LIVERPOOL HOPE UNIVERSITY

ELECTRICITY AT WORK

CODE OF PRACTICE

Responsibility for Policy:	Legal Services and Health and Safety Assistant
Approved by and date:	University Council 4th July 2013
Frequency of Review:	Five Yearly
Next Review date:	November 2024
Related Policies:	University Health and Safety Policy
Minor Revisions:	25th August 2015 20th November 2019
EIA:	Not Required

ELECTRICITY AT WORK CODE OF PRACTICE

The University recognises that Electricity as defined in the Electricity at Work Regulations 1989 and the Provision and Use of Work Equipment Regulations 1998 may give rise to hazards to health causing serious injury or fatalities. The Electricity at Work Regulations 1989 require precautions to be taken against risk of death or injury from electricity encountered during work activities, the principle requirement being for all systems and equipment to be constructed and maintained so far as reasonably practicable, so as to prevent danger to staff, students and visitors.

To fulfil the statutory obligations set out the above regulations and to satisfy the wider remit of the Health and Safety at Work Act 1974, the University will undertake suitable and sufficient analysis of electrical appliances and any related activities and introduce control measures to ensure safe working practices are outlined and supported by a regular testing and inspection schedule to ensure that the level of risk involved in working with electricity is reduced to an acceptable level.

This code of practice applies to all electrical systems, equipment and portable appliances and is intended to assist departments to ensure they meet the above requirements of the regulations. To this end this code forms two parts, Part One: 'Electrical Safety' and Part Two: 'Electrical Equipment Testing and Inspection Guide'.

Electrical Safety

Definitions used within this document:

Electrical Equipment	The term electrical equipment includes anything used or installed for use to generate, provide, transmit, transform, rectify, convert, conduct, distribute, control, store, measure or use electrical energy. This includes every type of electrical equipment.
System	An electrical system in which all the electrical equipment is or may be electrically connected to a common source of electrical energy and includes such sources and such equipment.
Portable Electrical Equipment	Portable electrical equipment includes any item of electrical equipment which, if required, may be moved from place to place between periods of use and is connected and powered by a fixed electrical supply via a flexible lead and plug and socket arrangement. This covers a wide range of appliances and includes computers, printers and domestic white goods.
Competent Person	A person is recognised as being competent if he has sufficient practical and theoretical knowledge of the equipment and work situation to cope with foreseeable danger. For complex situations or higher risk electrical activities the degree of competence increases accordingly.

PART ONE

Responsibilities for Electrical Safety

- Estates Department

The University's Estates Department is responsible for overseeing all electrical installations on University premises and ensuring installation are designed, constructed, installed and maintained safely.

This includes maintaining a register of electrical plant and equipment whenever this apparatus forms part of the University estate, to ensure equipment specific safety standards are identified, including manufacturer's recommendations, to help address the electrical risks and ensure these are adequately controlled through regular testing and inspection. All records of testing must be kept for a minimum of 5 years.

Estates will also ensure items that are included on such register are thoroughly inspected and tested at a frequency not less than stipulated in the equipment manufacturers' guidelines and in accordance with internal risk based testing procedures.

High Risk Electrical Works

The Head of Maintenance should ensure a system of rules and procedures are in place wherever electrical work is to be carried out by University staff, or ensure that appointed contractors have appropriate procedures in place. This information should be documented and the level of detail proportionate to the circumstances of the work. It should also include reference to emergency procedures. For works involving high voltage systems, this should include diagrams and clear safety rules that all working in the vicinity should have an understanding of. From the safety rules, workers should be aware of the limitations of the work allowed.

All Estates Managers instructing electrical works should ensure:

- Work is planned in advance, with documented procedures including risk assessments
- Roles of responsibilities are defined in accordance with their competence, including recognising when there may be a need for supervisors for some works, even where contractors are appointed.
- Ensure appointed supervisors are competent and supervision arrangements are appropriate to the level of danger involved.

When planning high voltage electrical works, the relevant Estates Manager also needs to ensure;

- A policy of live or dead working is appropriately applied*
- A method of identifying, evaluating and controlling the risks is in place
- Where live working is reasonable, suitable precautions are in place to prevent injury
- Work is planned and supervision requirements are specific along with the selection criteria for competent workers.
- Information, instruction, tools and equipment are provided to ensure workers are fully instructed and safeguards have been carefully considered.
- Arrangements for management checks and supervision of work are implemented.

*Separate procedures should be implemented in the event of working dead and working live. Guidance on such procedures can be found in HSG 85 – Electricity at Work: Safe Working Practices

Estates staff working with electricity should be competent with knowledge of the specific electrical system to be worked on. Supervision needs to be provided if they do not have the required training, skills or knowledge of the electrical system to work safely. Competence also requires the ability to recognise when there should be a change to a new procedure or system of work.

