroom, should be large and easy to read. The clock should be seen easily by the instructor and students and placed on either a side wall or the back wall if necessary. Never locate the clock at the front of the classroom.. The installation of synchronized wireless clocks should be considered. This will allow all clocks to be automatically reset when times change, will reduce staff hours changing batteries and will ensure all clocks will be showing the same time.
- b. All classrooms must be equipped with proper trash / recycling containers that are conducive to the décor of the area. Trash and paper recycling containers should be located near the exit door of each classroom. Class room design shall provide space for all loose bins in a manner not to block the required clearances near doors, or at aisles.

6. Filing and storage cabinets

Filing and storage cabinets, under-counter or freestanding. Keying of cabinetry should be included as part of its order.

7. Computer Accessories

- a. Ergonomic keyboard;
- b. Ergonomic mouse pad or tray;
- c. Monitor stand or support (depth of work surface should allow correct placement);
- d. Document stand or holder
- e. Mobility of components and access to components should be considered;
- f. Coordination of access to surge suppression and power backup devices.

8. Task Lighting

Task lighting should be considered in conjunction with layout and overall lighting design.

9. Shelving or bookcases

Shelving or bookcases, freestanding or secured to structure (with provision of architectural blocking). Designer should also be aware of the restrictions on height of shelving in projects that include sprinkler systems. Aisle space between and around shelving or storage units, must comply with the requirements of ADAS and CBC latest editions

10. Campus Phone

Provide campus phone that will provide access to AV service, campus police, physical plant, and all campus services. Equipment, installation location, and height must comply with the requirements of ADAS and CBC latest editions.

- e. CLASSROOM - LEED CREDIT CONSIDERATION (SEE LACCD SUSTAINABILITY GUIDELINES)

CATEGORY B. LABORATORY

1. INTRODUCTION

A class laboratory is a room used primarily for formally or regularly scheduled classes that require special purpose equipment or a specific room configuration for student participation, experimentation, observation, or practice in an academic discipline. These rooms may be called teaching laboratories, instructional shops, typing or computer laboratories, drafting rooms, band rooms, choral rooms, (group) music practice rooms, language laboratories, (group) studios, theater stages areas used primarily for instruction, instructional health laboratories, and similar specially designed or equipped rooms.

Research/Non-Class laboratory is a room used primarily for laboratory experimentation, research, or training in research methods, or professional research and observation; or structured creative activity within a specific program.

2. LABORATORY - ASSIGNABLE SQUARE FEET

Designers shall use the following space guidelines for laboratory rooms per the **California Community Colleges Space Planning Standards for Laboratories**⁹:

Laboratory Use

Laboratory room use shall be not less than 27.5 hours per 70-hour week.

Laboratory Occupancy

Laboratory room station occupancy shall be not less than 85 percent of capacity.

Capacity of Future Laboratory and Service Areas

In determining the computed capacity of future laboratory and service area facilities, the following space allocations by standard classification of subject matter shall be applied on a campus-wide basis:

⁹ California Code of Regulations, Title 5: Education, Division 6: California Community Colleges, Chapter 8: Construction, Subchapter 1: Community College Construction Act

ASSIGNABLE SQUARE FEET PER STATION AND PER 100 WEEKLY STUDENT CONTACT HOURS, CALIFORNIA COMMUNITY COLLEGES.

3. Classroom and Seminars

(Including Classroom Service) 8 a.m. to 10 p.m.

Campus Weekly Student	ASF/100
Contact Hours	ASF/STN. WSCH*
Less than 140,000.....	15..... 47.3
140,000 or more.....	15..... 42.9

4. Teaching Laboratories

(Including Teaching Laboratory Service) 8 a.m. to 10 p.m.

ASF/100	ASF/STN	WSCH*
Subject Grouping	ASF/STN	WSCH*
Agriculture	115	492
Architecture	60	257
Biological Sciences	55	233
Business and Mgmt.....	30	128
Communications ..	50	214
Computer & Info. Sci....	40	171
Education	75	321
Diesel	200	856
Air Conditioning ...	130	556
Refrigeration	130	556
Auto-Body & Fender	200	856
Auto-Mechanic	200	856
Auto-Technology	75	321
Small Engine Repair	100	428
Aviation Maint.....	175	749
Plastics	130	556
Stationary Eng.....	200	856
(Engineering)	75	321
Fine & Applied Arts	60	257
Foreign Language	35	150
Health Services ..	50	214
Home Economics .	60	257
Letters	35	150
Library Science	35	150
Mathematics	35	150
Physical Sciences	60	257
Psychology	35	150
Pub. Affairs & Serv.....	50	214

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Social Sciences ...	35	150
Commercial Serv.....	50	214
Interdisciplinary	60	257

*Based on following utilization components for space standards computation:

Classrooms and Seminars

Campus WSCH	Hrs./wks.	Stn. Occ.%	Stn. Use
Less than 140,000 ..	48 X	.66	- 31.68
140,000 or more	53 X	.66	- 34.98
LD	27.5 X	.85	- 23.375

Abbreviations

ASF/STN = Assignable square feet per student station Classrooms:

Hrs./Wk. = Number of hours out of a 70-hour week, 8 a.m. to 10 p.m., a classroom, on the average, should be used

STN. Occ. = The percentage of expected student station occupancy when rooms are in use

STN. Use = The number of hours per week (out of the 70-hour week for classrooms and class laboratories) which a student station, on the average, should be used

WSCH = Weekly Student Contact Hours-8 a.m. to 10 p.m. WSCH for non-laboratory (lecture) and laboratory hours.

Formula for Deriving the Standards

Example: For determining ASF/WSCH in Biological Science Laboratory on an 8 a.m. to 10 p.m. basis:

$$ASF/STN = 55$$

$$Hrs./Wk. = 27.5$$

$$STN./Occ. = .85$$

$$((55) / (27.5 \times .85)) \times 100 = 235 \text{ ASF}/100 \text{ WSCH}$$

ASF / STN

$$\text{-----} \times 100 = \text{ASF / 100 WSCH}$$

Hrs. / Wk. x Stn. Occ.

55

$$\frac{527.5 \times .85}{\text{-----}} \times 100 = 235 \text{ ASF} / 100 \text{ WSCH}$$

3. TYPES OF LABORATORY

There are a number of different types of laboratories that exist on LACCD campuses, including:

- Wet laboratories
- Dry laboratories
- Teaching laboratories
- Computer laboratories
- Studio or design-based laboratories
- Special large equipment laboratories.

Computer laboratories include but are not limited to Computer and Informational Sciences, and Communications. Wet laboratories include but are not limited to areas such as Biological Studies. Dry laboratories include but are not limited to Plastics and Refrigeration. Studio or design-based laboratories include but are not limited to Architecture, and Fine and Applied Arts. Teaching laboratories include but are not limited to Letters, Mathematics and Social Sciences. Special large equipment laboratories include but are not limited to Diesel, Refrigeration and Auto Technology.

While laboratory types vary markedly and can be so specialized as to defy space-planning guidelines, there are some common themes to keep in mind in laboratory space planning. Some of these are as follows:

Modularity – Making laboratory design as modular and flexible as possible is key, particularly in terms of HVAC design, specialized systems and structural loading designs;

Zoning – Creating laboratory “zones” which also enable flexibility and ease of operations is very important. EHS and ADA codes are critical here.

These themes will have different applications in laboratory design, depending upon the type of laboratory (wet labs are very different from computer or teaching labs, for example). Nonetheless, they are important themes to keep in mind as planning tools. The Basic Laboratory Module (most applicable to wet laboratories)

While laboratory needs vary widely between disciplines, as mentioned above, LACCD’s goal is to configure laboratory space in as flexible and modular a way as possible because of the fact that needs and methods change and evolve over time. Laboratory space is typically configured in standard laboratory modules, which become space denominators that are designed to meet a variety of needs. These modules allow for flexibility in planning the following: mechanical/ electrical/plumbing (MEP) systems; heating, cooling and ventilation

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(HVAC) systems; casework; laboratory support spaces; specialized functions; partitions; fume hoods; etc.

Laboratory modules, then, become the building blocks for planning space. Larger units can be created by aggregating a number of modules, and by the same token smaller laboratories can be created with portions of modules. The planning module is repetitive and regular, and enables flexibility in design. The size varies depending upon the depths requires for special equipment or particular purposes. The actual layout and zoning of the laboratory modules depends upon the specific laboratory function and needs, including sinks, fume hoods, and special support, as well as the building floor plan. For example, the relationship between laboratory and office zones, or between laboratory and support space, will vary depending upon the type of research and laboratory need. The module component will remain standard while the ways in which the modules are arranged will differ from laboratory to laboratory.¹⁰

Fire extinguisher cabinets must be installed with their bottoms not higher than 26" above floor, and top of the extinguisher inside not higher than 48" above floor.

a. WET LABORATORY¹¹

1. Overview

- a. Wet Laboratory space types are defined as laboratories where chemicals, drugs, or other material or biological matter are tested and analyzed requiring water, direct ventilation, and specialized piped utilities. Wet Laboratory space types do not include biohazards in Levels BL-2, BL-3, and BL-4 as defined by the 1999 NIH/CDC guideline "*Biosafety in Microbiological and Biomedical Laboratories*". The Wet Laboratory space types are typically located within a building specifically designed to house them.
- b. Wet laboratories house functions that include working with solutions or biological materials and utilize benches, sinks, chemical fume hoods, and biosafety cabinets (BSCs). Generally, a wet lab is fitted out with a full range of piped services such as deionized or reverse-osmosis (RO) water, lab cold and hot water, lab waste/vents, carbon dioxide (CO₂), vacuum, compressed air, eyewash, safety showers, natural gas, telephone, local area network (LAN), and power. Any wet laboratory where biological specimens are used will require an area to store medical pathologic waste (MPW). Sufficient knee-hole space must be provided in each laboratory module to accommodate in-use MPW boxes as well as other in-use waste receptacles. Design consideration should be made for accommodation of these boxes. Work areas and desk space require low bench space with knee-holes or adjustable, flexible desktop space. These areas may be used for a large number of computers and may require HVAC, supplemental

¹⁰ Stanford University Space Planning Guidelines. Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28.

¹¹ WBDG Staff. "Laboratory: Wet." 23 Apr. 2008. Whole Building Design Guide. 22 Oct. 2008 <http://www.wbdg.org/design/lab_wet.php>.

cooling, electricity, emergency or uninterruptible power, and telecommunications/LAN.

2. Space Attributes

- a. Separate Laboratory Modules: A Wet Lab space is typically divided into separate laboratory modules that contain individually controlled connections to HVAC, utilities and safety devices. Modules are defined spatially by floor-to-ceiling structural slab with under-floor plenum divider.
- b. Constant and Reliable HVAC: As some equipment and experiments are temperature- and humidity-sensitive, constant conditions are required in Wet Laboratory spaces to ensure that equipment can perform properly and that experiments produce accurate results. Laboratories are usually supplied with variable volume, terminal reheat system with pre-filters and after-filters for 90% efficiency. In general, laboratory spaces have positive pressure relative to other spaces with no return air from the laboratory to the other spaces. For more information, refer to individual program requirements.
- c. Dust Control: Just as experiments and equipment may be sensitive to changes in temperature and humidity, so might they be to dust and other foreign particulates. For more information, refer to individual program requirements.
- d. Gas/Utility Services: Utility connections in Wet Laboratory space types can include vacuum, pneumatic supply, natural gas, O₂ and CO₂, and distilled water. The fittings and connections for each module are connected to the building distribution system for six nominal piping systems.
- e. Fume Hoods: Design Wet Laboratory space types to accommodate one 6'-0" chemical fume hood for each laboratory module, and provide direct 100% exhaust. It is also typical of this space type to include an acid and corrosives vented storage cabinet located under the fume hood, as well storage for emergency equipment. Fume hoods must not project over their base cabinets; over circulation paths by more than 4".
- f. Laboratory Occupancy: Occupancy Group Classification for Wet Laboratory is B2, Sprinkler protected construction, as per IBC, with a GSA Acoustical Class C1 for enclosed spaces and Class C2 for open spaces.
- g. Fire and Life Safety:

All Laboratory spaces should contain a hand-held chemical emergency fire extinguisher in an emergency equipment cabinet. There is generally one fire alarm pull station by each egress point and an audible and visible (strobe) alarm in each occupiable space (not including closets, storage rooms, or coat racks). Also include toxic gas monitors in each lab module and a gas storage area with audio and visual (strobe) alarms both inside and outside the lab. Eyewash and deluge shower should be located at each module quad." For more information, refer to individual program requirements.

