

# Computers in the Department of Physics

(Also known as DSE or Display Screen Equipment)



This code contains:

1. The risks that computer users face
  - 1.1. Visual problems
  - 1.2. Radiation
  - 1.3. Musculo-skeletal problems
2. How to set up the work station
3. Good working practices
4. Entitlement to eye tests
5. Troubleshooting

Appendix A: Good working practices

Appendix B: Self-assessment questionnaire

Appendix C: Troubleshooting guide

## 1. The Risks that Computer Users Face

### 1.1 Visual problems

The most significant risks associated with use of computers are general stress and fatigue to the eyes (which is believed to be temporary) and various musculo-skeletal disorders

Visual problems can arise from the size of the characters on the screen and from the distance to the user. For instance, particularly for wearers of bifocals, this distance may neither match their prescription for reading, nor for distance vision. Fortunately, most modern computer packages allow you to increase the character size on screen so that it can be seen without squinting, and the screen sizes have got a lot larger as well! However, some people may need spectacles specifically for work at DSE.

### 1.2 Radiation

Those concerned about exposure to radiation, such as that from Wifi, will find useful information on the Health Protection Agency website here:

<http://www.hpa.org.uk/Topics/Radiation/UnderstandingRadiation/UnderstandingRadiationTopics/ElectromagneticFields/WiFi/>

In the early days of computing concerns were expressed over the radiation from computers themselves, but extensive research showed there to be no risk from that source. Now, flat screen technology is rapidly replacing the cathode ray tube display units in any event.

### 1.3 Musculo-skeletal problems

Various aches and pains in the neck, back and shoulders may arise if a poor posture is maintained in the long term. It should be stressed that musculo-skeletal problems are preventable, can usually be detected in their early stages but, if ignored, they can lead to permanent damage.

Repetitive movements can cause more serious damage than poor posture. Carpal tunnel syndrome can arise from a rubbing of the tendons against the walls of the carpal tunnels in the wrist. Symptoms may start as tingling and numbness, which are sometimes experienced several hours after work has stopped (e.g. at night). If these symptoms are ignored the condition can progress to the point where surgical intervention may be required.

## 2. How to Set up the Work Station

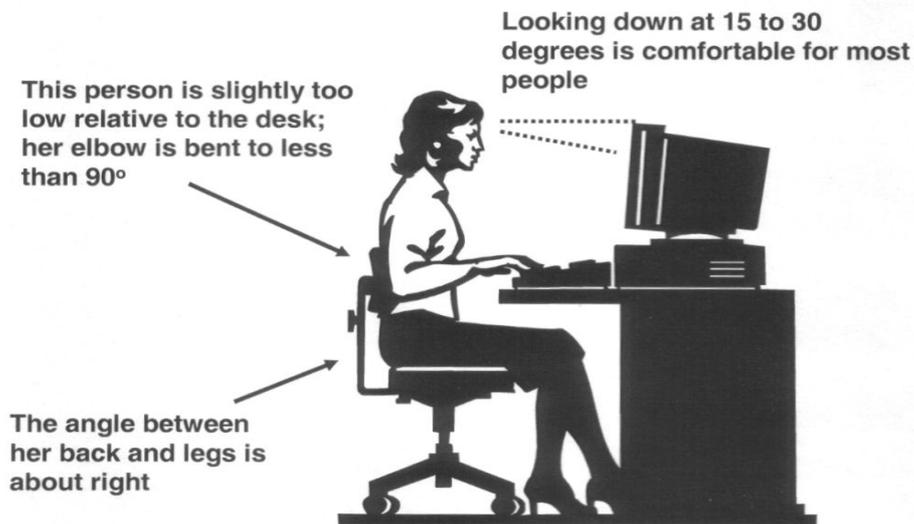
### General posture

You should be able to get your legs under the table or work surface - so clear any boxes or other items that get in the way.

