

MIDDLE SCHOOL SCIENCE LABORATORY

New Construction

I. PROGRAM PHILOSOPHY

Science is an integral part of our life and times, and therefore an integral part of the school curriculum. Science instruction must include both the content and process of science. In order to do this, a broad variety of courses should be offered to meet the varying needs and interests of the students.

II. PROGRAM GOALS

- a. Emphasize laboratory experiences
- b. Emphasize concepts and principles rather than just science content information
- c. Emphasize the quantitative nature of science
- d. Increase the use of laboratory instrumentation and technology
- e. Include in instruction the use of a great variety of audio-visual aids
- f. In developing programs, actively cooperate with other school departments

III. PROGRAM ACTIVITIES

Science laboratories will be used for teacher and student activities requiring gas, water and electricity. Activities in biological and physical science may include: maintaining living specimens; microscope and micro viewer work; dissections; preparation of microscope slides; chemical reactions involving solids, liquids and gases; heating of water and other substances; experiments involving force and motion, light, heat and electricity; and maintaining, displaying and studying such collections as insects, plants, living and preserved animals including fish, etc. Emerging technologies should be considered and incorporated, when appropriate, into room design.

IV. ORGANIZATIONAL NOMENCLATURE

Teacher - Student Ratio:	1:25
Student Capacity Per Period:	25
Total Number of Teachers:	2
Total Number of Aides:	None
Grade Levels or Age Levels for Which Program is Intended:	6, 7 and 8
Hours Per Day Space Will Be Used:	6 minimum

V. INNOVATIONS, EXPERIMENTAL IDEAS, OTHER PLANNED USES

It is possible that these facilities will be used at night, on weekends, or in the summer for enrichment, field trips, or summer camps. Security of the building should be considered to prevent the loss of expensive laboratory equipment, yet flexibility for the instructors to gain access during non-school hours should be maintained.

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Preparation/Storage Room and Project Storage Room: The laboratory should access a preparation/storage room. Prep/storage rooms may be combined but should be of at least two separate types: Physical Science and Biological Science. Arranging the prep/storage in this way separates the two different types of equipment and makes each easily available to all teachers. Within the Physical Science Storage area, a separate enclosed room with lockable door should be provided for the storage of chemicals. See science supervisor for sizes and placement.

VI. SQUARE FOOTAGE CHANGES EXPLANATION THAT VARIES FROM APPROVED FACILITIES LIST

None

Intermediate / Middle School Science Lab

VII. PROGRAM FACILITIES LIST

[illegible]

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VIII. PROGRAM FURNITURE AND EQUIPMENT REQUEST FORM

*Shown on drawings

#purchased and installed by contractor

<u>Space or Area</u>	<u>Number of Items</u>	<u>Description of Furniture/Equipment Needed</u>
LABORATORY		
	*11	Tables, 24" x 54" Kemresin Top, 30" high, 4" x 4" hardwood legs
	22	Standard Student Chairs
	2	Wastebaskets
	*1	Four-Drawer File Cabinet
	*#1	Smart Board or Interactive White board equivalent
BIOLOGY PREP/STORAGE		
	30	Student Microscopes
	10	Stereo Microscopes
	11	Triple Beam Balances
	*#1	Refrigerator, 19 cu. ft. with icemaker
	*#1	Four Burner Electric Stove, with oven and vent hood
	2	Human Torsos
	1	Human Skeleton
	6	Anatomical models
	*2	Tables, 42" x 72" x 30" high
PHYSICAL SCIENCE PREP/STORAGE		
	11	Triple Beam Balances
	6	pH meters
	1	Water distilling apparatus or deionizer
	6	Electronic balances
	1	Drying Oven
	*2	Tables, 42" x 72" x 30" high
	*#1	Standard dishwasher, installed near sink
TEACHER PLANNING WORKROOM (Includes Demonstration Classroom Requirements)		
	6	Computers and Printers
	*#6	Computer Workstations
	*#4	Teacher Desk/Workstations
	*4	Four Drawer File Cabinets
	8	Chairs

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EACH ROOM WITH SINKS

*#3

Paper Towel Dispensers

*#3

Soap Dispensers

In addition to the above, demonstration desks, prep sinks, wash-up sinks, counters, etc., are needed and described in Section IX, 17A, B, C, and D.

