

CLASSROOM DESIGN STANDARDS



**New York State Department of Health
Bureau of Emergency Medical Services**

Revised April, 2010

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GENERAL CLASSROOM DESIGN GUIDELINES

1.0 INTRODUCTION

The organization of this document is based on providing two sections of information:

- General Classroom Design Guidelines
- Specific Classroom Design Guidelines

This manual is derived from national standards and standards set-forth by the University of Maryland, Baltimore County, the Board of Pharmaceutical Specialties Washington, DC and The Convention Industry Council.

2.0 OVERVIEW

The New York State Department of Health Bureau of Emergency Medical Services (BEMS) guidelines are intended to be used as the criteria for BEMS approved course sponsors to assure that their classroom space is adequate enough to provide an educationally sound environment for their students and to assure uniformity in the EMS educational environment across New York State.

These guidelines are meant to supplement the BEMS course sponsor administrative manual and other policies, which can be obtained from the BEMS Central Office. Any proposed design which deviates from these guidelines must be reviewed and approved by the BEMS representatives.

Designing a space for teaching and learning requires careful planning and organization. It requires close collaboration between the instructor and all other personnel from the course sponsorship. A well designed space is the result of careful coordination of information amongst all parties.

3.0 GENERAL CHARACTERISTICS

3.1 Location

The learning environment must be: located within a building with easy access by students and equipment, isolated from noisy gathering places, and should be concentrated on the lower floors of buildings to provide an easy avenue for students, as well as provide convenient access for the disabled and support services. The uses of adjacent spaces must be carefully chosen to avoid distracting noises and sounds. They should not be adjacent to mailrooms, reception areas, dining facilities, rest rooms, loading docks, mechanical equipment rooms, vehicle bays and other similar noise producing areas. Care must be taken in their location in relation to the exterior environments as well as to direct air paths between rooms. For example, in rooms that rely on the presentation of materials through audio-visual equipment, south and west facing windows require a higher degree of blackout capability than do east and north facing windows.

Physical Access and Movement - The design shall take into account the flow of students both in and out of the space and within the space as well as the need for the instructor to move around in the front of the room.

The success with which a student receives information from an instructor or can effectively participate in class activities, is affected by factors of the room design, the shape as well as its placement within a building. In spaces planned for extensive media use, the configuration can be one of the most significant factors contributing to the effectiveness of the display system, the student's comfort and ability to interact with the instructor and other students, and the strength and clarity with which the instructor's voice is heard.

ADA Requirements

All BEMS course sponsors are required by federal law to abide by the American's with Disabilities Act for not only education, but the structural environment of the classroom. Following is an excerpt from federal regulation documents: "The regulations require that architectural and communication barriers that are structural must be removed in public areas of existing facilities when their removal is readily achievable—in other words, easily accomplished and able to be carried out without much difficulty or expense. Public accommodations that must meet the barrier removal requirement include a broad range of establishments (both for-profit and nonprofit)—such as hotels, restaurants, theaters, museums, retail stores, private schools, banks, doctors' offices, and other places that serve the public. People who own, lease, lease out, or operate places of public accommodation in existing buildings are responsible for complying with the barrier removal requirement.

Additional information may be obtained from <http://www.ada.gov/racheck.pdf> and <http://www.ada.gov/>.

3.2 Entrances and Exits

Entrances should be located to avoid student traffic passing through non-instructional areas. In addition, large numbers of students traveling in corridors and hallways can generate unwanted noise for rooms still in use. All classrooms should have a separate fire exit from the main entrance to the classroom. This is not a requirement, but is strongly encouraged. All fire exits must meet all state and local building and fire codes.

3.3 Seating, Capacity, and Support Space

The size of the room must 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 chalkboard, projection screen, or video monitor.

3.4 Floor, Walls, and Ceilings

Carpeting should be provided in all rooms unless discipline specific related courses dictate otherwise. Carpeting or another type of portable soft padding must be used in the practical skills classrooms unless the discipline suggests otherwise, i.e. oxygen therapy station, which is completed primarily on table tops.

The ceiling height is another important consideration when choosing a classroom. For example, because a projection screen must be large enough to display images of adequate size, it must be placed high enough from the floor to provide unobstructed sight lines. This usually requires a ceiling height higher than the standard eight feet.