- h. Acoustics: Noise levels in laboratories are difficult to control because room finishes are generally non-sound absorbent. Equipment such as chemical fume

hoods, centrifuges, and vacuum pumps contribute to the high noise levels within the laboratory. Planning shall isolate noise sensitive areas from noise sources wherever possible.¹¹ The sound level in laboratories—including those with fume hoods—must be as low as the classrooms' to allow normal conversations and collaboration.

- i. **Background Noise Criteria:** The background noise criterion is a measure of the noise that should not be exceeded by mechanical, electrical, plumbing and other noise sources in a space in order to achieve acceptable sound levels for various space uses. The Noise Criterion (NC) curves are used to describe acceptable noise environments for a variety of functional areas. The standard family of NC curves has been in use for years and may be found in the "Sound and Vibration Control" chapter of the HVAC Applications Handbook published by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). The recommended target background noise criteria for laboratories shall be NC-50.¹²¹³
- j. **Accessible:** Room layout, aisles, floor clearances in front of fixtures and equipment, and at least 5% of each type of work bench or equipment must with accessible and usable by the disabled

b. DRY LABORATORY¹⁴

1. Overview

- a. The Dry Laboratory space type is a laboratory space that is specific to work with dry stored materials, electronics, and/or large instruments with few piped services. The laboratories defined by this space type are analytical laboratories that may require accurate temperature and humidity control, dust control, and clean power.
- b. Dry laboratories involve work with computers, electronics, and large instruments. These laboratories are typically analytical laboratories that utilize sophisticated, highly calibrated electronic equipment in spaces that require accurate temperature and humidity control, stable structure and vibration control, shielded space, clean power, and filtered chilled water. These laboratories do not require extensive piped services or built-in fixed casework. Floor loading and ceiling heights are equipment driven. Access must be planned for routine maintenance, repair, or calibration of equipment. Examples of dry laboratories are computer and analytical areas, electron microscope rooms, bioengineering laboratories, and imaging rooms.

¹¹ NIH. Research Laboratory Design Policy and Guidelines. United States. Department of Health and Human Services. National Institutes of Health. 2006. B-1.

¹² Steinberg Architects. Physical Sciences Classroom Building Program. Harbor College, Los Angeles Community College District. 2007. 5.1.5

¹³ WBDG Staff. "Laboratory: Dry." 23 Apr. 2008. Whole Building Design Guide. 22 Oct. 2008 <http://www.wbdg.org/design/lab_wet.php>.

¹⁴ NIH. Research Laboratory Design Policy and Guidelines. United States. Department of Health and Human Services. National Institutes of Health. 2006. B-1.

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2. Space Attributes
 - a. Constant and Reliable Temperature and Humidity: As some equipment and experiments are temperature- and humidity-sensitive, constant conditions are required in Dry Laboratory spaces to ensure that equipment can perform properly and that experiments produce accurate results. Laboratories are usually supplied with variable volume terminal reheat system with pre-filters and after-filters for 90% efficiency. In general, laboratory spaces have positive pressure relative to other spaces with no return air from the laboratory to the other spaces. For more information, see WBDG refer to individual program requirements.
 - b. Dust Control: Just as experiments and equipment may be sensitive to changes in temperature and humidity, so might they be to dust and other foreign particulates. For more information, refer to individual program requirements.
 - c. Laboratory Occupancy: Occupancy Group Classification for Dry Laboratory is B2, Sprinkler protected construction, as per IBC, with a GSA Acoustical Class C1 for enclosed spaces and Class C2 for open spaces.
 - d. Durable/Flexible/Mobile Casework: As working conditions will often change due to new projects and equipment, dry laboratories are usually fitted with mobile casework to allow for *flexibility* in the floor plan. This casework is generally a pre-manufactured laboratory metal casework system with cantilever support off of central service chase system. Counters are typically a plastic laminate with integral splash. The chase system has metal channel support with a horizontal distribution of wiring.
 - e. Reliable, Easy to Access, Wiring System: Due to the flexible nature of the Dry Laboratory, the distribution of critical wiring (power, voice data, and HVAC) should be clearly laid out, and easy to access and redirect. Thus, a raised floor system is the recommended system of distribution of critical services for this space type.
 - f. Fire and Life Safety: All Laboratory spaces typically will contain a hand-held chemical emergency fire extinguisher in an emergency equipment cabinet. There is generally one fire alarm pull station by each egress point and an audible and visible (strobe) alarm in each occupy-able space (not including closets, storage rooms, or coat racks). For more information, refer to individual program requirements.
 - g. Acoustics: Noise levels in laboratories are difficult to control because room finishes are generally non-sound absorbent. Equipment such as chemical fume hoods, centrifuges, and vacuum pumps contribute to the high noise levels within the laboratory.¹⁵ Planning shall isolate noise sensitive areas from noise sources wherever possible.
 - h. Background Noise Criteria: The background noise criterion is a measure of the noise that should not be exceeded by mechanical, electrical, plumbing and other

¹⁵ Steinberg Architects. Physical Sciences Classroom Building Program. Harbor College, Los Angeles Community College District. 2007. 5.1.5

noise sources in a space in order to achieve acceptable sound levels for various space uses. The Noise Criterion (NC) curves are used to describe acceptable noise environments for a variety of functional areas. The standard family of NC curves has been in use for years and may be found in the "Sound and Vibration Control" chapter of the HVAC Applications Handbook published by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). The recommended target background noise criteria for laboratories shall be NC-50.¹⁶¹⁷

- i. Accessible: Room layout, aisles, floor clearances in front of fixtures and equipment, and at least 5% of each type of work bench or equipment must with accessible and usable by the disabled.
- c. TEACHING LABORATORY¹⁸
- 1. Overview
 - a. Today's teaching laboratory acts as a flexible framework, holding dynamic student work groups, research zones, and support equipment in unlimited arrangements. As such, new design strategies must be put in place to address the needs of academic laboratory facilities:
 - 1. Plan for the unexpected. Too many buildings are designed for current needs and technologies. Buildings must have extra power, data, cooling, and space over and above the minimum current requirements to serve the future.
 - 2. As disciplinary barriers dissolve, there is a greater need for labs and experimental spaces to stage special short and long-term events. Scheduling challenges will become more difficult and the buildings and their technologies must be ready to adapt.
 - 3. Special visualization and virtual reality labs are becoming common elements of new science buildings, with a dramatic impact on the way space will be used.
 - 4. Personal digital devices that merge all computing, communication, and locating technologies will soon be common. These devices will need to connect with networks embedded in buildings or furniture to create a seamless net of information access and sharing.
 - 2. Space Attributes
 - a. Teaching laboratories require space for teaching equipment, such as a lectern and marker boards; they require storage space for student microscopes, book

¹⁶ Watch, Daniel, Deepa Tolat, Gary McNay, and Perkins + Will. "Academic Laboratory." 23 Apr. 2008. Whole Building Design Guide. 22 Oct. 2008 <http://www.wbdg.org/design/academic_lab.php>.

¹⁷ NIH. Research Laboratory Design Policy and Guidelines. United States. Department of Health and Human Services. National Institutes of Health. 2006. B-1.

¹⁸ Steinberg Architects. Physical Sciences Classroom Building Program. Harbor College, Los Angeles Community College District. 2007. 5.1.5

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bags, and coats; and they have less instrumentation than in research labs. Also, teaching labs must support a wide range of dynamic activity from standard lectures to active team based inquiry with all the tools and technology necessary to enable any teaching and learning task easily.

- b. Interaction of learners and teachers occupying the same room has become more intentional, flexible and transparent to eliminate barriers and energize immediate and seamless collaboration. Classrooms must provide a greater level of visual and auditory contact between those sharing the room, and those beyond, to meet a higher standard of service to collaboration. Virtual reality and computer simulation technologies require more flexible space to serve these rapidly growing fields. Spaces must respond by becoming more flexible, changeable, and attuned to the senses.
- c. Lighting and acoustic control
 1. Lighting must be more sophisticated and flexible in every room, to allow the varied technologies to perform at their best. Lighting systems are more energy efficient and typically include daylight sensors and occupancy sensors. In all spaces, the control of the lighting is more adjustable to serve the varied presentation technologies and changes in scientific events that occur in each space.
 2. Acoustics: Noise levels in laboratories are difficult to control because room finishes are generally non-sound absorbent. Equipment such as chemical fume hoods, centrifuges, and vacuum pumps contribute to the high noise levels within the laboratory. Planning shall isolate noise sensitive areas from noise sources wherever possible.¹⁹ The sound level in laboratories—including those with fume hoods—must be as low as the classrooms' to allow normal conversations and collaboration.
 3. Background Noise Criteria: The background noise criterion is a measure of the noise that should not be exceeded by mechanical, electrical, plumbing and other noise sources in a space in order to achieve acceptable sound levels for various space uses. The Noise Criterion (NC) curves are used to describe acceptable noise environments for a variety of functional areas. The standard family of NC curves has been in use for years and may be found in the "Sound and Vibration Control" chapter of the HVAC Applications Handbook published by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE). The recommended target background noise criteria for laboratories shall be NC-50.^{20,21}

¹⁹ NIH. Research Laboratory Design Policy and Guidelines. United States. Department of Health and Human Services. National Institutes of Health. 2006. B-1.

²⁰ Steinberg Architects. Physical Sciences Classroom Building Program. Harbor College, Los Angeles Community College District. 2007.

²¹ .1.5.

- d. Accessible: Room layout, aisles, floor clearances in front of fixtures and equipment, and at least 5% of each type of work bench or equipment must with accessible and usable by the disabled
- e. Furnishing
 1. Some disciplines will require fixed casework, benches, and utilities, but many teaching labs have mobile casework (equipped with locks) installed in a way that allows for different teaching environments and for multiple classes to be taught in the same space. Some teaching labs even use casework that a student can easily change in height to accommodate sit-down (30 in.) or stand-up (36 in.) work. The flexibility of the furniture encourages a variety of teaching and learning scenarios. In fact, properties of traditional, fixed lab furniture (stability and vibration resistance) are merging with properties of rolling/adjustable computer furniture (infinite mobility, plug and play capability, changeability) to create a new type of furniture for most scientific pursuits. This new breed blends the need for computer connections to everything with the ability to change the individual and teamwork environment immediately, or move it to another space. The additional cost of flexible furniture is offset by the amount of space saved by eliminating the requirement for separate sit-down and stand-up workstations.
 2. Depending on the discipline and number of students, shared bench space can range from 15 to 30 linear feet per teaching laboratory; is usually configured as perimeter wall bench or center island bench; and is used for benchtop instruments, exhibiting displays, or distributing glass materials. Ten to 20 linear feet of wall space per lab should be left available for storage cabinets, as well as for built-in and movable equipment such as refrigerators and incubators. A typical student workstation is 3 to 4 feet wide with a file cabinet and data and electrical hookups for computers. Fume hoods shared by two students should be at least 6 ft. wide. The distance between student workbenches and fume hoods should be minimized to lessen the possibility of chemical spills.