IX. SPECIAL CONSIDERATIONS

- Heating/Cooling/Ventilation

In Prep/Storage Room provide the following:

One (1) Fume Hood with rinse away sink vented to the outside. Refer to Kewaunee Scientific Corporation Guide to Fume Hood Selection.

One (1) 30-Gallon Flammable Storage Cabinet (30"W x 7'H) vented to the outside. Refer to Justrite Classic Safety Cabinets for Flammables Guide.

In Science Laboratory, provide the following:

The nature of science activities, special attention must be given to providing a heating/air conditioning system capable of greater than normal air flow, fresh air return, humidity control, removal of fumes and odors, and with reduced noise.

Instructor-switchable forced air exhaust system capable of exhausting the entire room in three (3) minutes)

Special consideration should be given to placement of exhaust vents, and with provision of makeup air to maximize the effectiveness of the exhaust system.

- Acoustics

Special attention should be devoted to muting air handlers and exhaust systems so as to maintain a reasonably quiet learning environment.

- Floor

Teacher Office Planning and Work areas – Standard Vinyl Composition Tile (VCT)

All laboratories and prep/storage rooms – High-quality vinyl tile

Sheet vinyl in single toilet rooms and wet areas

Epoxy floor covering in group restrooms

Custodial service closets shall be sealed concrete

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IX. SPECIAL CONSIDERATIONS - (continued)

- Walls

Permanent, solid walls between instructional areas

All items that are mounted to drywall surfaces must have the proper backing (wood blocking) behind the drywall for support. Pencil sharpeners are one example.

Construction and finish of all walls shall comply with S.R.E.F. and the PA/E Handbook.

- Lighting

General Lighting - Fluorescent or LED

Some LED in each Science Lab with rheostat control.

Two (2) high intensity "can lights" over each demonstration table, provided with switch

Prep/Storage Rooms must be well illuminated.

Provide light switches at all points of entry into labs, storage and teacher planning areas.

Lights to be controlled by switching to allow varied light levels for technology and audiovisual

- Windows

Prefer all rooms to have 20 lineal feet of windows, above the wall shelves (windows to be from ceiling down to about 70" from floor). For safety reasons, students should not be able to look outside while performing lab work.

Provide all windows with "dark-out" capability (such as vertical blinds).

All exterior windows in educational spaces shall have vertical blinds to provide light control.

- Doors

Laboratory and storage room doors to be solid, lockable, with small glass panel.

Doors must be wheelchair accessible.

Window in doors to teacher planning spaces

Doors opening into Laboratories shall be recessed.

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IX. SPECIAL CONSIDERATIONS - (continued)

- Plumbing

Each room must have master cut-off valve for water, easily accessible to the instructor. Sinks in laboratory to have cold water only; prep/storage room to have hot and cold water supply (may be a demand-heater under sinks). Prefer using "vandalguard" or vandal-resistant fixtures on all sinks in the laboratory.

All drinking fountains inside buildings shall be electric water-coolers providing chilled water.

- Communications

Two-way intercom in laboratory and teacher planning office, connected to school P. A. System.

Provisions for closed circuit T.V. in each room; provisions for computer cabling to each room

One extension phone (switchboard) in department office

One large wall clock with second hand, in laboratory and teacher office area

- Electrical

Provide master cut-off switch for electricity in each room.

Laboratory: Fourteen (14) duplex GFI outlets (two outlets at each of the student stations). One (1) duplex outlet in each demonstration desk and fume hood. Three (3) duplex wall outlets in the front of each room and one (1) outlet for the U. V. Sanitizer. Provide other wall outlets around room as required. Three (3) duplex outlets above perimeter counter.

Biology Prep/Storage: Six (6) duplex wall outlets spaced around room. Four (4) duplex outlets spaced along work counter. One (1) 220V outlet for stove/oven. Electrical supply to refrigerator, range hood, and fume hood.

Physical Science Prep/Storage: Six (6) duplex wall outlets spaced around room. Four (4) duplex outlets spaced along work counter. Electrical supply to dishwasher and fume hood.