3.5 Noise control

To avoid the noise generated by their operation and use, vending machines should be located as far away as possible. Trash and recycling containers should be located near the vending machines. Restrooms and drinking fountains should be located nearby and should be adequate enough to handle student use between classes, rather than minimum code requirements which are based solely on room occupant load.

3.6 Telecommunications

Phones – Any building with a classroom must have a telephone accessible by the instructor and students in case of an emergency.

3.7 Natural Lighting

Natural lighting is desired in all rooms. Black-out shades need to be used for classes held in the daylight hours when video media is being used.

3.8 Electrical and Lighting

Line voltage (120v) electric clocks should be located in each classroom.

Fluorescent lighting should be used. Lower light levels appropriate for video projection in rooms is required and can be achieved with multi-tube fluorescent fixtures. Ability to zone the lighting so that fixtures in the instructor area are switched separately from those in the seating area.

Incandescent light fixtures should be dimmable and banked for lighting control.

Lighting Control – Lighting controls should be conveniently located to the instructor station, clearly labeled, and should provide instantaneous response when pressed. In addition, lighting control should have a minimum of four options: full-on, two projection settings (medium and low), and full-off.

3.9 HVAC

Consideration should be given to the use fans to enhance proper air circulation in the room.

HVAC Controls: Climate Control - Temperature and air flow as well as the associated acoustical control of HVAC systems are critical to the classroom or lecture hall. Air quality shall be without undesirable odors.

3.10 Sundry Issues

Trash cans are to be provided in all rooms.

Pencil sharpeners should be installed.

Water fountains as well as vending machines for food and drink should be available to students.

NYS DOH BEMS
SPECIFIC CLASSROOM GUIDELINES
Revised Draft, July 27, 2009

1.0 SPECIFIC CRITERIA

Specific criteria for each type of classroom is found within the description and detailed information for each classroom in the following section.

2.0 Types of Classrooms

There are four types of classrooms summarized below and further described on subsequent pages.

2.1 TYPE I (Basic): General purpose classroom that has basic standard technologies, such as, an overhead projector, projection screen, marker (writing) board (white) or chalkboard, Ethernet, audio and video components. The technology may be portable. This classroom is for **less than 41 students**.

2.2 TYPE II (Basic Plus): Enhanced classroom **of less than 61 students** that includes all of the items described in Type I.

2.3 TYPE III (Practical Skills Classroom): Classroom **for 20 to 40 students** with carpeting, and all items described in Type I.

2.5 TYPE IV (Video Teleconferencing Classroom - VTC) General purpose classroom designed to support use of interactive video for both teaching and learning. The room systems will produce origination of audio and video for two-way communication. Control systems to be sufficiently user friendly to enable operation by the instructor or assistant.

2.6 Type VI (NYS Written Examination Location): General purpose classroom or other large room designed to support the secure and required administration of the New York State Department of Health Bureau of EMS Written Certification Examination.

2.1 ROOM TYPE: I

SQ. FT.: Dependant upon number of students and type of furniture.

INTENDED USE:

Intended to provide a good learning environment that is prepared for use of mobile A/V Technology.

Number of students to be less than 41.

ROOM REQUIREMENTS:

Architectural:

- Square footage range must be between 17 and 22 square feet per student. See appendix A.
- Coordinate seating arrangement with technology requirements. Distance from the first row of seating to the screen shall be 1.5 to 2 times projected image width.
- Provide complete blackout capability.
- Assure acceptable acoustics.
- Assure durable, easy-to-clean floor covering. **Carpet is preferred.**
- Assure HVAC system capable of maintaining human comfort conditions summer and winter. Temperature range should be between 65 and 75 degrees Fahrenheit. Air quality shall be without undesirable odors.
- Lighting for classrooms should use multi-level switching and be dimmable for general seating. Lighting shall be controlled from the teaching station or nearby wall.
- If more than one switch, label all controls clearly.
- Evaluate need for light over chalkboard. Use focused light, if appropriate. Provide manual control at teaching station or preset if dimming system is available.