ROOM 1. BIOLOGICAL SCIENCES LABORATORY

a. BIOLOGICAL SCIENCES LABORATORY - DESIGN STANDARDS

"Most laboratory design requirements, e.g. laboratory configuration, equipment, ancillary Facilities requirements, etc. will be included in the facility's academic program." ²⁰

1. Ceiling Height

- a. The recommended minimum clear obstruction height is 12'-0" to accommodate video projection screen. A hung ceiling is recommended to reduce HVAC loads (volume reduction) and dust accumulation (exposed pipes, ducts, pendant mounted lighting fixtures and spray-on fireproofing if required), and to reduce noise.

2. Ceiling Treatment / finish: varies.
3. Floor Finish
 - a. The floor must be non-porous, one piece, and with covings to the wall. This can be achieved by use of glue, heat welded vinyl flooring, epoxy coated concrete slab, etc.
 - b. Floors should be covered up walls and cabinets to ensure spills cannot penetrate underneath floors/cabinets. Tiles and wooden planks are not appropriate because liquids can seep through the small gaps between them. These references apply specifically to laboratories containing biological and radioactive materials;
 - c. Floors in storage areas for corrosive liquids shall be of liquid tight construction.
4. Wall Finish
 - a. Cleanability²¹
 1. Walls should be painted with washable, hard non-porous paints.
 2. Wooden and wood finish walls or floors are not appropriate because they can absorb hazardous and/or potentially infectious material, particularly liquids, making decontamination/remediation virtually impossible. These references apply specifically to laboratories containing biological and radioactive materials; however, LACCD interprets this to include all laboratories (e.g., general chemistry and electronics).
5. Acoustic Treatment
 - a. Acoustic considerations should be primary concern in finishes in laboratories. Acoustic control between laboratories is important so that the sound transmission classifications (STC) ratings of structural components and finishes should be taken into account when selecting materials and systems.
6. Casework
 - a. Casework shall be of plastic laminate construction at laboratory benches and tables. Casework shall be detailed so as to minimize chipping of edge banding and to avoid swelling of core materials in contact with floor in case of flooding. Door hinges and casework doors shall be detailed to avoid pullout of screws. Drawers shall have heavy-duty full extension glides. Shelving material shall be a minimum of 1" thick and span no more than 3'-0". Sinks shall be under-mounted or flush inset into work surface. Self-rimming sinks with edges protruding above the plane of the adjacent work surface are not acceptable. Work surfaces shall be 1" thick modified epoxy resin, [black] or [Selected by College] in color.
 - b. The space between adjacent workstations and laboratory benches should be 5 ft. or greater to provide ease of access. In a teaching laboratory, the desired spacing is 6 ft. Bench spacing shall be considered and included in specifications and plans.

- c. Built in Cabinets
 - 1. Cabinets must be equipped with positive locking door latches and meet requirements of ADAS and CBC latest edition.
 - 2. Examples include barrel bolts, safety hasps, and child-proof locks. These latches will not allow the cabinet door to open unless the locking mechanism is triggered. Magnetic or pinch-grip catches are not considered “positive locking” and hence should not be used. For sliding glass doors, affix decals near handles stating “Keep Doors Closed”.
- d. Special materials
- e. Size and Quality
- f. Accessible: In compliance with ADAS, and CBC latest editions
- g. Items to be stored: Flammable Liquid Storage Cabinets
 - 1. Flammable Liquid Storage Cabinets must be UL listed and must meet California Fire code requirements.
 - 2. Cabinet Capability
 - 3. Where flammable liquid storage cabinets are required, they shall be designed such that they do not exceed 120 gallons for the combined total quantity of all liquids (i.e., Classes 1, 2, and 3).
 - 4. One or more Flammable Liquid Storage Cabinets are required for laboratories which store, use, or handle more than 10 gallons of flammable or combustible liquids.
 - 5. Labeling
 - 6. Flammable Liquid Storage Cabinets shall be conspicuously labeled in red letters on contrasting background "FLAMMABLE - KEEP FIRE AWAY."
 - 7. When flammable or combustible liquids present multiple hazards, the laboratory design shall address the storage requirements for each hazard.
 - 8. Flammable Liquid Storage Cabinets shall NOT be located near exit doorways, stairways, or in a location that would impede egress.
 - 9. Flammable Liquid Storage Cabinets must NOT be wall mounted.

²¹ [Stanford University Space Planning Guidelines](#). Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28

10. Laboratory design must ensure that Flammable Liquid Storage Cabinets are NOT located near an open flame or other ignition source.²²
7. Hardware: all door hardware should be cardkey ready.
8. Lighting: Minimum maintained lighting intensity of 75 foot-candles in accordance with the latest IES Lighting Hand Book.
9. Accessories: Bulletin board, White Board, Motorized projection screens. Boards shall be installed in a manner to provide a usable area within accessible reach ranges. Controls must be located on accessible route and within accessible reach ranges.
10. Openings
 - a. Windows
 1. If the laboratory has windows that open, they must be fitted with insect screens.
 2. Insects, particularly flies, are known to be a potential carrier of disease. To keep insects out of the lab, the doors must be closed while an experiment is in progress, and windows shall be screened if they are capable of being opened. These references apply specifically to laboratories containing biological materials; however, LACCD interprets this to include all laboratories.
 3. Shades at external windows. Window coverings intended for occupants use shall be operable with maximum 5 lbs of force. Controls shall be within accessible reach ranges and meet ADAS and CBC latest edition requirements.
 - b. Doors: Vision panel in door.
 - c. Treatment
11. Relationships
 - a. Adjacencies
 - b. Proximities
 - c. Special Requirements
12. Earthquake Restraints
 - a. All equipment requiring anchoring shall be anchored, supported and braced to the building structure in accordance with CCR Title 24, Part 2, Table 16A-O. For example, any equipment, including but not limited to, appliances and shelving that are 60 inches or higher and have the potential for falling over during an earthquake, shall be permanently braced or anchored to the wall and/or floor.

²² Stanford University, Stanford Laboratory Standard & Design Guide, Version 2, 11-06

- b. This practice keeps these items from falling in the event of an earthquake and assures that safety while exiting is not compromised.
- c. All shelves must have a passive restraining system such as seismic shelf lips (3/4 inch or greater). The shelves themselves must be firmly fixed so they cannot be vibrated out of place and allow shelf contents to fall.
- d. Installation of seismic lips on shelving areas will prevent stored items from falling during a seismic event. For bookshelves, friction matting may be substituted upon consultation with College Facility Director and Department head.
- e. All equipment requiring anchoring, whether installed by a contractor or the College, shall be anchored, supported, and braced to the building structure in accordance with 24 CCR Part 2, Table 16A-O.
- f. Cabinets must be equipped with positive locking door latches.
- g. FEMA, Reducing the Risks of Nonstructural Earthquake Damage
- h. Examples include barrel bolts, safety hasps, and child-proof locks. These latches will not allow the cabinet door to open unless the locking mechanism is triggered.
Magnetic or pinch-grip catches are not considered "positive locking" and hence should not be used.
- i. For sliding glass doors, affix decals near handles stating "Keep Doors Closed".

b. **BIOLOGICAL SCIENCES LABORATORY - AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA**

Most laboratory design requirements, e.g. laboratory configuration, equipment, ancillary facilities requirements, etc. will be included in the facility's academic program.²³ At minimum, laboratories will have the same technology requirements as classrooms.

- 1. Audio / Visual
- 2. Network Capability
- 3. Communications

c. **BIOLOGICAL SCIENCES LABORATORY - MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA**

- 1. Laboratory areas shall be provided with adequate natural or artificial illumination to ensure sufficient visibility for operational safety.
- 2. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level. Automatic shut-off of boiling lights, if any, shall be in accordance with the energy code requirements.

²³ University of California San Diego. "UCSD DESIGN GUIDELINES." [Special Program Requirements](http://fdc.ucsd.edu/documentation/designguidelines.html). University of California San Diego. 21 Oct. 2008 <<http://fdc.ucsd.edu/documentation/designguidelines.html>>.

3. Fans, ductwork, and air velocities shall be selected in a range of 35 to 45 NC as defined by ASHRAE.
4. HVAC
 - a. Ventilation
 - b. The room should have mechanically generated supply air and exhaust air. All lab rooms shall use 100% outside air and exhaust to the outside, except in San Fernando Valley Area. In the facilities located in San Fernando Valley area, make up air shall be cooled before entering the laboratories. There shall be no return of fume hood and laboratory exhaust back into the building.
 - c. The air balance of the room cannot be adjusted unless there is mechanically generated supply and exhaust air.
 - d. Mechanical climate control should be provided.
 - e. Cabinetry or other structures or equipment must not block or reduce effectiveness of supply or exhaust air.
 - f. General laboratories shall have a minimum of 6-air changes/hour.
 - g. Laboratories must be maintained under negative pressure in relation to the corridor or other less hazardous areas. Clean rooms requiring positive pressure should have entry vestibules provided with door-closing mechanisms so that both doors are not open at the same time. Consult with College Facility Director/Local Fire Marshal for design details.
 - h. Where appropriate, general ventilation systems should be designed, such that, in the event of an accident, they can be shut down and isolated to contain radioactivity.
 - i. The air velocity volume in each duct should be sufficient to prevent condensation or liquid or condensable solids on the walls of the ducts.
 - j. Fume hoods should not be the sole means of room air exhaust. General room exhaust outlets shall be provided where necessary to maintain minimum air change rates. Make-up air shall be tempered in Valley area.
 - k. Operable windows should be prohibited in new lab buildings and should not be used on modifications to existing buildings.
 - l. Local exhaust ventilation (e.g., “snorkel” or “elephant trunks”), other than fume hoods, shall be designed to adequately control exposures to hazardous chemicals. An exhausted manifold or manifolds with connections to local exhaust may be provided as needed to collect potentially hazardous exhausts from gas chromatographs, vacuum pumps, excimer lasers, or other equipment which can produce potentially hazardous air pollutants. The contaminant source needs to be enclosed as much as possible, consistent with operational needs, to maximize control effectiveness and minimize air handling difficulties and costs.
 - m. Hoods should be labeled to show which fan or ventilation system they are connected to.

- n. No laboratory ventilation system ductwork shall be internally insulated. Sound baffles or external acoustical insulation at the source should be used for noise control.
 - o. Air exhausted from laboratory work areas shall not pass un-ducted through other areas.
5. Fire Protection
6. Plumbing
- a. Auxiliary valves for gas and vacuum lines should be located outside the lab. The laboratory may be unsafe to enter.
 - b. Flexible connections should be used for connecting gas and other plumbed utilities to any freestanding device, including but not limited to biosafety cabinets, incubators, and liquid nitrogen freezers. Flexible connections should be appropriate for the pressure requirements and should be constructed of material compatible with the transport gas. A shutoff valve should be located within sight of the connection and clearly marked.
 - c. Seismic activity may cause gas and other utility connections to break off. A flexible connection will minimize this potential considerably.
 - d. Sink drains traps shall be transparent (e.g., made of glass) and easy to inspect or have drain plugs to facilitate mercury spill control.
 - e. Lab waste water lines shall be separate from domestic sewage, and a sampling point shall be installed in an easily accessible location outside the building.
 - f. The sampling point shall be installed at a location where all building lab wastes are discharged, before the lab waste line connects to the domestic waste line. The sampling point shall be designed so that it is perpendicular to the lab waste line, has a minimum 4 inches diameter, has a cleanout screw on cap and is protected by a Christy box. The sampling point should not be located in an area where water from irrigation or flow from storm water runoff can accumulate.
 - g. Each laboratory must contain a sink for handwashing.
 - h. Exposure to hazardous materials and/or pathogenic organisms can occur by hand-to mouth transmission. It is extremely important that hands are washed prior to leaving the laboratory. For this very reason, the sink should be located close to the egress.
 - i. Laboratory sinks shall have lips that protect sink drains from spills.
 - j. Sink lips or berms should be ≥ 0.25 inches and designed to completely separate the lab bench or fume hood work area from the sink drain.²⁴
 - k. Eyewash and shower equipment for emergency treatment:

²⁴ Stanford University, Stanford Laboratory Standard & Design Guide, Version 2, 11-06