You need to arrange that the following angles are 90 degrees:

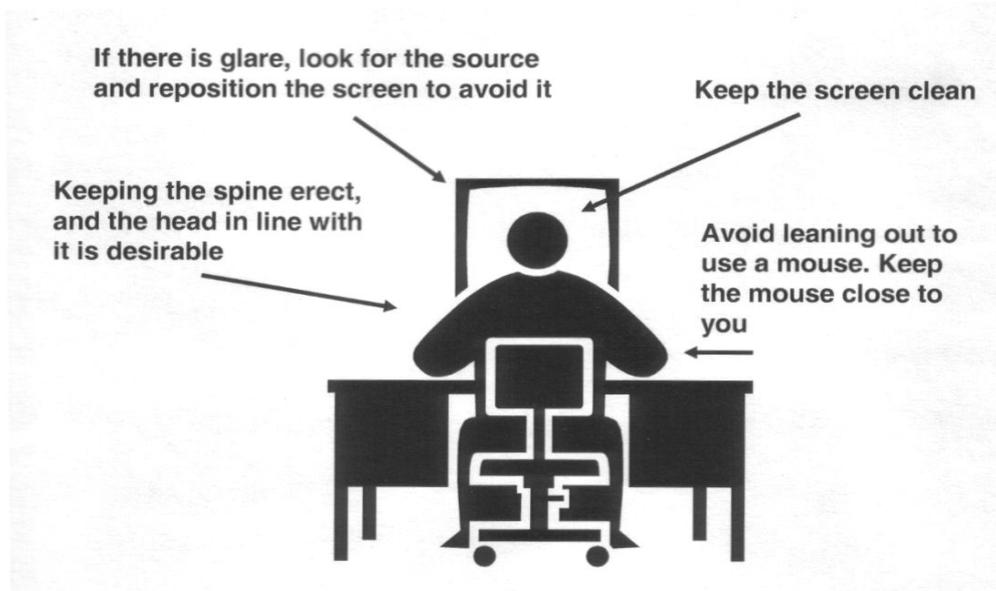
- between your back and thighs
- between your upper arm and forearm

Your legs should not dangle, so if necessary get a foot rest.

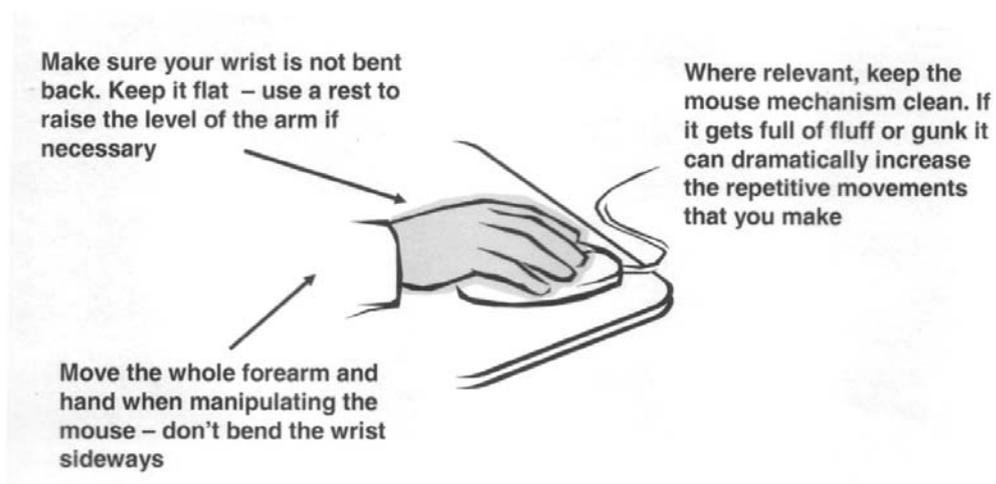


You should ensure that you keep your spine erect - habitually leaning can cause shoulder, back and neck problems. To reduce eye strain, keep the screen clean. If there is glare reposition your screen to eliminate it. If you cannot figure out where the glare is coming from, a good trick is to put a mirror against the screen. You will then see the source.

Keep your elbows close to your body and do not lean out to use the mouse.



When you use a mouse, use the whole forearm and hand to move it about - don't bend the wrist from side to side. Ensure that the wrist is not bent in the upward direction - use a rest to raise the level of the arm if necessary. Ensure that whatever mechanism the mouse has, it is kept in good working order.



### 3. Good Working Practices

You should not work continuously at the keyboard for long periods of time. Very short breaks, even of a minute, at frequent intervals allow your body to recover from the rather repetitive movements.

There is a short document listing the key points in setting up your workstation and essential good working practices is in Appendix A

There is also a self assessment checklist at Appendix B, to help you to identify anything you have not covered.

## 4. Entitlement to Eye Tests

"Users" are entitled to eye tests. The term 'User' is given a legal definition in the Regulations; it is an employee who habitually uses display screen equipment as a significant part of his or her normal work.