EQUIPMENT REQUIREMENTS:

- Choose all seating with consideration for ergonomic principles.
- Accommodate wheelchair users per current ADA criteria.
- If tablet arm chairs are chosen for classroom seating, provide oversize writing surface plus book storage beneath the chair.
- If tables and stackable chairs are chosen for classroom seating, tables must provide knee clearance no less than 27.5".
- Projection screens: minimum screen size should be 6' with actual size determined by room dimensions. Consider installing additional screens under the following conditions.
 - at intersection of front and side walls at a 45 degree angle.
 - when the room is significantly wider than it is deep.
 - if chalkboard space is limited when front screen is in use.
 - when it is likely that more than one projection device will be used simultaneously.
- Provide receptacles for recycled paper and trash.

2.2 ROOM TYPE: II

SQ. FT.: varies

DESCRIPTION: Basic Plus

Classroom

INTENDED USE:

A “basic plus classroom” is an upgrade from a Basic Classroom. It typically has a capacity of fewer than sixty-one students.

The “Basic Plus Room” shall provide a good learning environment and be prepared for use of mobile technology. **This space is intended for fewer than 61 student with** installed or portable TV/VCR and an overhead projector.

SPECIAL ROOM REQUIREMENTS:

Architectural:

- Square footage range must be between 22 and 23 square feet per student.
- All other requirements as in Type I classroom.

2.3 ROOM TYPE: III

SQ. FT.: varies

DESCRIPTION:

Practical Skills Classroom

INTENDED USE:

Intended to provide a good learning environment with significant use of Installed technology for practical skills sessions. Typically, this space is intended for 12 to 40 students, and under certain conditions additional students. Skills and laboratory groups must have a maximum ratio of 6 students per 1 instructor.

This type of classroom should not be the same classroom that is used for Type I and Type II. However, if there is no additional space the same room can be used as long as chairs and tables are able to be placed in an area as to not interfere with practical skills sessions and student learning. Separate rooms should be used for each skills station. However, if this is not possible there must be partitions separating each skills station to reduce noise and improve the overall educational environment. If skills stations are unable to be partitioned from one another then each station must be separated by enough square footage necessary to reduce noise levels.

SPECIAL ROOM REQUIREMENTS:

Architectural:

- Square footage should be 25 square feet per student and instructor. However, this is greatly dependant upon the type and use of the room and must be evaluated on a case-by-case basis.

2.4 ROOM TYPE: IV

SQ. FT. varies

DESCRIPTION:

Computer Classroom

INTENDED USE:

This room will be designed with either a computer workstation or a docking station at every station so that students can either use a provided workstation or bring his or her own with the ability to connect to the network. This room can also be used as a general classroom with enhanced audio visual capabilities to accommodate a group learning environment instead of individual working stations.

SPECIAL ROOM REQUIREMENTS:

Architectural:

- Securable.
- Locate front of room so doors do not conflict with teaching space.
- Locate instructor station at one side of the front of the room with ten feet between the student workstations and the whiteboard. Provide work surface at least five feet wide for instructor.
- Plan the printing area so it is large enough to accommodate other possible peripherals such as scanners or color printers. Although a printing station is not required students should have the ability to either print relevant lecture materials or save the materials electronically.
- Preferred room shape is rectangular but not completely square.
- Plan space for storage of printing and supplies, trash and recycling receptacles and documentation.
- Minimum and maximum viewing distances will determine location of seating.
- General guideline for location of first row of seats is approx. 1.5 times projected image width.
- General guideline for location of seat furthest from front of room is no more than four times projected image width.
- Blackout capability (prefer no windows to outside at all).
- Allow 30-40 square feet per student work-station. This station size (which is greater than in a standard classroom) will provide for larger aisle width and front of room dimensions required in computer classrooms. If the room is to be used as a group lecture center with no individual student computer or monitor access, then the square footage shall be equal to or greater than classroom types I and II.
- Orient all computing devices so students can view front of room with relative ease.
- Provide sound attenuation from adjacent spaces.
- Anti-static carpet should be used, but is not mandatory.
- Install framing or support for ceiling mounted video projector. Appropriate distance for projection depends on projector selected and room dimensions and shall be determined during design. Portable projection equipment shall adhere to requirements for classroom types I and II.
- Locate computers to avoid glare from lights or windows. Consider impact of furniture types.