IX. SPECIAL CONSIDERATIONS - (continued)

- Safety

1. Provide safety shower with floor drain and emergency eyewash station.
2. Provide fire extinguisher and wall-mounted woolen fire blanket.
3. Provide master shut-off valves for gas, water, and electricity.
4. Provide vented flammable storage cabinet in each prep/storage room.
5. Provide wall-mounted U. V. Goggle Sanitizing Cabinet in lab (such as Fisher Scientific S47608).
6. Provide one acid-resistant base storage cabinet in each prep/storage room.

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7. Please review safety requirements in S.R.E.F. and all other references to safety in the science area.

No raised thresholds

Exits, signs, panic hardware and other safety considerations required in the Florida Building Code shall be provided.

The electric stove shall have a safety cutoff switch and an operation/shut off timer, readily accessible to staff.

Rescue/Refuge Area shall be provided at all appropriate second floor areas and shall have the following amenities:

- A physical area as “per code” for a caller to wait for assistance to arrive
- An audible and visual (light) device for the caller to speak to a person and request assistance
- A lighted sign stating this is an Area of Rescue/Refuge with a minimum clearance of 80” above the finish floor
- A sign designating the physical location of the Area of Rescue/Refuge shall be 60” above the finish floor to the center of the sign and shall be in compliance with

Florida Building Code Accessibility, Chapter 7, Section 703 Signs.

All Areas of Rescue/Refuge call button/speaker devices within the campus will be on the same telephone line with the elevator telephone.

Provide electronic devices which notify both the Administrative area of the school as well as the Pinellas County Schools Police simultaneously. If unable to be accomplished, the primary contact location will be the Pinellas County Schools Police.

Security cameras shall be installed at each Area of Rescue/Refuge location, aimed at the call button/speaker devices. The camera installation is to serve a dual purpose; to potentially identify the caller in need of assistance and to identify and document on tape, anyone who abuses or misuses the call button/speaker devices.

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IX. SPECIAL CONSIDERATIONS - (continued)

- Built-in Cabinetry

- A. Built-in work counter

The laboratory is to include an 8' science demonstration desk (Kemresin top) with instructor's table (such as Kewaunee KTS-108 and KTS-106).

The laboratory shall have seven perimeter tables with island type workstations (such as Kewaunee KTS-380-Q28). These units provide 5-1/2 feet of working space for each two students, plus some counter space against the wall for supplies not directly involved in the experiment. These workstations are 36" high with Kemresin tops. (Investigate Sheldon TE2 Table)

Laboratory should have 25 lineal feet of perimeter counter along one wall. Counter to be 34" High x 30" Deep including backsplash, with Kemresin top. Below counter are large door and drawer arrangement; all provided with locks (such as Kewaunee 1K455, 1K168 and 1K225 alternating). Above this counter at 5' height, provide two Kemshield adjustable shelves (such as Kewaunee KM-0038-AD, AS-4812-WS). At 5' height provide four wall-mounted storage cases, 46.75" Long x 30" High x 12" Deep (such as Kewaunee 1K614 and 1K642 alternating). Along all walls (without windows or storage cases), provide picture molding near ceiling. Sinks, gas and electricity for this room is described in Section IX-- 9, 11, and 12.

- B. Built-in cabinets/shelving

One (1) Demonstration Station with large Kemresin® deep tub sink with 2 (vandal-resistant) gooseneck swiveling faucets.

Six (6) Student Workstations with Kemresin® tub sinks with 2 (vandal-resistant) gooseneck faucets.

Cabinetry with Chem Resin countertop, solid doors bottom/top.

Refer to Teacher Planning Area (Science Demonstration Classroom)

Teacher Planning Office Area will be shared with Science Demonstration Classroom teachers.

- C. Built-in Instructional Aids

Interchangeable board spaces for two 4 ft. x 8 ft. whiteboards and two 4 ft. x 8 ft. bulletin boards. Whiteboards are to have eraser tray, flag holder and demountable map railing. Install an interactive projector in the center of the whiteboard to be provided by the district.

Laboratory: As extensively as possible across the front of the room, on each side of the interactive white board, provide whiteboards, suitable for erasable marker pens. Also provide six linear feet of tack board per room.

Biological Prep/Storage and Physical Science Prep/Storage: Provide four linear feet of whiteboard and six feet of tack board per room.