1. This Guide presents the minimum performance requirements for eyewash and shower equipment for the emergency treatment of the eyes or body of a person exposed to injurious materials. It covers the following types of equipment: emergency showers, eyewash equipment, and combination shower and eyewash or eye/face wash.
2. A plumbed eyewash shall be provided for all work areas where, during normal operations or foreseeable emergencies, the eyes of an employee may come into contact with a substance which can cause corrosion, severe irritation, or is toxic by skin absorption. Drench hoses, sink faucets, or showers are not acceptable eyewash facilities. A plumbed eyewash shall be provided at all work areas where formaldehyde solutions in concentrations greater than or equal to 0.1% are handled.
3. An eyewash safety station should be installed within all acid washing areas. An eyewash safety station should be installed in N₂ dispensing stations and film processing areas using chemical developers and fixers.
4. Eye wash safety stations shall provide knee, toe, and floor space in compliance with ADAS, and CBC latest editions; shall not protrude over circulation paths in excess of 4".
5. An emergency shower shall be provided for all work areas where, during normal operations or foreseeable emergencies, areas of the body may come into contact with a substance which is corrosive, severely irritating to the skin or is toxic by skin absorption. A deluge shower shall be provided at all work areas where formaldehyde solutions in concentrations greater than or equal to 1% are handled. Shower controls must be pull or lever type; must be located within accessible reach ranges on accessible route.

d. **BIOLOGICAL SCIENCES LABORATORY FURNITURE AND EQUIPMENT STANDARDS**

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

1. All furniture must be sturdy. All work surfaces (e.g., bench tops and counters) must be impervious to the chemicals used. The counter top should incorporate a lip to help prevent run-off onto the floor.
2. For example, many microbiological manipulations involve concurrent use of chemical solvents such as formaldehyde, phenol, and ethanol as well as corrosives. The lab bench must be resistant to the chemical actions of these substances and disinfectants. Wooden bench tops are not appropriate because an unfinished wood surface can absorb liquids. Also, wood burns rapidly in the event of a fire. Fiberglass is inappropriate since it can degrade when strong disinfectants are applied. Fiberglass also releases toxic smoke when burned.

3. All equipment requiring anchoring shall be anchored, supported and braced to the building structure in accordance with CCR Title 24, Part 2, Table 16A-O. For example, any equipment, including but not limited to, appliances and shelving that are 60 inches or higher and have the potential for falling over during an earthquake, shall be permanently braced or anchored to the wall and/or floor.
4. This practice keeps these items from falling in the event of an earthquake and assures that safety while exiting is not compromised and includes:
 - a. Student Chairs
 - b. Moveable tables and chairs
 - c. Work surfaces with movable chairs
 - d. Tablet arm seats
 - e. Student Tables
 - f. Instructor Furniture
 - g. ADA Tables
 - h. Whiteboards / Chalkboards
 - i. Clocks, Trash and Recycling
 - j. Artwork
 - k. Desk
 - l. File Cabinets
5. Cleanability²⁵
 - a. The laboratory shall be designed so that it can be easily cleaned. Bench tops must be a seamless one-piece design to prevent contamination. Laminate bench tops are not suitable. Penetrations for electrical, plumbing, and other considerations must be completely and permanently sealed. If the bench abuts a wall, it must be covered have a backsplash against the wall.

CATEGORY C. OFFICE SPACE

1. INTRODUCTION

This category includes rooms that are used as individual multi-person or workstation space that is used by faculty, staff or students when working at one or more desks, table or

²⁵ Stanford Laboratory Standard & Design Guide General Requirements for Stanford Laboratories Version 2.0/ 11-06

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workstations. Office services such as conference rooms, copy area, see General Use Areas.

- a. LACCD has established a governing philosophy and a set of guiding principles for space planning that facilitate the design of functional work environments. Office Space should be designed and arranged according to function. The open environments promote creativity, collaboration, and flexibility,
- b. Design team should verify with the individual campus if campus specific design criteria exist.
- c. There are three types of office space where private offices, shared offices and cubicles are assigned:²⁶
 1. Executive Offices
 2. Academic Offices
 3. Administrative Offices

2. OFFICE SPACE - ASSIGNABLE SQUARE FEET²⁷

Designers shall use the following space guidelines for office space per the **California Community Colleges Space Planning Standards for Offices:**

All office space (academic offices, administrative and clerical office service rooms, and conference rooms) shall be computed at 140 assignable square feet for each full-time equivalent instructional staff member. Office space for a small Community College district shall be computed at 160 assignable square feet for each full-time equivalent instructional staff member.

3. OFFICE SPACE PLANNING GUIDE²⁸

- a. All private offices shall be designed and furnished in a manner to allow a wheelchair user to enter, and exit the room. Required door clearances shall not be blocked by furniture, or furnishings. All offices used for meeting with public and or students must be planned to provide floor space for wheelchair access, and seating at the table. Refer to “Designing for Accessibility at LACCD” for additional information.
- b. The table below shows the recommended net assignable square footage for a person by position type. Net Assignable square feet is defined as the area of a building suitable for occupancy measured from the interior walls, including closets and secondary corridors within assignable space. This excludes main corridors, bathrooms, and other non-assignable space.

²⁶ Office Space Guidelines. Space Utilization Initiative, University of Michigan. Ann Arbor, MI, 208.

²⁷ California Code of Regulations, Title 5: Education, Division 6: California Community Colleges, Chapter 8: Construction, Subchapter 1: Community College Construction Act

²⁸ Office Space Guidelines. Rep.No. Space Utilization Initiative, University of Michigan. Ann Arbor, MI, 208.

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Type of Room Occupants	Space Type	Recommended Net Assignable Square Feet per person
Executives		
President	Private Office	400
Vice President	Private Office	300
Academic		
Dean	Private Office	240
Associate or Assistant Dean	Private Office	160
Department Chair	Private Office	160
Faculty Full-Time Tenure Track	Private Office	100-160
Faculty, Consulting, Visiting, Part-Time	Private Office, Shared Office	80
Fellow, Lecturer, Research Assoc., Visiting	Shared Office Cubicle	80
Unit Administrative Manager	Private Office	100-160
Staff, Professional, (Full-Time)	Private Office, Shared, Office,	64-100
Staff, Professional, (Part-Time)	Shared Office or Cubicle	80
Staff, Administrative Support (Full-Time)	Shared Office or Cubicle	64-100
Staff, Administrative Support (Part-Time)	Shared Office or Cubicle	64-80
Temporary or Student Staff	Shared Office or Cubicle	30-64

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Administrative		
Associate Vice President	Private Office	240
Director	Private Office	100-160
Associate Vice President, Associate Dean	Private Office	100-140
Manager	Private Office, Shared Office	80-140
Staff, Professional (Full-Time)	Private Office, Shared Office	64-100
Staff, Professional (Part-Time)	Shared Office or Cubicle	80
Staff, Administrative Support (Full-Time)	Shared Office or Cubicle	64-100
Staff, Administrative Support (Part-Time)	Shared Office or Cubicle	64-80
Temporary or Student Staff	Shared Office or Cubicle	30-64

4. PRESIDENT’S OFFICE

The President’s Office should be a single, private office capable of accommodating a desk, files, bookshelf and a meeting area for at least an additional 4-5 people.

a. DESIGN STANDARDS²⁹

1. Ceiling Height: 8’ Minimum
2. Ceiling Treatment / Finish: Varies
3. Floor Finish: Usually carpet tiles
4. Wall Finish: Paint or wall covering
5. Acoustic Treatment:
6. Casework
7. Hardware: See Master Format & Specifications Section

²⁹ [Stanford University Space Planning Guidelines](#). Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28.

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8. Lighting: Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.
 9. Windows Coverings: Window coverings to be consistent with other window treatments in the building. Use of light diffusing shades on a roller is recommended. Consider shades and space requirements and details for roller and valance. All window treatments shall have a non-reflective matt finish.
- b. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA
1. Office space shall provide:
 - a. Computer stations – two ports per person minimum and for technology-oriented 4 ports
 - b. Internet connectivity
 - c. Data cabling per A/V guidelines
 - d. VoIP to each desktop
 - e. Minimum (2) 4-plex power supply on opposite walls
- c. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA
1. Fans, ductwork, and air velocities shall be selected in a range of 30 to 40 NC as defined by ASHRAE.
 2. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level.
- d. FURNITURE AND EQUIPMENT STANDARDS
- All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.
1. Ergonomic chair
 2. Desk or work surface (adjustable as needed, computer-compatible):
 - a. L shape desirable for computer usage, U more so, if space allows;
 - b. Wire management system, horizontal and vertical, with properly sized and located grommets or other fittings required for connectivity;
 - c. An acceptable security system or method for protection of electronic devices and other personal possessions;
 - d. Layout and fit of furniture must not block access to power, data, and HVAC controls and filters and other utilities;
 - e. All desks to come equipped with drawer locks
 3. Computer Accessories:
 - a. Ergonomic keyboard;
 - b. Ergonomic mouse pad or tray;
 - c. Document stand or holder

- d. Mobility of components and access to components should be considered;
 - e. Coordination of access to surge suppression and power backup devices.
4. Task Lighting be considered in conjunction with layout and overall lighting design.
 5. Shelving or bookcases, freestanding or secured to structure (with provision of architectural blocking). Designer should be aware of the restrictions on height of shelving in projects that include sprinkler systems.
 6. Filing and storage cabinets, under counter or freestanding. Keying of cabinetry should be included as part of its order.
 7. Need for seating area or meeting table.
 8. Tack boards, marker boards, and occasionally chalkboards.
 9. Coat hooks
- e. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

5. DEAN / VICE PRESIDENT OFFICES³⁰

Dean and Vice President offices should be a single, private office intended to accommodate a desk, files, bookshelf and a meeting area for an additional 5-6 people. Dean and Vice President offices *at LACCD should be approximately 240 nasf.*

a. DESIGN STANDARDS³¹

1. Ceiling Height: 8' Minimum
2. Ceiling Treatment / Finish: Varies
3. Floor Finish: Usually carpet
4. Wall Finish: Paint or wall covering
5. Acoustic Treatment
6. Casework
7. Hardware: See Master Format & Specifications Section
8. Lighting: Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.
9. Windows Coverings: Window coverings to be consistent with other window treatments in the building. Use of light diffusing shades on a roller is recommended. Consider shades and space requirements and details for roller and valance. All window treatments shall have a non-reflective matt finish.

b. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA

³⁰ [Stanford University Space Planning Guidelines](#). Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28.

³¹ [Stanford University Space Planning Guidelines](#). Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28.

1. Office space shall provide:
 - a. Computer stations – two ports per person minimum and for tech oriented 4 ports
 - b. Internet connectivity
 - c. Data cabling per A/V guidelines
 - d. VoIP to each desktop
 - e. Minimum 2 4-plex power supply on opposite walls
- c. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA
 1. Fans, ductwork, and air velocities shall be selected in a range of 30 to 40 NC as defined by ASHRAE.
 2. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level.
- d. FURNITURE AND EQUIPMENT STANDARDS

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

 1. Ergonomic chair
 2. Desk or work surface (adjustable as needed, computer-compatible):
 - a. L shape desirable for computer usage, U more so, if space allows;
 - b. Wire management system, horizontal and vertical, with properly sized and located grommets or other fittings required for connectivity;
 - c. An acceptable security system or method for protection of electronic devices and other personal possessions;
 - d. Layout and fit of furniture must not block access to power, data, and HVAC controls and filters and other utilities;
 - e. All desks to come equipped with drawer locks
 3. Computer Accessories:
 - a. Ergonomic keyboard;
 - b. Ergonomic mouse pad or tray;
 - c. Document stand or holder
 - d. Mobility of components and access to components should be considered;
 - e. Coordination of access to surge suppression and power backup devices.
 4. Task Lighting shall be considered in conjunction with layout and overall lighting design.
 5. Shelving or bookcases, freestanding or secured to structure (with provision of architectural blocking). Designer should be aware of the restrictions on height of shelving in projects that include sprinkler systems.

