# UBC Office Ergonomic Guidelines

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## Introduction

UBC is committed to the continued development of a healthy, sustainable workplace. This document is intended to provide a standard of minimum requirements for office layout and furnishings to help eliminate or reduce the risk of musculoskeletal injuries (MSI’s) resulting from prolonged computer use (4 hours or more daily). The standards outlined in this document are in compliance with the Canadian Standards Association (CSA) and other standards, as noted.

## Definitions

**Computer User:** A staff or faculty member whose work involves 4 hours or more of daily computer use.

**Ergonomics:**

“Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.”

From: [The International Ergonomics Association (IEA)](https://www.iea.org/)

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Musculoskeletal Injuries: Musculoskeletal Injuries (MSIs), also known as Musculoskeletal Disorders (MSDs), are injuries that affect muscles, tendons and ligaments, nerves, blood vessels or related soft tissue. These injuries can occur from overexertion or from repeatedly using the same muscles over and over again (Repetitive Strain Injuries).

Roles and Responsibilities

Supervisors will:

- identify all computer users under their jurisdiction;
- ensure these computer users are accommodated in accordance with the requirements of this standard;
- ensure that these computer users are informed regarding acceptable work postures and habits and also the proper adjustment of the workstation and accessories; and
- encourage all computer users to discuss any ergonomic concerns with the supervisor.

Workers will:

- use and adjust workstations and accessories to accommodate individual needs;
- apply the principles of good working posture and work habits; and
- discuss any ergonomic concerns with the supervisor.

UBC Ergonomics (office) Program will:

- provide guidance on design of office including equipment purchase;
- offer training tutorials for proper workstation set-up for all Staff & Faculty;
- Provide self-help tools online;
- provide training courses for Dept. Office Ergo Rep Program to allow 1+ reps per dept.;
- provide assessment and recommendations to staff and faculty, if concerns persist after training and review of online materials;
- loan ergonomic office equipment to departments for trial use.

Office Chairs

- **Height Adjustable**: 15 to 22” (may include option for taller/shorter chairs)
- **Seat Depth**: depth adjustable preferred (16 to 20”) or option for smaller seat pan
- **Backrest Height**: ≤17.7”
- **Lumbar support**: height adjustable required; depth adjustable preferred
- **Backrest Angle**: Allow upright and at least 15° reclined posture.
- **Dynamic recline**: must have tilt lock or sufficient tension control to support the user
- **Seat Width**: 19” (with option for narrower chair or armrests that come in closer)
• **Armrests**: Height Adjustable & removable (unless they can go low enough so as not to interfere with pulling in close to the desk); Width adjustable: preferred if the distance between armrests can adjust between 13 and 20” or provide option for narrower seat pan

• **Footrest** must be provided if user’s feet do not rest firmly and comfortably on the floor.

• See [UBC Guidelines for Choosing an Office Chair](#) for more information and examples.

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1as measured with the BIFMA chair measuring device

2Lumbar support should provide sufficient support such that it does not flatten out with weight against the backrest

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**Workstation**

• **Workstation Depth**: 30”
  Exemption: 24” acceptable if keyboard tray available
  **Rationale**: monitor must be 15.7”- 30” away from eyes (7.6.1(b)). Larger or multiple monitors should be placed further away than single or small monitors and therefore a 30” depth is preferred
  **CSA Z412 Requirement (7.5.7)**

• **Workstation Height**: Adjustable height preferred; Fixed height (seated): 28.7+/−1” –preferred to have most desks set at 28” with option to raise desk for those who need it
  **Assumption**: keyboard tray available
  **Ideal**: adjustable height preferred as this will allow users to keep their feet on the ground while keeping the keyboard and monitor at the correct height. If a desk height of >28.5” is used then a chair with a higher cylinder (22”) should be available
  **CSA Z412 Requirement (7.5.6)**

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**Keyboard Height**

• **Keyboard height**: 25” - 29” (CSA Z412 7.5.6)
  **Rationale**: keyboard & mouse must be just below seated elbow height
  *Some individuals may require their keyboard height to be below 25”

**Keyboard Tray Requirements:**

• ≥26” width, equal height, i.e. supports keyboard & mouse at the same level (articulating clip platform that raises mouse to key height and overlaps keyboard tray is acceptable if easy to alternate between left and right; drop down mouse platform is not acceptable)

• **No Knob** Height Adjustable

• **Negative Tilt Capacity**

• Removable Palmrest (palmrest width≤19”; depth≤3”; height≤1”-there should be no palmrest in front of the mouse)

• Stable & durable
  **CSA Z412 Requirement (7.5.6)**
Leg Clearance
- **Leg clearance:** ≥23.5”
- **Rationale:** there must be sufficient depth of unobstructed space under the desk for the worker’s legs.
  
  *CSA Z412 Requirement*

Monitor Position
- **Monitor Height:** Monitor must be viewed with a line-of-sight angle between horizontal and 60° below horizontal, preferred not below 35° (CSA Z412: 7.3.6).
  
  *Note:* Upward line-of-sight angles should be avoided since tilting the head backward, even slightly, can quickly result in fatigue and neck discomfort. For this reason it is best if desk height can be lowered, otherwise, the monitor will be too high for shorter individuals, those with bifocals and/or those with large monitors.
  
  *CSA Z412 Requirement*

- **Requirement for monitor position relative to light source:**
  Position monitor perpendicular to window (WSBC)
  Try to position monitor between rows of light

Workstations Space Guidelines
- General recommendation that each office worker should have sufficient space to carry out his/her tasks safely and comfortably.
  
  *CSA Z412 Standard*

- The Government of Canada 2.0 Fit-Up Standards for government employees indicate the following space requirements for fixed employees (those spending >60% of their day at their desk) as: **4.5m² (48.4 square feet)**.

- UBC Facilities Planning: For planning purposes only, Facilities Planning recommends **43 to 120 square feet per employee** depending on office or workstation allocation.

- **Exemptions:** smaller workstations may be possible if employees are provided with access to alternative space as needed, such as:
  - Private space available for concentrated work;
  - Meeting rooms;
  - Areas for collaboration;
  - Option to work remotely

Noise
- **55 dB(A)** is listed as the upper limit for mental work and complex supervisory work (*Introduction to Ergonomics, p.434).*
• Appropriate sound blocking, absorption and masking should be done to promote the required level of concentration.

**Lighting**

• Target Illuminance for computer:
  - Recommend a **maximum luminance level of 500 lux & minimum of 1/10 of the maximum Cnd. Occ. Health & Safety Regulations, Schedule IV s.6.7 and Schedule IV s.6.11(2)**
  - **Minimum 500 lux** for paper based work (task lighting may be used to supplement overhead lighting)

• **Light Distribution**
  - Use of indirect lighting can reflect the light to a variety of directions and soften shadows (IES 2004)

• **Light Control**
  - To the extent possible, allow user control of lighting