

# School of Electrical, Electronic & Computer Engineering

## Health and Safety in Electrical Laboratories for Stage III & IV Project & Research Students, MSc Students and Research Staff

**BEFORE WORKING IN A LABORATORY IN WHICH PROJECT AND RESEARCH WORK IS UNDERTAKEN, EVERYONE MUST SIGN A DECLARATION THAT HE/SHE HAS READ AND UNDERSTOOD THIS DOCUMENT.**

### **1. INTRODUCTION**

- 1.1 Electrical and mechanical equipment can be dangerous. The Health and Safety at Work Acts places the obligation on everyone (which means students and staff equally) to take responsibility for health and safety not only of themselves, but also of others who may be affected by their acts or omissions at work.
- 1.2 These Notes must be read in conjunction with any safety notes issued by the member of staff responsible for the particular laboratory in which you intend working. They also follow on from the Notes entitled 'Health and Safety for Stages I and II Students in Electrical Laboratories' and 'General Notes of Guidance'.
- 1.3 This document is a code of practice which gives guidance on responsible behaviour in electrical laboratories. In particular, it refers to those laboratories in which more advanced experimental work is conducted, of the postgraduate research type. All persons who enter laboratories of this type (regardless of whether or not they are personally involved with experiments) must understand the letter and spirit of this code of practice, and obey safe working procedures.
- 1.4 All Stage I and II students have been issued with the School code of practice for safe working in electrical laboratories. The general advice given in that document continues to apply, but further advice is now needed on a number of matters. This is because (i) more advanced work implies that experiments are no longer of a set type, (ii) there is some necessary increase in both the range and degree of risks that may be encountered, and (iii) persons are at a more advanced stage of development towards professional engineering standards of self-reliance, so that there is less direct supervision of their work.
- 1.5 Each new project requires a written risk assessment to be completed/signed and counter-signed. A suitable Proforma is held by the School office.

### **2. LABORATORY SUPPLIES AND EXPERIMENTAL APPARATUS**

- 2.1 Particular care is needed when dealing with unfamiliar apparatus, or when working in unfamiliar circumstances (e.g. field trials). Always consult the instruction book before using any new apparatus. If you have any doubt about how to use equipment, seek the advice of a person who is familiar with the problems.
- 2.2 In each laboratory, notices are prominently displayed which give telephone numbers for use in an emergency, and also give advice on how to apply resuscitation. **MAKE SURE THAT YOU KNOW WHERE THESE NOTICES ARE AND THAT YOU HAVE READ THEM, AND THAT YOU KNOW WHERE THE 'EXIT' SIGNS ARE LOCATED.**
- 2.3 Always think before you act. Move and work in a deliberate manner. Keep your workplace tidy. Absent-mindedness, involuntary movement through stumbling, and incorrect procedure caused by a cluttered environment, are well-known major causes of accidents.
- 2.4 Particular care should be exercised when handling equipment capable of storing energy, e.g. batteries (always include a switch and fuse in the circuit), current-carrying inductors (these can generate large arcs if the current is improperly interrupted) and charged capacitors (always discharge before handling). Further examples are rotating flywheels and containers holding chemicals, or gases/liquids under pressure.

- 2.5 Never work with wet hands, wet clothing, or wet bench or floor surfaces.
- 2.6 Be on your guard against stroboscopic effects either from fluorescent lighting or from stroboscopes, which can make rapidly moving parts appear stationary.
- 2.7 Loose clothing and long hair are very dangerous near moving machinery. Never work wearing overcoats or scarves, and secure ties and long hair.
- 2.8 Report immediately any damaged or faulty equipment to laboratory staff, and do not attempt to use any imperfect equipment.

**3. ATTENDANCE, SECURITY AND SUPERVISION**

- 3.1 Normal work hours in the laboratories are between 9 am and 5 pm, Monday to Friday inclusive. If you need to work in the School outside these normal hours, you must obtain written permission from the Head of School after consulting your supervisor. In no case would this allow performing experimental work alone.
- 3.2 When working in the School outside normal hours, you should ensure that all access doors, including those leading to inner rooms which may be in use, are kept locked. Do not approach intruders if you are alone in the School. Windows and doors should be secured and lights switched off before leaving the building. Check that the outer door is locked.
- 3.3 No person is permitted to work alone on energised equipment at any time. If any supplies whatever are to be switched on (including apparatus connected to the 240V mains), there must be another person within sight and sound. He/she must be competent to switch off supplies, raise an alarm, and apply resuscitation; he/she should have attended a resuscitation lesson.

**4. Laboratories for which additional safety notes are available**

Power Electronics and Drives (UG),

Professor Bayan Sharif August 2007  
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**School of Electrical, Electronic & Computer Engineering  
 Safety Declaration 2007**

**DECLARATION**

The document entitled “Health and Safety in Electrical Laboratories for Stage III & IV Project & Research Students, MSc Students and Research Staff” has been issued to me. I have read the document carefully and understand the regulations contained therein which I shall do my utmost to observe at all times.

(PLEASE COMPLETE IN BLOCK CAPITALS)

Name ..... Course and Stage .....  
 Date ..... Signed ..... Student Number.....