6. Filing and storage cabinets, under counter or freestanding. Keying of cabinetry should be included as part of its order.
7. Need for seating area or meeting table.
8. Tack boards, marker boards, and occasionally chalkboards.
9. Coat hooks

e. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

6. FACULTY OFFICE - FULL-TIME TENURE TRACK

“Full time tenure track faculty generally are assigned a single, private office. Individual faculty offices are intended to accommodate a desk, files, bookshelf and workspace for the faculty member, plus a meeting area for an additional 2-3 people as needed. Part-time tenure track faculty, depending upon their circumstances, may be assigned spaces more similar to visiting faculty and research associate offices.

Special Circumstances

In special circumstances, to be evaluated by LACCD, a faculty office may be larger or smaller than 160 nsf. These circumstances might include:

- Special or unusual building configurations which affect the efficiency of the measured nsf;
- Particular accessibility issues;
- Overall school and/or department space constraints or needs;
- Needs of department chairs for group meeting spaces;
- The need to merge needs/expectations of interdisciplinary programs

Second Offices

LACCD discourages the assignment of second offices for faculty. A second office may be assigned in the following cases:

- Department chairs may be assigned a second administrative office, particularly if the primary faculty office is in a separate building from the department office.
- Faculty who are in leadership positions (i.e., Directorships) in independent laboratories, faculty who are Associate Deans or faculty who have joint appointments might be assigned a second office, particularly if their primary office is a significant distance (i.e. across campus) from the home department. LACCD faculty may be assigned a second office due to distance issues.
- Faculty second offices should not be as sizeable as the primary office; that is, the second should be smaller than 160 nsf. Two faculty offices in the same building (other than in a chair situation) are strongly discouraged. The appropriate school Deans, the Dean of Research, and the Provost work together to consider requests for second faculty offices.”³⁰

³⁰ [Stanford University Space Planning Guidelines](#). Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28.

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a. DESIGN STANDARDS³²

1. Ceiling Height: 8' Minimum
2. Ceiling Treatment / Finish: Varies
3. Floor Finish: Usually carpet
4. Wall Finish: Paint or wall covering
5. Acoustic Treatment
6. Casework
7. Hardware: See Master Format & Specifications Section
8. Lighting: Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.
9. Windows Coverings: Window coverings to be consistent with other window treatments in the building. Use of light diffusing shades on a roller is recommended. Consider shades and space requirements and details for roller and valance. All window treatments shall have a non-reflective matt finish.

b. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA

1. Office space shall provide:
 - a. Computer stations – two ports per person minimum and for tech oriented 4 ports
 - b. Internet connectivity
 - c. Data cabling per A/V guidelines
 - d. VoIP to each desktop
 - e. Minimum 2 4-plex power supply on opposite walls

c. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA

1. Fans, ductwork, and air velocities shall be selected in a range of 30 to 40 NC as defined by ASHRAE.
2. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level.

d. FURNITURE AND EQUIPMENT STANDARDS

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

1. Ergonomic chair
2. Desk or work surface (adjustable as needed, computer-compatible):
 - a. L shape desirable for computer usage, U more so, if space allows;

³² Idem

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- b. Wire management system, horizontal and vertical, with properly sized and located grommets or other fittings required for connectivity;
 - c. An acceptable security system or method for protection of electronic devices and other personal possessions;
 - d. Layout and fit of furniture must not block access to power, data, and HVAC controls and filters and other utilities;
 - e. All desks to come equipped with drawer locks
3. Computer Accessories:
- a. Ergonomic keyboard;
 - b. Ergonomic mouse pad or tray;
 - c. Document stand or holder
 - d. Mobility of components and access to components should be considered;
 - e. Coordination of access to surge suppression and power backup devices.
4. Task Lighting be considered in conjunction with layout and overall lighting design.
5. Shelving or bookcases, freestanding or secured to structure (with provision of architectural blocking). Designer should be aware of the restrictions on height of shelving in projects that include sprinkler systems.
6. Filing and storage cabinets, under counter or freestanding. Keying of cabinetry should be included as part of its order.
7. Need for seating area or meeting table.
8. Tack boards, marker boards, and occasionally chalkboards.
9. Coat hooks
- e. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

7. VISITING SCHOLARS, VISITING FACULTY, PART TIME FACULTY, LECTURERS, FELLOWS AND RESEARCH ASSOCIATES

Visiting Scholars, Visiting Faculty, Lecturers, Fellows and Research Associates generally are assigned shared office space, with two individuals housed in one 160 nasf office. A variation on shared offices for these faculties can be open-office cubicle arrangements, with typical cubicle sizes of about 80 nasf per person. In either case, space assignments for these faculties depend upon the type of work being done, whether individuals have full or part time appointments, and overall program needs and building constraints.³³

- a. DESIGN STANDARDS³⁴

³³ [Stanford University Space Planning Guidelines](#). Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28.

³⁴ [Stanford University Space Planning Guidelines](#). Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28.

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1. Ceiling Height: 8' Minimum
 2. Ceiling Treatment / Finish: Varies
 3. Floor Finish: Usually carpet
 4. Wall Finish: Paint or wall covering
 5. Acoustic Treatment
 6. Casework
 7. Hardware: See Master Format & Specifications Section
 8. Lighting: Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.
 9. Windows Coverings: Window coverings to be consistent with other window treatments in the building. Use of light diffusing shades on a roller is recommended. Consider shades and space requirements and details for roller and valance. All window treatments shall have a non-reflective matt finish.
- b. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA
1. Office space shall provide:
 - a. Computer stations—2 ports per person minimum, for tech oriented 4 ports
 - b. Internet connectivity
 - c. Data cabling per A/V guidelines
 - d. VoIP to each desktop
 - e. Minimum (2) 4-plex power supply on opposite walls
- c. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA
1. Fans, ductwork, and air velocities shall be selected in a range of 30 to 40 NC as defined by ASHRAE.
 2. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level.
- d. FURNITURE AND EQUIPMENT STANDARDS
- All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.
1. Ergonomic chair
 2. Desk or work surface (adjustable as needed, computer-compatible):
 - a. L shape desirable for computer usage, U more so, if space allows;

- b. Wire management system, horizontal and vertical, with properly sized and located grommets or other fittings required for connectivity;
- c. An acceptable security system or method for protection of electronic devices and other personal possessions;
- d. Layout and fit of furniture must not block access to power, data, and HVAC controls and filters and other utilities;
- e. All desks to come equipped with drawer locks

3. Computer Accessories:

- a. Ergonomic keyboard;
- b. Ergonomic mouse pad or tray;
- c. Document stand or holder
- d. Mobility of components and access to components should be considered;
- e. Coordination of access to surge suppression and power backup devices.

4. Task Lighting shall be considered in conjunction with layout and overall lighting design.

5. Shelving or bookcases, freestanding or secured to structure (with provision of architectural blocking). Designer should be aware of the restrictions on height of shelving in projects that include sprinkler systems.

6. Filing and storage cabinets, under counter or freestanding. Keying of cabinetry should be included as part of its order.

7. Need for seating area or meeting table.

8. Tack boards, marker boards, and occasionally chalkboards.

9. Coat hooks

e. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

8. STAFF OFFICES

“The (LACCD) guideline for full time staff office space ranges from 64-140 nsf per person. This space may be cubicle space, a shared office, or a private office, depending upon the nature of the work. Part-time staff should be located in shared spaces or cubicles at the smaller end of the range. Student employees should be located in shared cubicles.

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Cubicle Spaces

Staff may be accommodated in cubicle environments ranging from 64-80 nsf per person, depending on the type of work. Cubicle environments can have the benefit of being more open, airy and light, and can make more efficient use of space. Such environments are particularly conducive to team-oriented office groupings. Cubicle environments work best when they contain adequate numbers of conference and small group meeting spaces, for confidential conversations and/or group tasks. Additional storage is sometimes required for file intensive office groups.

Shared Offices

Staff also may be assigned to share an office space of 160 nsf, which amounts to 80 nsf per person. This can be a good solution for staff for whom a quiet office environment is important for writing, financial planning or other tasks. In addition, for staff working in teams of two this can be ideal.

Private Offices

Management staff, depending upon the nature of their work, may require a private office. The size of the office varies depending on the type of work and the need to supervise other employees and/or participate in private discussions. When private offices are justified, management staff members typically are assigned private offices of 100 nsf. If senior management staff and/or department heads require different or larger space accommodations for specific reasons, such cases are considered by the appropriate Vice President or Dean on a case-by-case basis, and space is allocated depending on the work needs of these individuals. In some cases, Program Directors require office of 140 nsf. shared office format.”³⁵

a. DESIGN STANDARDS³⁵

1. Ceiling Height: 8' Minimum
2. Ceiling Treatment / Finish: Varies
3. Floor Finish: Usually carpet
4. Wall Finish: Paint or wall covering
5. Acoustic Treatment
6. Casework
7. Hardware: See Master Format & Specifications Section
8. Lighting: Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.
9. Windows Coverings: Window coverings to be consistent with other window treatments in the building. Use of light diffusing shades on a roller is recommended. Consider shades and space requirements and

³⁵ Stanford University Space Planning Guidelines. Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 28. ³⁵ Ibidem

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details for roller and valance. All window treatments shall have a non-reflective matt finish.

b. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA

1. Office space shall provide:

- a. Computer stations – 2 ports per person minimum, for tech oriented 4 ports
- b. Internet connectivity
- c. Data cabling per A/V guidelines
- d. VoIP to each desktop
- e. Minimum 2 4-plex power supply on opposite walls

c. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA

- 1. Fans, ductwork, and air velocities shall be selected in a range of 30 to 40 NC as defined by ASHRAE.
- 2. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level.

d. FURNITURE AND EQUIPMENT STANDARDS

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

- 1. Ergonomic chair
- 2. Desk or work surface (adjustable as needed, computer-compatible):
 - a. L shape desirable for computer usage, U more so, if space allows;
 - b. Wire management system, horizontal and vertical, with properly sized and located grommets or other fittings required for connectivity;
 - c. An acceptable security system or method for protection of electronic devices and other personal possessions;
 - d. Layout and fit of furniture must not block access to power, data, and HVAC controls and filters and other utilities;
 - e. All desks to come equipped with drawer locks
- 3. Computer Accessories:
 - a. Ergonomic keyboard;
 - b. Ergonomic mouse pad or tray;
 - c. Document stand or holder
 - d. Mobility of components and access to components should be considered;
 - e. Coordination of access to surge suppression and power backup devices.
- 4. Task Lighting be considered in conjunction with layout and overall lighting design.

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5. Shelving or bookcases, freestanding or secured to structure (with provision of architectural blocking). Designer should be aware of the restrictions on height of shelving in projects that include sprinkler systems.
6. Filing and storage cabinets, under counter or freestanding. Keying of cabinetry should be included as part of its order.
7. Need for seating area or meeting table.
8. Tack boards, marker boards, and occasionally chalkboards.
9. Coat hooks

9. DOCUMENT STATION

- a. An area centrally located to all users for printing, copying, faxing, and scanning documents.
- b. Provide dedicated power for printer/copier/scanner.
- c. Provide additional space for document assembly and sorting.
- d. Special consideration into noise reduction and blank paper stocking.

CATEGORY D. LIBRARY SPACE

1. INTRODUCTION

Library space is a facility used by students to study and research at their convenience, which is not restricted to a particular subject or discipline by contained equipment.

The library interior should provide a high degree of flexibility with a minimum of load bearing internal walls and columns, facilitating periodic reorganizations during the life of the building. Construction materials, equipment, shelving and furnishings should be attractive, durable, functional, comfortable and be chosen as part of an integrated interior design. Interior fittings should suit the needs of library staff and patrons. The library should only house objects which are appropriate to the library and consistent with library and council policy and the integrity of the interior design.

