

University of Guelph

Guidelines & Specifications For New Classroom Construction or Renovation December 2006

Preamble:

These guidelines and specifications are the result of a review, compilation and consolidation of existing documentation prepared by the University of Guelph *Teaching Support Services* and *Physical Resources*. They are to be used for reference purposes in the planning and design stages of new classroom construction or renovation. The standards are organized into seven categories. They are: general; acoustics; lighting; heating, ventilation and air conditioning (HVAC); electrical; room layout; and, presentation technology. The guidelines and specifications balance current requirements with the flexibility necessary to accommodate future needs.

1. General

- 1.1 Design must comply with the governing regulations of the following:
 - 1.1.1 Ontario Building Code
 - 1.1.2 Fire Code
 - 1.1.3 ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers)
 - 1.1.4 Acoustic
 - 1.1.5 Accessibility for Ontarians with Disabilities Act, 2005
 - 1.1.6 University of Guelph
- 1.2 All control panels (switches etc.) must be simple to use and clearly labeled.
- 1.3 Entrance to the room must be contained within the building, illuminated and identified. Type and style of room identification to consider students with disabilities. (Mounting height not to exceed 48" A.F.F.)
- 1.4 Paint (Guidelines):
 - 1.4.1 Side and rear walls – Benjamin Moore PH-78 "Litchfield Gray" in eggshell;
 - 1.4.2 Front wall – two shades lighter than PH-78 in eggshell;
 - 1.4.3 Ceiling (drywall) – white with PH-78 tint in eggshell; and,
 - 1.4.4 Ceiling (acoustic tile) – white.
- 1.5 Window coverings that provide complete blackout (sun shades area preferred low maintenance option).
- 1.6 A minimum of one clock per room that is visible to both students and faculty (ideally tied to a master clock system).
- 1.7 Communications:

- 1.7.1 Telephone with dedicated line in the event of an emergency or technology malfunction (adjacent to instructor's station with option of direct ring to either security staff or Help Desk).
- 1.7.2 One data connection per student or infrastructure to install data connections at a later time. Data connection will be 10/100 mb.
- 1.8 Bulletin boards or tack strips installed for teaching purposes only and not for public notice (to extend over full run of writing surface as a minimum).
- 1.9 Tack board/pocket or clip arrangement re: class notices to be provided outside entrance of each instructional space. (Mock-ups of various configurations to be provided.)
- 1.10 Signage must include maximum occupancy, normal seating layout, and emergency telephone number and evacuation route. (Notice to be included re: customized furniture layouts and return to 'normal' seating layout at the end of each class).
- 1.11 For the accommodation of future technology:
 - 1.11.1 Raised /floating floor throughout the room or just in the instructor's area if room is sloped or appropriate trenching system.
 - 1.11.2 Suspended ceiling (with cable tray system as appropriate).
- 1.12 Vision in or near doors to allow students to check if room is being used and security staff to monitor.

2. Acoustics

- 2.1 Acoustic tile is to be used for tiled ceilings.
- 2.2 Reverberation time to be 0.8 to 1.0 second.
- 2.3 Restrict exterior noise intrusion.
- 2.4 Employ quiet lighting ballasts.
- 2.5 Consideration to be given to A/V technology and HVAC as sources of unwanted sound (air conditioning better than NC 30).

3. Lighting

- 3.1 Classrooms will require variable light control within the room and in specific zones (i.e. fixtures with multiple tubes with individual switching):
 - 3.1.1 70fc at the blackboard while ensuring that the light fixtures do not interfere with sight lines and screen mechanisms;
 - 3.1.2 50-70 fc at the student desk;
 - 3.1.3 20-40 fc at the instructor's desk plus task lighting to increase illumination to 50-70 fc; and,
 - 3.1.4 0 fc at the screen.
- 3.2 Labeled primary light controls to be located at the instructor's station, A/V cabinet and projection booth (as appropriate).

- 3.3 Light control at the door needs to facilitate safe passage to the instructor's station.
- 3.4 Step lights are required in tiered classrooms.

4. HVAC

- 4.1 Consideration must be given to presentation technologies as sources of heat.
- 4.2 Personalized HVAC delivery system whereby the instructor can modify and control the local environment (within a 4 to 6 degree Celsius range).
- 4.3 No return air plenum ceiling or floating floor (affecting fire rating requirements of cabling).
- 4.4 Consideration must be given to ceiling mounted presentation technology.

5. Electrical

- 5.1 One duplex per two student stations (or provision for future installation as deemed appropriate).
- 5.2 Two duplexes at the instructor's station on separate circuits.
- 5.3 Two duplexes at the front wall on separate circuits.
- 5.4 Additional receptacles as equipment requires.
- 5.5 All power to individual instructional spaces supplied from one source (one power panel).