Typical University examples of users might be: secretarial staff, computing staff, data entry staff in research units, certain administrators, those involved with accounts and data storage, and other scientific, administrative and support staff whose work is computer based. Where use is less frequent other factors connected with the job must be assessed. While there are no hard and fast rules, the Health and Safety Executive suggests that if most or all of the following factors apply to an individual then the person concerned should be classified as a user:

- The individual depends on the use of display screen equipment to do the job as alternative means are not readily available for achieving the same result.
- The individual has no discretion as to the use or non-use of the display screen equipment.
- The individual needs particular skills in the use of display screen equipment to do the job.
- The individual normally uses display screen equipment for prolonged spells of more than one hour.
- The individual uses display screen equipment more or less daily.
- Fast transfer of information between the user and the screen is an important requirement of the job.
- The performance requirements of the systems demand high levels of attention and concentration by the user, for example, where the consequences of error may be critical.

Scientific, research support and administrative staff who use display screen equipment for relatively short periods each day and have a great deal of discretion over when to do that work would probably not be classified as users.

All requests for eye tests must go through the approved route: initially to the Department Secretary, then to Occupational Health.

## 5. Troubleshooting

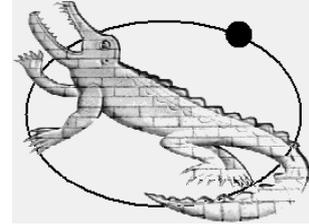
If things go wrong, and you experience symptoms, have a look at the troubleshooting guide in Appendix C in the first instance. If trying one of these tips does not work, then consult a computer officer. There may be some hardware or software that can solve your problem. If none of these helps, then your next port of call is Occupational Health.

## Appendix A: Good Working Practices

### Advice to Computer users

#### Sitting

- Try not to slouch, keep the curve in the lower back
- Adjust the backrest to support the lower back
- Sit right back in the chair to gain proper support
- Remove obstructions that prevent upright postures
- Organise the workstation to allow upright postures
- Place documents in a copy stand
- Break up display work with informal postures
- Get some exercise during work breaks
- Alter your posture (try leaning back in the chair occasionally)
- Bend your back backwards occasionally



#### Upper body

- Adjust the seat height until forearms are horizontal
- Align the hands with the forearms, work with straight wrists
- Use a light keying action
- Use a footrest if the seat height is too high
- Adjust the screen angle to suit the sitting height
- Rest the upper body whenever routine allows
- Let your shoulders relax (shrug them occasionally)
- Avoid arm and wrist activities during work breaks
- Learn to touch type
- Place mouse close to keyboard
- Do not move the mouse around by twisting at the wrist
- Reduce mouse use by using shortcuts on the keyboard and styles in documents

#### Vision

- Place copy stand close to display
- Adjust copy stand height to match display height
- Adjust copy stand height to minimise head/neck movement
- Vary viewing distance over the working day
- Adjust screen to avoid reflections
- Sit sideways to windows if possible
- Use window blinds on bright days
- Adjust brightness control especially if light levels change
- Clean the screen
- Rest eyes during work breaks
- Get eyes tested and then at regular intervals
- Look away from the screen every few minutes at a distant object

Jane Blunt, May 2000

## Appendix B: Self Assessment Questionnaire

DISPLAY SCREEN EQUIPMENT (DSE) RISK  
ASSESSMENT FORM



**UNIVERSITY OF  
CAMBRIDGE**

*Department of Physics*

Date of Issue December 2010

Version 1

Name:	Room:
Research group:	Date of assessment:

<b>WORKSPACE</b>	Is the work surface large enough?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is there enough room for you to change position and move/stretch?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is the work surface free of distracting reflections and glare?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is the chair suitable and stable?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Do the chair adjustment mechanisms work?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Are the levels of heat, light and humidity comfortable?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is there a source of fresh air?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is the noise level acceptable?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Are you comfortable?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Do you work on a computer at home?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	If YES, have you applied these same DSE RA principles to your setup at home?	Yes <input type="checkbox"/> No <input type="checkbox"/>

<b>COMPUTER</b>	Do you use a laptop as your main computer?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	If YES, do you use a docking station or external peripherals?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	<b>Screen:</b>	
	Are the characters readable?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is the image stable?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Can brightness and contrast be adjusted?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Does the screen swivel and tilt?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is the screen free of glare and reflections?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	<b>Keyboard and mouse:</b>	
	Can the keyboard be tilted?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Can a comfortable keying position be found?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is there room to rest your hands in front of the keyboard (when not typing)?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Can the characters on the keys be read easily?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is the keyboard clean?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Is the mouse positioned close to you?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Can a comfortable position be achieved when using the mouse?	Yes <input type="checkbox"/> No <input type="checkbox"/>