Outside the remit of the Electricity at Work Regulations 1989, Estates responsibilities also encompass electrical installations that are intended to operate at low or extra low voltage in buildings or parts of the building comprising dwelling houses and flats with a shared supply, including common areas in blocks of flats, such as corridors and staircases and shared amenities of blocks of flats such as laundries and kitchens, as covered by the Building Regulations 2010.

- Heads of School

Heads of School or Department must ensure that risk assessments encompassing electrical hazards are undertaken and are suitable and sufficient. All findings must be recorded and control measures should be monitored and reviewed periodically for effectiveness. Heads of School or Department must also ensure that a competent person is appointed to undertake the inspection and / or testing of new and existing portable electrical equipment and an appropriate record is kept.

- Vice Chancellor's Office

The Legal Services and Health and Safety Assistant shall monitor and audit compliance with the Electricity at Work Code of Practice. On request the Legal Services and Health and Safety Assistant will also provide information and advice to staff on electrical safety and signpost to suitable resources, including training to enable staff to comply with this policy.

- Safety Coordinators

Safety Coordinators shall monitor any electrical equipment that is introduced into the department and ensure that the departmental register of portable electrical equipment is maintained. Safety Coordinators will also liaise with any competent persons within the department to ensure that such equipment is maintained in accordance with the agreed schedule and verify that suitable working practices have been adopted.

- Contractors and Visitors

Equipment belonging to and used by persons visiting the University must be in safe working condition. Equipment belonging to and used by Contractors of the University must be fit for purpose, appropriate to the intended task and have a valid test certificate or label attached for inspection upon request by University staff. All work on fixed systems as part of the University estate (including live work) must be carried in accordance with the Estates Department local policies and associated safe systems of work.

PART TWO

Electrical Equipment Testing and Inspection Guide

All portable electrical equipment owned by the University; or in use on University premises by staff (outside residential accommodation) or students, must be inspected and if necessary, tested as part of a maintenance programme. The risk of injury involving portable equipment is increased due to the use of unsuitable or defective equipment and wear and tear to equipment creating the potential for exposed live parts.

In order to implement an effective maintenance regime either of the following arrangements should be in place within each department:

- A qualified or competent member of University staff.
- A suitable arrangement with University approved contractor.

Effective maintenance of portable electrical equipment can be achieved by a combination of:

1. User Checks

University staff using any type of portable electrical equipment must regularly undertake the following visual checks prior to use:

i. **Plugs** – Plugs which are non- standard, chipped, broken, has loose pins / screws, missing parts, or that has more than one cable connected or looks to be wrong wired should be withdrawn from use immediately. Staff should also check that the plug has a current PAT test sticker place, if appropriate.

ii. **Cable / Flex** – Cables or flexes with bare wires, inadequate insulation, kinked, taped or not properly fixed, running between rooms, through doors, across corridors or stairs should be withdrawn from use immediately. Similarly cables or flexes that have been damaged by the heat or cold, abrasion or have been cut should also be withdrawn from use as soon as detected.

iii. **Equipment** – All equipment should have suitable and sufficient casing that should be checked for damage, missing screws or evidence of misuse e.g. due to water ingress, heat or corrosion. Also the equipment should be in working order, with a functioning on/ off switch and be suitable for the job it is intended for.

iv. **Extension Boards** – Extension bars should not be overloaded or used in series (or 'necklaced'). Extension bars should not be covered by anything which may prevent adequate air circulation and should not be positioned to expose the cable to wear and tear, plugs and cables for extension bars should also undergo the same visual checks as standalone portable devices. Extension bars should only be used to power smaller, portable appliances such as radios, pcs and kitchen equipment where extension bars are intended for long term use, additional wall sockets should be considered. Multi-way plug adaptors should not be used and should be removed if found.

v. **Wall Sockets** – Any wall sockets missing covers or cover screws, that show signs of scorching or burning, which may indicate that equipment has overheated should be switched off immediately, any electrical equipment items disconnected and the fault reported to the Estates Department.

Regular visual checks are sufficient for offices and other low risk environments.

2. Formal Visual Inspections

Formal inspections combine a visual and an optional electrical examination of portable and transportable electrical equipment by a competent person, to detect potentially dangerous faults. Formal visual inspections can be carried out by any member of staff who has sufficient information and knowledge of what to look for,and who has acquired the appropriate training to do so. This also includes knowing when the limit of their experience and knowledge has been reached. Visual inspections should consider;

- Whether the electrical equipment is being used in accordance with the manufacturer's instructions;
- The equipment is suitable for the job;
- There has been any change of circumstances;
- The users have reported any issues.