Movement between adjacent spaces must be fluid. Separations by columns and load-bearing walls must be minimized as they prevent easy future expansion. Since the library's population of media as well as patrons typically increases as the years pass, future growth and expansion should be taken into consideration in the library's design program at the onset of any academic library project.

Technology has demanded new kinds of space needs. Computer workstations with adequate space for a librarian's assistance are essential and require added floor space. Electronic information kiosks located near library entrances require floor space not taken into consideration during the days before the emergence of computer technology. In addition, user needs now demand adequate space for group study, interlibrary loan centers, and

seminar rooms, among others. Although computers are placed in any academic library design, space for backpacks, notebooks, and hardcopy research materials is still essential.

Internet access, electronic media, computer technology, and other forms of modern-day advancements have had a profound effect on the function and design of libraries. As a result, Library space type design must be flexible enough to take into account these types of integrated technologies as well as to properly store, handle, and circulate printed and other media types.

The Design Team should verify with the individual campus if campus specific design criteria exist.

Planning/Design considerations:

- Well-planned, secure and adequate space for users.
- Building mechanical systems should be properly designed and maintained to control temperature and humidity at recommended levels.
- Provisions of conducive study spaces, including sufficient number of seats and varied types of seating.
- Enough space for library's collections.
- Sufficient staff workspace and configured to promote efficient operations.
- Adequate Signage.
- Provide ergonomic workstations for its users and staff.
- Electrical and network wiring sufficient to meet the needs associated with electronic access.
- Meet the accessibility guidelines of the Americans with Disabilities Act.
- Provide technology for distance learners.

Space considerations:

- Estimation of the collections provided by the library and the space needed to accommodate those provisions to meet the future needs of its users
- Estimation of floor space needed to accommodate seating areas
- Estimation of floor space needed by staff
- Estimation of floor space needed for meeting rooms
- Estimation of miscellaneous public- and staff-use space (special use space)
- Estimation of space needed for entry halls, mechanical rooms, bathrooms, etc. (non-assignable space).

Library spaces includes:

- Entry Vestibule
- Exhibits

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- Check Out
- Reference Desk
- Reference Computer Terminals
- Card Catalog/Digital Catalog (If applicable)
- Lounge Seating
- Table Seating
- Carrels
- Group study room
- Innovation Space
- Research Computer Terminals
- Microfiche Cabinets
- Microfiche Readers
- Periodicals
- Reference Stacks
- Collections Stacks
- AV Work Room
- Audio Lab with Audio Visual Media Collection

- Duplication Center
- ADP
- Librarian's Office
- Librarian's Assistant
- Work Room
- Store Room
- Housekeeping

2. ASSIGNABLE SQUARE FEET

Designers shall use the following space guidelines for library spaces per the **California Community Colleges Space Planning Standards for Library Spaces:** ³⁶

All library space shall be computed by assignable square feet for library functions as specified in the subdivisions of this section. Square feet are "assignable" only if they are usable for the function described. Areas such as the main lobby (excluding card catalogue

³⁶ California Code of Regulations, Title 5: Education, Division 6: California Community Colleges, Chapter 8: Construction, Subchapter 1: Community College Construction Act

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area), elevators, stairs, walled corridors, rest rooms, and areas accommodating building maintenance services are not deemed usable for any of the described functions.

Stack Space .. = .1 ASF x Number of Bound Volumes

Number of Volumes

Initial Increment = 16,000 volumes

Additional Increments

(a) Under 3,000 DGE [FNa1] = +8 volumes per DGS [FNaa1]

(b) 3,000-9,000 DGE = +7 volumes per DGS

(c) Above 9,000 DGE = +6 volumes per DGS

Staff Space .. = (140 ASF x Number of FTE Staff) + 400 ASF

Number of FTE Staff

Initial Increment = 3.0 FTE

Additional Increments

(a) Under 3,000 DGE = +.0020 FTE Staff per DGS

(b) 3,000-9,000 DGE = +.0015 FTE Staff per DGS

(c) Above 9,000 DGE = +.0010 FTE Staff per DGS

Reader Station Space .. = 27.5 ASF x Number of Reader Stations

Number of Reader Stations

Initial Increment = 50 Stations

Additional Increments

(a) Under 3,000 DGE = +.10 Stations per DGS

(b) 3,000-9,000 DGE = +.09 Stations per DGS

(c) Above 9,000 DGE = +.08 Stations per DGS

Total Space .. = Initial Increment = 3,795 ASF

Additional Increments

(a) Under 3,000 DGE = +3.83 ASF per DGS

(b) 3,000-9,000 DGE = +3.39 ASF per DGS

(c) Above 9,000 DGE = +2.94 ASF per DGS

For audio-visual and programmed instruction activities associated with library learning resource functions, additional areas sized for individual needs but not exceeding the following totals for the district as a whole.

Total Space .. = Initial Increment = 3,500 ASF

Additional Increments

(a) Under 3,000 DGE [FNa1] = 1.50 ASF per DGS [FNaa1]

(b) 3,000-9,000 DGE = 0.75 ASF per DGS

(c) Above 9,000 DGE = 0.25 ASF per DGS

[FNa1] Day-Graded Enrollment

[FNaa1] Day-Graded Student

3. LIBRARY SPACE STANDARDS

a. DESIGN STANDARDS³⁷

1. Ceiling

- a. Minimum 14 to 15-foot floor to floor heights are recommended to accommodate large ductwork. Low-voltage telephone and data distribution systems are often arranged in open visible troffers and covers so that the library space can be easily arranged at a later time without the concern of relocating communications connections.

2. Floor Finish

- a. Floor surfaces in libraries should be able to handle high traffic and have appropriate acoustic qualities. Appropriate surfaces for specific functions should be selected. No raise floor except in the data room.

3. Shelving systems

- a. Depending on the particular needs of a library space, shelving systems can be integrated into the design of the room or installed as modular and adaptable units.
- b. Shelves fitted with books are exceptionally heavy. Floors supporting library shelving or compact use need to conform to minimum design loads on structures.
- c. Shelving must be adjustable. Metal shelving is usually considered the most practical and cost effective but there are also adjustable wooden products which may be suitable if designed for library usage. (Refer to LACCD E-Catalog).
- d. Shelving heights should be user-friendly, providing easy access to collections for all users:
- e. Book stacks for public use shall be 54" maximum above finish floor. (CBC **11B-225.2.3**)
- f. The lowest shelf should be at a height that can be reached comfortably without excessive bending.
- g. Aisles between rows of shelves should have a minimum width of 36" clear. Main aisles shall be not less than 44" wide. (CBC **11B-403.5.1**). Aisle widths at turns around elements shall be per requirements of ADAS and CBC latest editions.
- h. Shelving sequences should be clearly labelled and well lit. Signage attributes must be per requirements of ADAS and CBC latest editions.

4. Acoustics Treatment

³⁷ WBDG Staff. "Libraries" 13 Mar. 2007. Whole Building Design Guide. 22 Oct. 2008 <http://www.wbdg.org/design/library_st.php>.

- a. Library space types will typically included reading and private work/study areas that require acoustic and visual separation from general circulation and work areas.
- 5. Lighting
 - i. Establishing lighting zones at the beginning of the design process. Differentiate between the lighting needs for shelving, circulation, reading and workrooms.
 - ii. A variety of lighting styles should be used according to functional requirements in different parts of the library, while ensuring flexibility with adjustable fittings wherever possible.
 - 1. Light fixtures should be readily accessible for maintenance and cleaning purposes.
 - 2. Natural light is desirable but should not be relied on completely to provide illumination. Potential glare on computer screens should be kept in mind when designing for natural light.
 - 3. Provide minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.
- 6. Media Storage
 - a. The Library space types are areas where digital, bound paper documents, film, or magnetic media are stored. A Library space type may include both open and closed storage systems and moveable shelving systems, and be applicable to file rooms and other dense storage of material in conditioned office environments. Libraries are assumed to be general purpose, and may include display spaces and reading, meeting, and electronic workstations, as defined by the desired level of access to materials being stored.
 - b. The media resources program should provide adequate space for housing collections and for use of the materials. Media space design should consider the rapidly evolving world of digital media and the attendant networking requirements. Magnetic materials and optical storage media required specialized storage for conservation and preservation. Archival collections should receive special treatment and handling.
 - c. Media resources should be available in a variety of playback situations, including a mixture of individual, small group, and large group viewing facilities.
 - d. Archival media resources collections require specialized storage and handling. The library should establish a program for archiving media resources, even if housed in a separate special collection. Some media resources may need to address long-term environmental impacts from humidity and temperature.
- 7. Wayfinding and signage
 - a. Each library should have adequate external signs, including directional street and building signs, and attractive and functional internal signage. Planning of wayfinding should commence with the earliest stages of building design. Wayfinding should not rely entirely on signage but use internal layout, lighting, furnishing, floor covering, color schemes and graphics to define spaces and lead

users to them. Signage shall be per requirements of ADAS and CBC latest edition.

b. **AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA**

- a. In anticipation of ongoing growth of digital services and to ensure flexibility of interior design all spaces should have provision for power, and communications cabling.

Wireless technology should be considered as an option to increase flexibility.

Libraries, as major providers of information, should make adequate provision for future needs and technology in this area, including space for additional workstations distributed throughout the library.

- b. Provide a dedicated space for stand-alone computing and network equipment. The mechanical and electrical system should adequately anticipate the associated increase in electrical and cooling requirements.

- c. Today's libraries will evolve into Instructional Media Centers. They will require the following:

- 1 TV head ends and distribution services
- 2 Centralized distributed computing
- 3 Training labs
- 4 Teleconferencing capabilities
- 5 Refer to campus and project specific audio-visual requirements.

c. **MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA**

- a. The Library space type is durable and adaptable, and will typically include features such as a raised floor system for the distribution of critical services (power, voice, data, and HVAC) and mobile workstations and storage.

- b. Fans, ductwork, and air velocities shall be selected in a range of 30 to 40 NC as defined by ASHRAE.

d. **FURNITURE AND EQUIPMENT STANDARDS**

All Furniture shall be ordered through LACCD E-Catalog All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

- a. Durable, attractive and comfortable furniture that meets the needs of all library users should be selected. Workstation furniture should be adjustable to suit a variety of users. A variety of seating should be provided, including ergonomic seating, arm chairs, sofas and study carrels.

- e. **LEED – CREDIT CONSIDERATION** (see LACCD Sustainability Guidelines)

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CATEGORY E. GENERAL USE AREAS

This section will cover the following general use spaces:

1. Conference Room
2. Corridors
3. Custodial Room
4. Lobby / Reception Area

1. CONFERENCE ROOM

- a. For the purpose of these guidelines, a Conference Room is considered as a meeting space planned for 25 or fewer people.³⁸
- b. The total amount of conference room space required to serve a building or grouping of office areas varies widely. Factors influencing the amount of conference room space required include type of offices being served (cubicles vs. private offices), number of offices being served, academic discipline, and nature of work being performed. Due to these various factors, the amount of conference room space is addressed on a case-by-case basis for new construction or renovations.³⁹
- c. For planning considerations, (LACCD) recommends using the following guideline for calculating conference room space:
 1. Total Conference Room ASF Required = FTE Faculty & Staff X 15 ASF
 - In general, the maximum required is 750 ASF for one grouping of offices.⁴⁰
- d. The range of space for a small seminar room or conference room of 0 – 25 people is approximately 16 to 26 nsf per person. The larger area is for a room with space for audio/visual equipment, a screen and/or white board for projection and display, bookcases or shelves, and a serving area for buffet food or coffee service. The smaller areas per person are for conference rooms without these capabilities.⁴¹
- e. The total amount of conference room space required to serve a building or grouping of office areas varies widely. Factors influencing the amount of conference room space required include type of offices being served (cubicles vs. private offices), number of

³⁸ Stanford University Space Planning Guidelines. Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 26.