Mechanical

- Plan cooling at 25% more than is needed to accommodate total potential number of workstations the room is capable of housing in operation at one time with a temperature of less than 75° F.
- HVAC must support ambient noise levels so not to interfere with sound levels and learning environment.

Electrical

- Provide voice, video, data, power, and audio outlets at front of room, and at location of electronic image display device providing connection to Interactive Video Network, Computing Services, or other networks.
- Provide power and low voltage outlets at front of room
- Provide adequate power to support total potential number of workstations the room is capable of housing with two duplex outlets per workstation preferred (one is minimum requirement).
- Provide non-glare fluorescent lighting. Indirect lighting is preferred over direct lighting. Bank lights and control banks from front to back. Dimmable lighting is best but differently switched fluorescent fixtures is acceptable.
- Provide switches for general room light at each door and at teaching station.
- Provide program sound reinforcement for multimedia presentations.

Telecommunications:

- Install pathway according to nationally accepted standards to bring voice, data, and video from source to standard communications outlets in the classroom, projection point at rear of room (interface with house sound system) and front of room.
- Provide a data connection at each workstation location, two at the instructors station, and one at the front of the room. Delivery of data should conform to the most recent standards.
- Provide communications from one hub to each station.

Equipment Requiriements:

- Work surfaces (number to match room capacity) at tables at a height of 26 inches for standard use and 29 inches (27" clear opening height) for handicapped access must be used, a minimum of 42 (minimum) to 48 (preferred) inches of work space should be allotted for each workstation. Each table should make provision for tower configurations or under work surface applications.
- Computer workstations (number to match room capacity, including one for instructor), should be arranged so as to eliminate glare. One computer shall have a large monitor to accommodate users with reduced vision.
- Consider installation of assistive listening devices to counteract high ambient noise created by workstations and peripherals.
- Provide a station (with computer) for lab administrator or instructor.
- Workstation chairs (number to match room capacity) should be selected in accordance with ergonomic principles.
- Printer(s).

- 1 high resolution (SVGA or XVGA), video/data projection device, chosen to be suitable for the room size and configuration and installed so as not to obstruct student view.
- 1 markerboard.
- 1 projection screen, size to be determined when room dimensions known.
- Provide security for workstations and in particular laptop computers.
- 1 overhead projector (optional).
- 1 VCR and/or DVD player (optional)
- Sound system
- Containers for trash and recyclables
- Install line voltage (120v) electric clock(s) with large, easy-to-read. They should be located so they are visible to the instructor.
- Provide a telephone that will provide access to emergency services.

2.5 ROOM TYPE: V

SQ. FT.: 100 per skills station

DESCRIPTION:

NYS DOH Bureau of EMS Final Practical Skills Examination (PSE) location

INTENDED USE:

Intended to provide a secure and adequate testing environment for the number of candidates who will be taking the final PSE.

If the site where the course was taught does not meet the required criteria below, it is the responsibility of the course sponsor to locate and secure another location that will meet this criteria. This type of classroom can be without the audio and video requirements set-forth in the aforementioned classroom types.

SPECIAL ROOM REQUIREMENTS:Architectural:

- Square footage should be 100 square feet for each PSE station.

Specific Requirements:

- Each station must be partitioned in such a way to reduce noise from surrounding stations.
- Each station must have easy entrance and exit area for the candidates.
- Each station must be setup in such a manor so no other candidate or examiner can observe the testing of a candidate.
- Convenience between stations must be accomplished so not to disturb any other testing stations.
- Environment must be free from undue and excess noise and distractions.
- Test site must have an adequate area to be used as a gathering or staging area for candidates awaiting testing station assignment. This area must be enough distance to not allow excess noise to overflow in to the testing environment.
- HVAC system must be able to maintain a comfortable temperature between 65 and 75 degrees Fahrenheit. Air quality must be free from unwarranted odors.
- Adequate restrooms, drinking fountains/vending machines, and adequate parking for the number of candidates taking the exam.
- Adequate lighting in the testing environment to assure a secure and adequate testing environment.
- Adequate space for the number of examiners and other staff to gather for pre-examination orientation and break periods.
- Ability to secure all examination materials in such a way so they are not visible or obtainable from any unauthorized personnel.
- Each station must be appropriately marked for candidates and the pathways to each station must be clearly labeled.
- A chair for each examiner and if required each assistant and/or victim. Each examiner should be provided with a clipboard or other hard writing surface, a pen, and clock or watch as well as pertinent examination documents that pertain to the skills being tested.

