



# INDIANA UNIVERSITY

## COMPUTER CLASSROOM DESCRIPTION AND REQUIREMENTS INDIANA UNIVERSITY, BLOOMINGTON

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### DEFINITION

This room will be designed to have a computer workstation with a communications outlet and a duplex power outlet at every station so that students can either use a provided workstation or bring their own laptops with the ability to connect to the network. All rooms should be designed so that they can be used for instruction. In most cases, the workstations in the room will be all the same architecture.

### SPECIAL ROOM REQUIREMENTS

#### *IU Building Design Standards*

##### *Architectural*

- Securable
- Flat floor
- 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 large enough to accommodate the possibility of other peripherals such as scanners, color printers, and output table for printed materials
- Preferred room shape is somewhat rectangular with the longer side at front and rear
- Plan space for storage of printing and consulting supplies, trash and recycling receptacles
- Minimum and maximum viewing distances will determine location of seating
- General guideline for location of first row of seats is approximately equidistant to the image height.
- Minimum projected image size **height** is determined by calculating the distance from the furthest viewer to the projection screen and dividing by 6.
- Blackout capability (prefer no outside windows at all)
- Allow 30-40 square feet per student 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 classroom
- Orient all computing devices so student can view front of room with relative ease
- Provide sound attenuation from adjacent spaces
- Consider installation of extra acoustical material (needed when classroom is used as unscheduled cluster)
- Vinyl floor tile (pref. for most campuses); or carpet tile (if carpet is to be used) to meet University carpet static tolerance standard; consult with user representative to determine campus preference

- Provide for access by persons with disabilities
- Install framing or support for ceiling mounted video projector; appropriate distance for projection depends on projector selected and room dimensions; to be determined during design
- Locate computers to avoid glare from lights or windows

### IU Engineering Standards

#### *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 75° F
- HVAC must support ambient noise level of not more than NC 35
- HVAC: In renovations, evaluate cooling requirements to account for the added heat load
- Provide outside air for ventilation according to ASHRAE 62-1989
- Provide 15 CFM/person of conditioned outside air; for variable air volume systems, ensure outside air provision is maintained

### IU Engineering Standards

#### *Electrical*

- Use IU Standards for Telecommunications Distribution Facilities
- Provide a TIE (Technology Interface and Exchange) box at the instructor's workstation location. Coordinate location with IU Classroom Technology design team. The TIE box location may refer to a junction box or raceway entrance. Provide these conduit requirements to be connected to the TIE box.
  - 1 ½" to each projector and display location
  - ¾" to nearest program speaker. All program speakers to be connected with ¾" conduit
  - ¾" to dimming system controller if used
  - 1 ½" to a 2 gang box at each camera position
  - Shop drawings for audio system must include speaker layout, conduit routing, and wire fill and be reviewed by the technology specialists
- Provide an IU information outlet within 8" of the TIE box location
- Provide dedicated circuits for each room, currently this is a maximum of 8 machines per circuit
- 3 duplex outlets each at front and back (left, center, right); at least 2 duplex outlets each side; these outlets all are in addition to those at workstations
- Install low voltage raceway and cable connecting all workstations with nearest IDF; integrate channels for electrical wiring and data cabling into furnishings, keeping surface free; current implementations use 4000 wiremold (metal or plastic) conduit mounted horizontally on the backs of the rear table legs, approximately 6" - 8" below the top of the table.
- Power and low voltage outlets on riser at front of room
- Adequate power to support total potential number of workstations and peripherals the room is capable of housing; two duplex outlets per workstation preferred; one is minimum requirement
- Provide non-glare fluorescent lighting; indirect lighting is preferred over direct lighting. Bank lights; control banks from front to back. Multi-level switched fluorescent fixtures are acceptable. In all cases full control of all lighting zones shall be installed near the instructor's

station.

- Switches for general room light at each door and at teaching station
- Screen controls at instructor's location
- Remote room locking capability; automatically and/or remotely from another location (optional)

#### *Telecommunications*

- Provide a 1-port IU Information Outlet at each workstation location; a 2-port outlet at the instructors station, and a 1-port outlet at the front of the room. Delivery of data should conform to the most recent standards as established by the communications group at University Information Technology Services.
- Communications switching can be from one in-room switch hub to each station or run back to wiring closet
- Install standard communication outlet near consultant station per IU Telecommunication standards
- Install pathway according to IU Telecommunications standards to bring a 1-port Information Outlet to the security panel location

#### EQUIPMENT REQUIREMENTS

- Work surfaces (number to match room capacity) at tables at a height of 29 inches for standard use with 27 inches under-table clearance (see below for requirements of ADA Accessible work station); a minimum of 42 inches (minimum) to 48 inches (preferred) of work space should be allotted for each workstation; 30" deep.
- Each table should have cable pass-through hole centered at the back of the table surface (optional).
- Prefer a gap of 4" - 6" be maintained between tables (if positioned back-to-back) for space for technicians to service cable
- Each table should make provision for tower configurations, but not by means of using shelves underneath the table. The issue of tower storage should be re-visited at design stage, due to possible future changes in tower size, configuration..
- One or two tables with greater free desktop area for possible use of alternative keyboards and mice by persons with disabilities
- Computer workstations (number to match room capacity, including one for instructor), arranged so as to eliminate glare; one computer shall have a large monitor to accommodate users with reduced vision.
- 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 (width 48")
- 1 table with modesty panel and communication outlet and duplex power outlet
- 1 ergonomic chair for instructor station
- Workstation chairs (number to match room capacity); chairs should be selected in accordance with ergonomic principles (See General Building Considerations, Computer Workstation Environment)
- Five-drawer filing cabinets (number to be provided by user)

- Printers with enough capacity to adequately serve number of workstations in room
- Provide 4 lf work space per printer
- 1 high resolution (XGA or current standard), ceiling-mounted video/data projection device, chosen to be suitable for the room size and configuration and installed so as not to obstruct student view
- 1 marker board, approx. 80 sf (i.e., 4' x 20')
- 1 projection screen, size to be determined when room dimensions known, manual preferred
- 1 bulletin board (4' x 6')
- Provide security for systems (consult project architect for contact with appropriate University office to approve security systems)
- 1 telephone
- 1 lockable double door storage cabinet (optional)
- 1 overhead projector (optional)
- 1 VCR (optional)
- Sound system (optional)
- 1 wall clock
- Containers for trash and recyclables
- 1 pencil sharpener (mounted securely, not on dry wall partition)

## LOCATION

Locate away from electromagnetic interference and from noise generating or conducting building features such as elevators, toilet rooms, machine rooms, service shafts. Do not locate under kitchens or toilet rooms, or other facilities where there a chance of water damage. This room also will generate a certain amount of noise and is best located away from quiet study areas. If possible, locate in building to accommodate 24 hour access, in same security envelope as a set of restrooms.