³⁹ The Office of Campus Planning & Space Management. Auburn University Space Planning Guidelines. Working paper No. Auburn University. Auburn, AL, 2005. 24.

⁴⁰ Idem

⁴¹ Stanford University Space Planning Guidelines. Department of Capital Planning and Space Management, Land, Buildings and Real Estate, Stanford University. Stanford, CA, 2003. 26.

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offices being served, academic discipline, and nature of work being performed. Due to these various factors, the amount of conference room space is addressed on a case-by-case basis for new construction and renovations.⁴²

f. DESIGN STANDARDS

1. Ceiling Height: 9' Minimum
2. Ceiling Treatment / Finish: Varies
3. Floor Finish: Usually carpet 4. Wall Finish: Paint or wall covering
5. Acoustic Treatment:
6. Casework: Built-in counters; cabinets below and above; periodical racks integrated in shelving may be included.
7. Hardware: See Master Format & Specifications Section
8. Lighting: Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.
9. Windows Coverings: Window coverings to be consistent with other window treatments in the building. Use of light diffusing shades on a roller is recommended. Consider shades and space requirements and details for roller and valance. All window treatments shall have a non-reflective matt finish.
10. Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.

g. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA

1. Provide projector connection and projection screen.
2. Provide Phone/Data/Network connectivity.
3. If available, adhere to campus specific Information Technology (IT) Plan.
4. Provide a portable or permanent Assistive Listening System (ALS) and associated power and data connections

h. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA

1. Fans, ductwork, and air velocities shall be selected in a range of 25 to 35 NC as defined by ASHRAE.
2. Provide occupancy sensors with two circuits override switch so occupant may select a preferred lighting level.

⁴² Idem

i. FURNITURE AND EQUIPMENT STANDARDS

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

j. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

2. CORRIDORS

a. DESIGN STANDARDS

1. Height & Width:

- a. Minimum Corridor Width with offices on each side: 6 ft.
- b. Minimum Corridor width with offices on one side: 5 ft.
- c. Minimum Corridor width with instructional rooms on one side: 8 ft.
- d. Minimum Corridor width with instructional rooms on each side: 10 ft.
- e. Minimum Corridor Height: 8-ft. Clear
- f. Optimal Corridor Height: 10-ft. Clear

2. Ceiling Treatment / Finish: Varies

3. Floor Finish: Provide floor finish that is easy to clean and maintain.

4. Wall Finish: Paint or wall covering

5. Acoustic Treatment:

6. Casework: Built-in counters; cabinets below and above; periodical racks integrated in shelving may be included.

7. Hardware: See Master Format & Specifications Section

8. Lighting: Minimum maintained lighting intensity of 50 footcandles in accordance with the latest IES Lighting Hand Book.

9. Windows Coverings: Window coverings to be consistent with other window treatments in the building. Use of light diffusing shades on a roller is recommended. Consider shades and space requirements and details for roller and valance. All window treatments shall have a non reflective matt finish.

10. Accessories: Provide walk off mat at building entrances

b. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA

c. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA

- 1. Ventilating systems shall be designed and installed so that they do not cause conditions that conflict with ASHRAE Standard 55, "Thermal Environmental Conditions for Human Occupancy".

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2. Design of air handling and other mechanical systems shall be such that sound levels in all occupied spaces fall within the NC levels tabulated in the ASHRAE Guide for the occupancies involved.
3. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level. Include by-pass switch.
- d. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

3. CUSTODIAL ROOM

- a. The need for space for custodial purposes must be addressed in the programming phase of design in a building project. It is important that early design review of custodial closets occur with the College Facility Director. Ideally, custodial rooms should have a door width of 40" or greater to allow for passage of larger cleaning machines. Exact janitorial requirements for each building are a program issue to be resolved during design development.
- b. Buildings up to 50,000 square feet will require two to three janitor closets, a minimum of one per floor level.
- c. Buildings up to 100,000 square feet will need three to four janitor's closets minimum, at least one per floor level; larger buildings should be programmed for additional closets at the rate of one per 25,000 square feet.⁴³
- d. CUSTODIAL CLOSETS/HOPPER ROOM:
 1. One Hopper Room per floor shall be at least 100 square feet (at least 10 feet wide) and be located close to the vertical circulation and plumbing core of the building. Add a 2nd hopper room for a single floor space exceeding 40,000 square feet. The Hopper Room shall accommodate the following:
 - a. Two open storage steel shelving units, at least 8 feet high, 2- feet deep and 4-6 feet wide, secured to the wall
 - b. Containment cabinet for cleaning chemicals and secure storage. Cabinet shall have shelving on one side and vertical storage on the other. The cabinet shall be lockable, at least 15-inches deep, 6-feet 6-inches tall, and 30- inches wide. (Example: Sandusky Janitorial Supply Cabinet).
 - c. Louvered door with kick plate. Install rated shutter in fire rated door.
 - d. Hardware: proximity card with key override per college requirements.
 - e. Clear open floor space in room shall be at least 42-inches wide and 6-feet deep.
 - f. The door shall open into the hopper room.
 - g. Tack Board

⁴³ [Princeton University Design Standards Manual](#). Facilities Department, Princeton University. Release 7.0 Princeton, NJ, 2008. 1-2. September, 2019

- h. Emergency phone
- 2. Do not locate electrical panels, telephone boards, other equipment, or roof access within the custodial closet.⁴⁴
- 3. Construction and Fire Rating: review need for fire-rated enclosure and door assembly, including door closer.
- 4. Closets must be secured to ensure protection of equipment
- 5. Finishes
 - a. Walls:
 - 1. Masonry: brick, block, glazed block, ceramic tile
 - 2. Wood and/or metal frame with plaster finish: smooth finish, gloss painted finish
 - 3. Green board, 12" x 12" ceramic tile or FRP 6-foot height and 6-foot wide on both side of the floor sink, topset coved rubber base. Gloss paint wall finish
 - b. Floor
 - 1. Concrete (properly sealed), terrazzo, ceramic or quarry tile
 - 2. Coved base to match floor;
 - 3. Locally depressed floor drain. Provide automatic trap primer.
 - c. Ceiling
 - 1. Exposed structure is preferred if rated ceiling is required, plaster finish should be specified.
- 6. Utilities/Equipment
 - a. Power –
 - 1. Two dedicated 20A, 120V GFCI protected electrical outlets mounted at 48-inches AFF for battery and equipment charging.
 - 2. Convenient outlets on two opposite walls, GFCI protected.
 - b. Lighting - Vapor proofed utility LED w/ guard at ceiling, wall switch. Provide occupancy sensor with two circuits override switch so occupant may select a preferred lighting level.
 - c. Ventilation - exhaust ventilation with make-up air; review requirements for tempering make-up air
 - d. Piping, etc. - maintain headroom of 90"; piping, conduit, ductwork, etc. to be installed above that level.
 - e. Detector - smoke detection may be required; review use
 - f. Sprinklers - provide upright pendant with wire cage in buildings with suppression

⁴⁴ University of California San Diego. "UCSD DESIGN GUIDELINES." [Special Program Requirements](http://fdc.ucsd.edu/documentation/designguidelines.html). University of California San Diego. 21 Oct. 2008 <<http://fdc.ucsd.edu/documentation/designguidelines.html>>.

- g. Corner floor mop sink with hot and cold water, mop hanger, 36" hose with wall hanger, vacuum breaker on the faucet. Mop sink: Acorn Model # TNC-32-TF2-SSC or equal.
7. Miscellaneous
- a. Accessories (optional as requested by College Facility Director) - in one closet per building (typically), install cleaning chemical dispenser over receptor friction-type mounting brackets for mops, brooms, etc. on wall over receptor (not under chemical dispenser) 12" – 14" stainless steel shelving high on third wall, 8' total if possible
- e. CUSTODIAL SUPPLY AREAS
- 1. STORAGE CLOSET– shall be provided *for buildings not located on the Main Campus*. (Examples: East's South Gate; Mission's East Campus). The Storage Closet is in addition to the requirements for Hopper Rooms. A Storage Closet shall be at least 10-feet by 20-feet. Storage Closets shall NOT contain mechanical equipment, exits to the roof, transformers, electrical panels, water heaters, etc. to which other personnel or building occupants must have access. Storage Closets must be secured at all times. The Storage Closet shall accommodate the following:
 - a. Be located near the restrooms.
 - b. Have a camera with dedicated data recorder in FMO main office.
 - c. Open adjustable shelving that is at least 6 tiers, 10-feet high, 18-inches deep and 6-feet wide, anchored to the wall.
 - d. Sealed concrete floor with locally depressed floor drain and automatic tramp primer.
 - e. Open floor space that is at least 6-feet by 8-feet.
 - f. Two dedicated 20A, 120V and one 30A, 240V GFC I protected electrical outlets mounted at 48-inches AFF.
 - f. MAIN CUSTODIAL SUPPLY AREA- One per college main campus which is located in the Maintenance and Operations area, next to the receiving dock. It will be the central supply area for all custodial operations. The Main Custodial Supply room is a high security area and shall be at least 9,600-square feet with a HIGHER secured lockable storage within that area of at least 3,600-square feet. The area shall accommodate the following:
 - 1. Main Custodial Supply area shall be lockable with high security key and the wire mesh security room within the area shall have a higher security key.
 - 2. Room height shall be at least 15-feet to provide for pallet shelving.
 - 3. Interior wall bottom 4-feet shall be constructed with CMU or plywood. Green board to 8-feet high with high gloss paint finish.
 - 4. Provide one 10-feet wide and 10-feet high electric powered overhead door.
 - 5. Security camera with dedicated data recorder in FMO main office.
 - 6. Sealed concrete floor with locally depressed floor drain and automatic tramp primer.
 - 7. Ample open space for carts, fork lifts and custodial equipment.
 - 8. 10 power outlets equality spaced on opposite walls.
 - 9. 2 compressed air connections from a compressor with minimum 25 CFM at 90 PSI, 10 HP electrical motor, 90 gallons tank.
 - 10. Water faucets and electrical outlets on the outside of the main custodial supply room.

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11. Two (2) 18-inch deep, 43-inch wide, 60-inch high, flammable storage cabinets with built in ventilation system to the exterior.
12. At least 550-feet of open and pallet shelving.
13. Vapor proofed LED light fixtures.
14. Equipment/vehicle charging station – 240 volts, 15 amp.
15. Janitorial cabinet 36"x24"x72" similar to Strong Hold Model #36-BC-244.
16. Dispensing station area with floor mounted 41-inch high stainless steel utility sink, wall mounted faucet with built in backflow preventer and level handles, one (1) 24" wide 30" deep and 35.5" high stainless steel table next to the sink, GFI outlets at 48"+AFF directly above the table, and floor drain.
17. Provide a commercial washer and dryer. Washer/extractor shall be front loading with 60 lbs. capacity.

4. LOBBY / RECEPTION AREA

- a. Access to the building spaces will be through a central enclosed, and lockable lobby area. Typically, the lobby area shall contain a building directory, a lockable bulletin board for schedules and special announcements, and space for future digital display.
- b. Provide hard flooring at least six feet in from the entrance doors for the location of entry mats.
- c. Entrance doors shall be protected by canopies and wing walls; or, doors shall be recessed.
- d. Building Memorial Plaque: For new buildings, the Design Professional shall make provisions for a wall area in the main lobby or in the vestibule to the main lobby to be used for installation of a future memorial plaque. The wall area shall be architecturally designed to provide an aesthetic setting for the plaque and shall be adequately lighted.⁴⁵
- e. Minimum of 30 footcandle maintained lighting intensity in accordance with the latest IES Lighting Hand Book.

5. TELECOMMUNICATION ROOM

The need for space for telecommunications and security must be address in the programming phase of design in a building project. It is important that early design review of telecommunication rooms occur with the IT Managers. Each building will require a minimum 100SF Telecommunication room on the first floor and minimum 80SF Telecommunications room on all other floors. Refer to District Facilities Telecommunications Standards for further details."