2.6 ROOM TYPE: VI

SQ. FT.: Varies on Number of Candidates Testing

DESCRIPTION:

NYS DOH Bureau of EMS Final Written Certification Examination location

INTENDED USE:

Intended to provide a secure and adequate testing environment for the number of candidates who will be taking the NYS DOH BEMS Written Certification Examination.

If the site where the course was taught does not meet the required criteria below, it is the responsibility of the course sponsor to locate and secure another location that will meet the criteria. This type of classroom can be without the audio and video requirements set-forth in the aforementioned classroom types.

Specific Requirements:

- Environment must be free from undue and excess noise and distractions.
- HVAC system must be able to maintain a comfortable temperature between 65 and 75 degrees Fahrenheit. Air quality must be free from unwarranted odors and dust.
- Adequate restrooms, drinking fountains/vending machines, and adequate parking for the number of candidates expected to take the exam.
- Adequate lighting in the room to assure a secure and adequate testing environment.
- There must be adequate writing surface for the candidates to open their booklets (which measures at a minimum of 17" x 11" when open) and to lay their answer sheets (8 1/2" x 11") flat. Tables or large desks work best.
 - Tables preferred for use measure 8' x 2.5' or 6' x 2.5'. There should be a 3' space between each table and a 3' row separating the tables. Typically a 6' x 2.5' table will accommodate 2 candidates. Typically a 8' x 2.5' table will accommodate 3 candidates.
 - A sample setup for a row with 2 tables that are 6' x 2.5' would require a minimum of 15' in length by 8.5' in width.
 - A samples setup for a row with 2 tables that are 8' x 2.5' would require a minimum of 19' in length by 8.5' in width.
 - If desk chairs are used instead of tables, their must be enough left handed desks made available to accommodate any left handed candidates.
- There should be approximately three feet of open space around each candidate (front, back, and each side).
- Area for coat rack on which candidates can leave their books, purses, briefcases, jackets, etc. It is best if the room can be set so that candidates enter at the rear of the room in order to diminish distractions as candidates leave the room. However, this is not mandatory.
- There must be space for a head table at the front of the room from which the examination proctor can provide verbal instructions to the candidates and can observe the entire room where candidates will be testing. Two chairs must be at the head table.
- Either a chalk board (with chalk and erasers) or a flip chart (with marker) must be located near the front of the room.
- A working clock so candidates and proctor are aware of time left during the examination.

Appendix A

Classroom Requirements

Setup Style	Space per Person	Notes
Type I Classroom: General	17 – 22 square feet	<p>Allows for use of rectangular tables that are 6 or 8 feet long and 18 inches wide, with 2 feet per person and 3.5 feet between tables as the minimum for comfortable set.</p> <p>When using 30-inch tables, add 1 square foot per person to these figures.</p> <p>Always use the larger area per person when the speaker is on the long wall, since this set is less efficient.</p>
Type II Classroom: 60 People or less	22 to 23 square feet	As noted above.
Type III Classroom: Practical Skills Classroom	25 Square feet	Variables must be considered dependant upon what type of skills are being taught and the amount of student participation at any one time.
Type IV Classroom: Computer and/or Distance Learning Classroom	30 to 40 square feet (dependant on use)	<p>For use of individualized computer or laptop workstations, 30 to 40 square feet is required.</p> <p>For use as distance learning for generalized lectures, all requirements for types I and II must be followed.</p>
Type V Classroom: NYS BEMS Final Practical Skills Examination Facility	100 square feet per practical skills testing station	For use of the NYS BEMS Final PSE
Type VI Classroom: NYS Written Certification Examination Facility	Approximately 31 square feet per candidate.	For use of the NYS BEMS Written Certification Examination