<b>HEALTH</b>	During DSE use, have you ever suffered from:	
	Eyestrain?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	If YES, when did you last consult an optician for an eyetest?	
	Pain in the back/neck/shoulders?	Yes <input type="checkbox"/> No <input type="checkbox"/>

	Pain in the arms (elbows/wrists/hands)?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Pain elsewhere? (please specify: _____ )	Yes <input type="checkbox"/> No <input type="checkbox"/>

<b>WORKING PRACTICE</b>	How long per day, on average, do you spend using a computer?	
	Do you take regular breaks (1 minute every 10 minutes is better than 6 minutes every hour) ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Do you have a mechanism to remind you to take breaks e.g. interruption software?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Have you read the guidance and best practice advice for DSE users on the safety website?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	Do you know whom to ask for further advice?	Yes <input type="checkbox"/> No <input type="checkbox"/>

If the answer to any <b>health issue</b> above is YES, has this been reported to the Safety Officer or recognised deputy?	Yes <input type="checkbox"/> No <input type="checkbox"/>
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If YES, has a doctor or Occupational Health been consulted?	Yes <input type="checkbox"/> No <input type="checkbox"/>
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**ACTIONS NEEDED TO REMEDY PROBLEMS**

(Continue on separate sheet if necessary; write NONE if no action is required.)

**DECLARATION** (For a self-assessment, the user should sign below.)

The above assessment is, to the best of my knowledge, an accurate statement of the current state of my workstation.

Name:	Signature:	Date:
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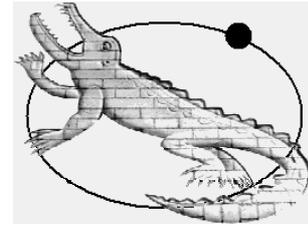
*For office use only:*

<b>ACTIONS COMPLETED?</b> (Safety Officer or Line Manager to sign below)	Yes <input type="checkbox"/> No <input type="checkbox"/>
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Name:	Signature:	Date:
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**REVIEW DATE** (normally, 12 months hence):

## Appendix C: Troubleshooting Guide



### Troubleshooting work stations

Problems	Possible causes
Eyestrain/headaches/dizziness	<ul style="list-style-type: none"> <li><input type="checkbox"/> Dirty screen</li> <li><input type="checkbox"/> Inadequate lighting</li> <li><input type="checkbox"/> Defective vision</li> <li><input type="checkbox"/> Glare on screen</li> <li><input type="checkbox"/> Flicker on screen</li> <li><input type="checkbox"/> Screen brightness incorrectly adjusted</li> <li><input type="checkbox"/> Unclear symbols on keyboard</li> <li><input type="checkbox"/> Screen/copy holder wrong distance/height</li> </ul>
Upper limb disorders (arms, wrists, shoulders, neck)	<ul style="list-style-type: none"> <li><input type="checkbox"/> Seat wrong height</li> <li><input type="checkbox"/> Wrist position incorrect</li> <li><input type="checkbox"/> Desk/screen wrong height</li> <li><input type="checkbox"/> Incorrect mouse technique</li> <li><input type="checkbox"/> Not enough breaks</li> <li><input type="checkbox"/> Too much VDU work</li> </ul>
Backache	<ul style="list-style-type: none"> <li><input type="checkbox"/> Poor back support</li> <li><input type="checkbox"/> Screen wrong distance</li> <li><input type="checkbox"/> Incorrect posture (especially leaning to one side or twisting)</li> <li><input type="checkbox"/> No footrest</li> <li><input type="checkbox"/> Not enough breaks</li> </ul>
Lower limb disorders	<ul style="list-style-type: none"> <li><input type="checkbox"/> Chair wrong height/angle</li> <li><input type="checkbox"/> No footrest (when required)</li> </ul>
Tiredness/fatigue/stress/irritability	<ul style="list-style-type: none"> <li><input type="checkbox"/> Daily work routine incorrect</li> <li><input type="checkbox"/> Ill health of the user</li> <li><input type="checkbox"/> Workstation set-up incorrect</li> <li><input type="checkbox"/> Environment incorrect</li> <li><input type="checkbox"/> Management tension</li> <li><input type="checkbox"/> Not enough exercise</li> </ul>
Fire/electrical/tripping hazards	<ul style="list-style-type: none"> <li><input type="checkbox"/> Inadequate lighting</li> <li><input type="checkbox"/> Loose cables</li> <li><input type="checkbox"/> Cluttered workstation</li> </ul>