⁴⁵ University of California San Diego. "UCSD DESIGN GUIDELINES." [Special Program Requirements](http://fdc.ucsd.edu/documentation/designguidelines.html). University of California San Diego. 21 Oct. 2008 <<http://fdc.ucsd.edu/documentation/designguidelines.html>>.

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CATEGORY F. ASSEMBLY USE AREAS

“Definition: A room or space accommodating a group of individuals for recreational, educational, political, social, civic, or amusement purposes, or for the consumption of food and drink.”⁴⁶

AUDITORIUM

The Auditorium space types are areas for large meetings, presentations, and performances. Auditorium space type facilities may include assembly halls, exhibit halls, auditoriums, and theaters. Auditorium spaces are designed to accommodate large audiences. As such, they tend to have wide spans and are multiple-stories high in order to accommodate seating, sightline, and acoustical requirements. Raised stage/dais floors and special lighting equipment are often required as well.

1. DESIGN STANDARDS

- a. **Sloped Floors:** Sloped floors, with level terraces for each row of seating, help provide the proper sightlines from the audience to the stage. Note that the bottom and intermediate rows should be directly accessible from entry levels to allow for accessible seating per requirements of ADAS and CBC latest edition.
- b. **Special Acoustical Design:** Quality acoustical characteristics are important in Auditorium spaces so that performances and presentations can be clearly heard and understood. For performance spaces and general presentation spaces, recommended noise criteria (NC) rating ranges from NC-20 to NC-30; recommended sound transmission class (STC) rating ranges from STC 40 to STC 50. Strategies to achieve the recommended NC and STC ranges include, for example: Type II vinyl wall covering and fabric covered acoustical wall panels for the interior wall finish in the auditorium; Type II vinyl wall covering for the stage area; Type II vinyl wall coverings for 1/3 of the front of the orchestra (audience) sidewalls and fabric covered acoustical panels for 2/3 of the back of the orchestra (audience) sidewalls; fabric covered acoustical panels for rear walls; and a plaster and plywood combination— because of their reverberation characteristics—for the ceiling.

2. AUDIO VISUAL SYSTEMS & TECHNOLOGY DESIGN CRITERIA

A permanently installed Assistive Listening System (ALS) shall be provided in the room, per requirements of ADAS and CBC latest edition.

3. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA

- a. **Increased Cooling Capacity:** Heating, ventilating, and air-conditioning (HVAC) systems for Auditorium spaces are sized and zoned to accommodate varying internal loads, which are a function of audience sizes, performance lighting loads, and projection equipment. Particularly, air-handling units (AHUs) with

⁴⁶ Division of the State Architect. [DSA/AC Checklist](#). 2006th ed. CA

increased cooling capacity should be zoned separately for the auditorium, lobby, projection spaces, stage areas, and audience seating areas. Also, the Auditorium typically has a separate AHU constant volume with modulated temperature control for ventilation.

- b. Special Lighting: Dramatic lighting systems include front lighting, foot lighting, spotlights, follow spot lights, beam lights, and flood lights, and a projection room/booth with manual and programmable lighting controls, and space for the spot light operator space. Lighting systems should be flexible to accommodate various performance venues (e.g., lectures, plays, musical performances, etc.) in the Auditorium.

4. FURNITURE AND EQUIPMENT STANDARDS

All furniture and equipment shall utilize a District Master Agreement. The current list of FFE Master Agreement vendors can be obtained from the Relocation Project Manager.

- a. Fixed Seats: Typically, fixed seats with tilting upholstered seat and back, integral arm and tablet arm are provided with articulated back for maximum occupant passage space between rows. The seats may be fully upholstered or wood contoured outer back and seat shells with wood armrests with tablet arm option and aisle light option at row ends. Seat number/row letters and the International Symbol of Accessibility (ISA) markers should be compliant with ADAS and CBC latest editions. Wheelchair access option-removable seats in sections of two and accessible end chairs for mobility limited occupants should be provided.

5. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

CATEGORY G. SANITARY USE FACILITIES

1. WOMEN'S RESTROOMS

Introduction

The primary concerns in the design of both male and female restrooms are durability and ease of maintenance. Restrooms should be designed to be resistant to graffiti and vandalism. Additionally, designers should consider the maintenance requirements of materials.

a. DESIGN STANDARDS

1. Toilet partitions shall be made of phenolic material (see master format performance standards section for details)
2. Wall and ceiling construction shall use vandal resistant Gypsum Wall Board
3. Wall surfaces shall be tiled from floor to ceiling with a durable graffiti resistant material. Porcelain tile is preferred.
4. Floor surfaces shall be of a durable easily maintained material such as porcelain tile or terrazzo.
5. See Master format performance standards for Toilet Room Accessories

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6. Provide Stainless steel wall access panels as required
 7. Provide painted steel ceiling access panels as required
 8. Restrooms shall have obstructed sightlines from outside corridors and public spaces.
 9. Restroom design shall plan for recessed roll-towel-paper dispenser and trash receptacle units or design shall provide space in alcoves for loose bins, and projecting dispensers. At least one trash receptacle location shall be planned near entry door Surface mounted protruding towel-dispensers, and loose trash cans blocking the floor clearances for doors, and fixtures are not acceptable.
- b. Mechanical, Electrical, and Plumbing Design Criteria
1. Toilets and flush valves shall be of the low water consumption type. (See master format performance standards section for details).
 2. Provide wall mounted water closets for ease of cleaning.
 3. Lavatories shall be made of vitreous china, and shall feature low water consumption Faucets (see master format performance standards section for details).
 4. Provide floor drains.
 5. Provide lockable centrally located stainless steel hose bibs for wet cleaning in areas with floor drains.
 6. HVAC design shall comply with ASHRAE minimum design standards
 7. Lighting shall comply with minimum lighting levels as noted in the IES handbook.
 8. Lighting levels shall be uniform throughout the room.
- c. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)

2. MEN'S RESTROOM

- a. See Women's Restrooms Design Standards
- b. No waterless urinals.
- c. Accessibility: Plan, fixtures, and accessories must comply with ADAS and CBC latest editions

3. UNISEX

- a. DESIGN STANDARDS (see Women's Restrooms)
- b. MECHANICAL, ELECTRICAL, AND PLUMBING DESIGN CRITERIA
(see Women's Restrooms)
- c. LEED – CREDIT CONSIDERATION (see LACCD Sustainability Guidelines)
- d. Accessibility: Plan, fixtures, and accessories must comply with ADAS and CBC latest editions

CHAPTER 2. GENERAL BUILDING STANDARDS

STANDARD 1. SPECIAL FACILITIES MAINTENANCE STANDARDS

1. LADDERS, CATWALKS AND PLATFORMS

- a. Ladders, stairs, catwalks and platforms should be provided to areas where access is required for inspection or maintenance. At a minimum, provide access to fans, balancing and flow control dampers, steam traps, sanitary clean-outs, and sensors located high above suspended ceilings. Walking across ductwork is not an option in reaching these components.
- b. Catwalks and/or platforms should be provided in accessible shafts and plenums for inspection, maintenance and/or future modifications. Arrange layout of ceiling suspended fans in mechanical rooms to allow access from a jack stand.

2. LOADING DOCKS

- a. Provide space for compactors and utility carts. Confirm specific type and numbers of refuse/ recycling containers and compactors with the Campus Facilities Director early in the design process. Provide access for large 34 cubic yard trucks to service containers. Provide electrical outlets at loading docks for compactors and other general purposes. Provide data connections for future use with refuse/ recycling containers.

3. ROOF PENETRATIONS

- a. Where roof penetrations are a part of modifications to an existing building, construction documents shall clearly indicate that cutting and sealing of roof must be made by a roofing contractor and the College Facilities Director be informed at least 24 hours in advance of the penetration.

4. AIR SYSTEM DESIGN LAYOUT

- a. Obtain accurate measurements for all aspects of system performance, where feasible:
 1. Provide manufacturer required straight inlet and discharge duct lengths at all fans, air flow stations, static pressure sensor, air blenders, air terminal boxes, humidifiers etc.
 2. Do NOT locate sub-main or branch takeoffs within 7.5 equivalent duct diameters of fan outlet
 3. Lay out ductwork and dampers such that accurate flow measurements can be made at all mains, sub-mains and branches, essentially 7.5 diameters of straight duct. Show dimensions of straight runs to assure acceptable measurement accuracy
 4. Do NOT use splitter dampers
 5. Constant volume systems, if used, will be equipped with balancing dampers shown on drawings in all sub-mains and branches with their type
 6. Make provision in the layout for measuring the amount of outdoor air at both minimum and maximum outdoor air damper conditions
 7. Provide flow measuring stations with cfm gauges for all fans larger than 5000 cfm

5. WATER SYSTEM DESIGN LAYOUT

- a. Show all balancing stations and isolation/ shut-off valves on the drawings. Typical details may be used for pumps, coils and fin tube. Sub-mains, branch line balancing stations, and isolation shut-off valves must be shown on either the floor plans or a riser diagram.
- b. Details and plans must clearly show locations of balancing stations so that accurate flow measurements can be made at all mains, sub-mains and branches. Show dimensions of straight runs to assure acceptable measurement accuracy.
- c. Venturis or pitot tube type measuring devices are preferred for all piping 4" or larger. Some Venturi manufacturers require less straight piping up and downstream than pitot tube manufacturers.
- d. GPM gauges are preferred for all pumps larger than 200 gpm.

6. SUSPENSION OF MATERIALS ABOVE CEILINGS

- a. Design means of suspension systems from the slab above, allowing space for hangers, including seismic bracing where required. Piping, ductwork and equipment shall have independent support systems (piping may not be supported from ductwork supports). Do NOT suspend anything (including electrical conduit) from ductwork. Show trapeze hangers on drawings and provide sufficient details to convey design intent to the Contractor. Verify that sufficient space exists above suspended ceiling for the design.
- b. When modifying existing buildings, new piping, ductwork and equipment shall not be supported from existing hangers and/ or existing supplementary steel without A/E verification of existing conditions and loading capabilities.

7. SEPARATION FROM BUILDING SERVICES

- a. Waste and vent piping serving laboratories, research areas or handling acid shall NOT be connected to the building general sanitary systems

8. CUSTODIAL CLOSETS

- a. Provide at least one closet per floor for smaller (about 5,000 square feet) buildings, although two per floor are required in opposite wings. Custodial closets may NOT contain mechanical equipment, exits to roof, electrical panels, etc. to which other personnel or building occupants must have access. Closets must be secured to ensure protection of equipment.

Each room shall be approximately 10'X10' and be located close to vertical circulation and plumbing core of the building. The closet shall accommodate the following:

1. Corner Mop Sink with hot and cold water faucet, 36" hose w/wall hanger, and stainless steel wall guards.
2. SS shelf and mop hanger located above the Mop Sink.
3. Open storage shelving (2-4' long shelves)
4. Containment cabinet/container (explosion proof) for bleach.

5. Two dedicated 20A, 120V electrical outlets mounted at 48" AFF for battery and equipment charging.
6. Convenience electrical outlets (GFI).
7. Floor drain w/ trap primer.
8. Sealed concrete floor.
9. Vapor proof lighting fixture(s).
10. Louvered rated door w/ fire shutter.
11. Latch set to be prox. card operated w/ key override.

9. NATURAL GAS SHUT-OFF VALVES FOR LABORATORIES

- a. A readily accessible manual shut-off valve is required at the building gas supply connection. The District prefers one for any lab which has more than two gas outlets.
- b. Provide readily accessible manual shut-off valves (eg. bench top turret valves) within six feet of equipment being served. Shut-off valves may NOT be located above ceilings.

10. ROOM NUMBERING

- a. Room Numbering on Contract Documents must conform to the Campus Facilities conventions, and must be coordinated with the Facilities Director.

11. MECHANICAL ROOM FLOORS

- a. All mechanical room floors and curbs which are not slabs on grade, shall be waterproofed to prevent leakage into occupied space below.