6. Room Layout

- 6.1 Recommended Classroom Proportions:
 - 6.1.1 1/3 of front room for instructor's station;
 - 6.1.2 2/3 remaining for student stations.
- 6.2 Student sight lines must be within $< 90^\circ$ horizontally and $< 15^\circ$ vertically.
- 6.3 The provision for two types of presentation technology to be used simultaneously.

7. Presentation Technology

- 7.1 Screens
 - 7.1.1 Screens are to be sized according to the viewing task:
 - 7.1.1.1 For viewing video, the minimum screen height is to be 0.125X the distance to the furthest viewer. (Width to be 0.167X the distance to the furthest viewer.);
 - 7.1.1.2 For viewing computer text and graphics the minimum screen height is to be 0.167X the distance to the furthest viewer. (Width to be 0.22x the distance to the furthest viewer.);
 - 7.1.1.3 For viewing detailed computer images the minimum screen height is to be 0.25X the distance to the furthest viewer. (Width to be 0.33x the distance to the furthest viewer.);

- 7.1.1.4 For viewing HDTV images the screen height is to be 0.125X the distance to the furthest viewer. (Width to be 0.22X the distance to the furthest viewer.)
- 7.1.2 Screens are to be mounted so the bottom of the projected image is a minimum of 4 feet above the floor.
- 7.1.3 Screens over 6 feet in width must be electrically operated. Electric screen control to be located at the instructor's station, A/V cabinet and projection booth.
- 7.2 Sound system controls to be located at the instructor's station, A/V cabinet and projection booth.
- 7.3 White/chalkboards should be mounted 3 ft above the floor (and provide for as much writing surface as possible when projection screens are in a lowered position).
- 7.4 Writing materials: consideration to be given to 'supply' cabinet in instructional spaces; responsibility for supply of writing materials; damage caused to chalkboard surfaces by wax content in 'dustless' chalk.
- 7.5 Technology standards should meet or exceed those standards as outlined below in "Technology Standards by Classroom Size".

This document was produced in conjunction with Humber College *Learner Support Services and Facilities Management Departments* in response to the University of Guelph – Humber College SuperBuild project.

Any part of the *Guidelines & Specifications for New Classroom Construction or Renovation* may be used in print or electronic (web page) format with proper reference.

0-40 Seat Classroom (loose tables, loose chairs)

Chalk Board/White Board
2 Screens
Overhead Projector
Monitor for Computer and Video Display c/w Speaker or data projector and sound system
Video Tape Recorder (VCR)
Digital Virtual Disc (DVD)
Computer Interface (connection between computer and monitor/data projector)
Network Connection
Teaching Station (connections & controls)

41-60 Seat Classroom (loose tables, loose chairs)

Chalk Board/White Board
2 Screens
Overhead Projector & Cart
Data projector
Video Tape Recorder (VCR)
Digital Virtual Disc (DVD)
Speakers
Computer Interface (connection between computer and data projector)
Network Connection
Teaching Station (connections & controls)
Help (audio & video)

61-80 Seat Classroom (fixed tables, loose chairs)

Chalk Board/White Board
2 Screens
Overhead Projector & Cart
Data Projector
Video Tape Recorder (VCR)
Digital Virtual Disc (DVD)
Sound System
Wireless Microphone
Computer Interface (connection between computer and projector)
Network Connection
Teaching Station (connections & controls)
Help (audio & video)
Assistive Listening Devices (70+ seats)

81-140 Seat Classroom (fixed tables, fixed chairs)

Chalk Board/White Board
2 Screens
Overhead Projector & Cart
2 Data Projectors for Computer and Video
Computer Interface (connection between computer to projector)
Computer & Monitor (Connected to the Network) [with wireless mouse]
Network Connection
Video Tape Recorder (VCR)
Digital Virtual Disc (DVD)
Sound System
Wireless Microphone
Document Camera (opaque, 3-dimensional object)
Teaching Station (connections and controls)
Help (audio & video)
Assistive Listening Devices

140+ Seat Classroom (fixed tables, fixed chairs)

Chalk Board / White Board
2 Screens
Overhead Projector & Cart
2 Data Projectors for Computer and Video Screen Projection
Computer Interface (connection between computer to projector)
Computer & Monitor (Connected to the Network) [with wireless mouse]
Network Connection
Video Tape Recorder (VCR)
Digital Virtual Disc (DVD)
Sound System
Wireless Microphone
Document Camera & Monitor (opaque, 3-dimensional object)
Teaching Station (connections and controls)
Help (audio & video)
Assistive Listening Devices

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