95% of equipment defects can be detected by visual checks but additional checks can be made by removing the plug cover to check;

- For any signs of internal damage,
- That the correct fuse is in use and is a 'proper' fuse
- That the wires, including the earth where fitted, are secured to the correct terminals
- That terminal screws are tight
- The cord grip is holding the outer part of the cable tightly
- No bare wire is visible other than at the terminals

Formal visual inspections should be carried out at regular intervals, the periods between inspections can vary based on the type of equipment, conditions of use, potential for modifications and foreseeable abuse, equipment age and the environment its used in.

Equipment that is wired directly to the mains system and the testing and inspection of the fixed wiring installations within University buildings is the responsibility of the Estates Department.

3. Combined Inspection and Test (PAT Testing)

The checks and inspections outlined above should reveal the most dangerous potential faults but some defects cannot be detected by visual inspection alone so a combined inspection and test should be carried out periodically. Periodic combined visual inspection and test is particularly appropriate when;

a. There is reason to believe equipment may be defective
b. Following any repairs or modification
c. After an appropriate period in relation to the equipment use, age, frequency of use and the environment it's used in.

Electrical or PAT testing should be carried out at less frequent intervals than visual or user checks. The frequency of formal inspections should be appropriate to each piece of equipment based on the level of risk; equipment that is rarely moved and is not at risk of damage requires less frequent inspection than equipment that is moved regularly, may be subject to damage or changes in environment such as heat, cold and damp. (see Appendix A: Suggested Initial Maintenance Intervals)

Combined inspection and testing requires a greater degree of competence (including knowledge, training, skills and experience) than for inspection alone. Appropriate electrical knowledge is needed to undertake the testing and interpret the results. However with appropriate training, it can be carried out by a University employee. There are two levels of competency, it is the Head of Schools/ Departments responsibility to ensure staff are

competent for the type of testing required by the department to ensure equipment can be maintained in a safe condition.

A periodic check and inspection schedule must be carried out by each School or Department and in doing so must:

- Visually inspect and where necessary electrically test portable equipment as outlined above and correctly interpret and record the results of the test and inspection.

- Avoid the hazards presented by the PAT and the equipment under test by safely isolating the necessary equipment and providing a safe working area that protects others.

- Take any necessary action to withdraw any defective equipment from service.

- Denote all items tested with the relevant ‘pass’ / ‘fail’ sticker or some other form or record and the date of inspection.

Further Reading

Maintaining portable and transportable electrical equipment HSG 107 (Third Edition) HSE Books 2013
Maintaining portable and transportable electrical equipment in low risk environments HSE Books 2012

Electricity at Work: Safe Working Practices HSG85 (Third Edition) HSE Books 2013

Memorandum of Guidance on the Electricity at Work Regulations 1989. Guidance on Regulations HSR25 (Second Edition) HSE Books 2007

HSE Guide: Electrical Safety and You – A Brief Guide

HSE's 'Electrical Safety at Work' site: www.hse.gov.uk/electricity

Liverpool Hope University
Portable Appliance Testing Register

Department: **Location:**

ITEM DESCRIPTION	SERIAL NO	TEST DATE	RE-TEST DATE

Appendix A: Suggested Initial Maintenance Intervals

Type of Environment		User Checks	Formal Visual Inspection	Combined Inspection and Test
Equipment Hire		N/A	Before issue/ after return	Before Issue
Battery Operated Equipment (less than 40V)		No	No	No
Extra Low Voltage Equipment (less than 50V ac) telephones, low voltage desk lights		No	No	No
Construction	110V equipment	Yes, weekly	Yes, monthly	Yes, before first use on site, then 3 monthly.
	230V equipment	Yes, daily/ each shift	Yes, weekly	Yes, before first use on site, then monthly.
	Fixed RCDs	Yes, daily/ each shift	Yes, weekly	Yes, before first use on site, then 3 monthly (portable RCD's monthly).
	Equipment site offices	Yes, monthly	Yes, 6 monthly	Yes, before first use on site then yearly.
Heavy industrial/ high risk of equipment damage (not construction)		Yes, daily	Yes, weekly	Yes, 6-12 months
Light Industrial		Yes	Yes, before initial use then 6 monthly	Yes, 6-12 months
Office information technology –rarely moved, desktop PCs, photocopiers		No	Yes, 2-4 years	No if double insulated, otherwise up to 5 years
Double insulated class II equipment moved occasionally		No	Yes, 2-4 years	No
Hand- held, double insulated equipment- floor cleaners, some kitchen equipment		Yes	Yes, 6 months – 1 year	No
Earthed (Class I) equipment, electric kettles		Yes	Yes, 6 months – 1 year	Yes, 1 -2 years.
Cables, leads, plugs connected to class I equipment, extension leads and battery charging equipment		Yes	Yes, 6 months – 4 years depending on type of equipment its connected to	Yes, 1 – 5 years depending on type of equipment its connected to