Introduction

This document is intended to provide guidance for those that find overheating a common problem in their office. Whilst not all suggestions may be practicable in every office, it is hoped that a combination of the ones that are will be of comfort to office users.

Use blinds during peak temperature periods to minimise solar heat gain.

Drawing the blinds and preventing the sun from penetrating the office will help to cool you down. When the sun shines into the office the heat becomes trapped, creating an effect similar to the greenhouse effect.

Ensure you put the blind back up before you leave work or when the sun is no longer shining on office (whichever is sooner), this will maximise heat loss during the evening if leaving your window on a latch, so air flow is not restricted.

Open the window, particularly if there is a cool breeze.

Opening a window in high temperatures can reduce perceived temperatures by 2°C. However, it should be noted that opening a window during high temperatures can lead to thermal gains if the air outside is warmer than the air inside.

Use the window latch to leave windows open overnight in order to cool the building down naturally.

This option should only be used if the overnight temperature is expected to be 5°C or more, and the daytime temperature expected to be more than 20°C. This option should not be used (or needed) during periods of high winds or rain. During periods of high temperature night time ventilation should be maximized.

The building cools more slowly than it heats up by a factor of three, therefore the greater time ventilation can be achieved for the better. If there is no latch on the window, you can make a project request for this to be done. Open the window whilst you are in the office and close it when you leave in the interim period.

Open doors onto the corridor.

During peak temperature periods, consider opening doors onto the corridor in order to stimulate cross flow ventilation. Fire doors should remain closed at all times.
Consider relaxation of office dress to encourage individual adaptation to conditions.

Lightweight, loose-fitting, cotton clothing will help to keep you cool. Light colours reflect the heat and sunlight more than dark colours. Some synthetics will increase heat, though some are designed to reduce heat – check the label if you’re unsure. If you have long hair, try wearing it up and off your face and body.

Stay hydrated.

Drinking water keeps you cool during hot weather. The European Food Safety Authority recommends that women drink 2 litres of fluid and men should drink 2.5 litres of fluid a day². Try not to drink too many caffeinated drinks, such as tea and coffee, as these are diuretics and tend to increase dehydration. Dehydration increases core body temperature 0.1 – 0.2°C per 1% dehydration³.

Eat to stay cool.

Food can keep you cool provided you make the right choices. Meat, high calorie and protein-heavy foods can increase metabolic heat production, adding to loss of water. Try eating salads, fresh raw food, vegetables and fruit to keep you cool.

Consider flexible working hours.

The office will be at its coolest early in the morning, after the building has been cooling overnight, it will begin to cool again during the afternoon or early evening. Consider taking a long lunch to avoid working during the hottest part of the day, or moving to another office if possible. If these options are not appropriate, consider working from home on very warm days.

Consider using North facing offices.

This may be possible on a permanent basis or on a temporary basis during periods of particularly high temperature.

Switch off electronic equipment at the plug, overnight and at weekends.

Heat output from electrical equipment makes a significant contribution to the temperature of a space⁴. If not in use, electrical appliances should be turned off.
Adjust the Thermostatic Radiator Valves.

Room occupants have control of the heating within their room by using the thermostatic radiator valves (TRV’s) attached to the end of the radiator. By putting the radiator on a frost protection setting, you can turn the heating off within your office (with the exception of frost protection kicking in on cold nights). If you set your TRV to 2, the radiator will automatically turn off when the room has reached 16°C. If the room is already at this temperature, the radiator will not turn on. If you are often too hot in your office, regulating the temperature via the TRV will help achieve a more comfortable temperature, and lower the university’s carbon emissions and heating costs.

Turning the TRV to a higher setting does not cause the room to heat up any faster, the room will heat up at the same rate regardless of which setting it is on (a higher setting will result in a higher end temperature, see figure 1). How quickly the room heats up depends on the size of the radiator, the size of the boiler and the size of the room. If the radiator is on, the window should be shut and vice versa. Whilst this may appear obvious, opening windows is often the first action people take to cool down, rather than turning the radiator down or off.

Figure 1 shows the temperature corresponding to each number setting.

![Temperature Chart]

How Thermostatic Radiator Valves work.

TRV’s monitor the temperature of the surrounding air and regulate the flow of water through the radiator to heat up the room to a temperature corresponding to the number on the valve. As such, the temperature of the air surrounding the TRV should be representative of the room, and should not be covered or obstructed.

TRV’s allow rooms to be maintained at different temperatures, whilst heat is supplied from the same boiler. However, the radiator can only supply heat if the boiler is turned on, regardless of the number on the dial. Similarly, turning your radiator off will not cause the boiler to turn off. The radiators within the university are turned off between 11pm and 6am between 1st October and 1st June and 24 hours a day for the rest of the year. There are exceptions to this, if you would like more information on this subject please contact the Energy Manager at j.bastiaans@lancaster.ac.uk.

TRV’s consist of a thermostatic head and the valve body; this regulates the flow of hot water to the radiator. The thermostatic head contains a sensor containing a wax, liquid or gas which expands as the temperature increases. As the wax, liquid or gas expands the sensor detects this, causing the valve to close. As the substance cools and contracts, the sensor
opens the valve. As the TRV valve opens, more hot water is moved into the radiator, giving out more heat. As the TRV valve closes, water flow through to the radiator is restricted and less heat will be given out.

The window is open and the radiator is on, this is a waste of energy and the heat input will counteract the cooling effect of the open window.

The radiator is on the frost protection setting and the window is open, maximising the cooling effect of the open window and saving energy.
References

1. SEAI, Energy Efficiency Best Practice In Housing


3. European Hydration Institute, Hydration in the workplace, (February 2013).