



FACULTY OF ENGINEERING
SCHOOL OF ELECTRONIC & COMMUNICATIONS ENGINEERING
DIT, KEVIN STREET, DUBLIN 8

Safety Statement 2009

Revised June 2009

TABLE OF CONTENTS

1	Introduction	3
2	Commitment to Safety Policy	4
3	Policy Statement	5
4	School Safety Committee	7
5	Brief Description of the Workplace	9
6	Specific Hazards	10
7	Emergency Procedures	21
8	Incident Reporting	23

1 Introduction

The Safety, Health and Welfare at Work Act 2005 is primarily concerned with the prevention of accidents and ill health at the place of work. The Act is designed to provide a comprehensive and integrated system of law relating to safety, health and welfare in connection with the activities of persons at work.

In addition, the Act provides for the establishment of a National Authority for occupational Safety and Health to be responsible for administration and enforcing of the Act and any regulations or codes of practice made under the Act.

Central to this legislation is the requirement, under Section 20 of the Act, for this Institute to prepare a written Safety Statement, which represents the commitment of the Institute to the safety, health and welfare of its staff, students, contractors and visitors.

The Safety Statement specifies the manner, the organisation and the resources necessary for maintaining and reviewing safety and health standards. For their part, the staff and students are required under the terms of the Act to co-operate fully to ensure the success of the safety programme. The production of the Safety Statement does not of itself eliminate hazards or prevent injury to general well being but, such a statement is important and plays a vital role in the implementation of the safety policy of the Institute at Kevin Street.

This Safety Statement relates to the School of Electronic & Communications Engineering, Kevin Street, Dublin 8 and should be read in conjunction with the DIT Parent Safety Statement. In the event that this School safety statement conflicts with the DIT parent safety statement, the DIT parent safety statement shall take precedence over all or any provisions contained in this statement.

2 Commitment to Safety Policy

It is the intention of the Director, Faculty of Engineering and the Head of School of Electronic & Communications Engineering to ensure the safety, health and welfare of all staff, students and guests through the provision and maintenance of a safe place of work, safe plant and equipment, and safe systems of work.

The Head of School, Dr Gerald Farrell is responsible for implementing safety policy within the School and is assisted in the fulfilment of these responsibilities by the members of the School Safety Committee. All staff and students are required to comply with safety policy as specified in section 13 (paragraph 1, page 23), of the Safety, Health and Welfare at Work Act 2005.

3 Policy Statement

The matter of the health and safety of those who use the facilities of the Dublin Institute of Technology at Kevin Street is the concern of all who work there, staff and students alike. Health and safety, however, is not simply a matter of concern. We are now required by law, to accept responsibility for safety and health in our workplace. The Safety, Health and Welfare Act 2005, together with the various updates and amendments to the Act since that date, established a comprehensive system of law relating to all matters of safety, health and welfare at work.

The Act has, as its primary aim, the prevention of accidents and ill health at the place of work and the creation of an environment, which is conducive to the general welfare of all employees. It is my concern and my responsibility as a Director of this Institute to ensure that the provisions of the Act, in so far as they relate to the buildings, staff, and students and the operation of the Institute, are put into effect.

This Institute is committed, in so far as is reasonably practicable, to ensuring that appropriate safety structures/systems, and the necessary resources to support them, are established and maintained. In particular, appropriate management procedures have been established to ensure that those who are charged with responsibility for the operation of the College and its facilities see safety as an integral part of the management process.

This Institute is committed to maintaining full consultation with staff on all matters relating to safety, health and welfare, and to the provision of full information for employees in respect of all risk to safety and health, which arise. In turn, we seek the support and co-operation of staff at every level to ensure the proper operation and success of the safety, health and welfare programme and to the upholding of DIT safety policy.

This policy document sets out details of the safety structures/systems and procedures, which have been put in place to comply with the terms of the Safety, Health and Welfare at Work Act 2005 and any relevant regulations or orders made under the 2005 Act, codes of practice, Health and Safety Authority guidelines and the use of best practice, which are necessary to ensure that the safety policy is translated into effective action. It represents this Institute's commitment to the creation and

maintenance of a safe and healthy working and learning environment for all staff and students.

SIGNED: _____ DATE: _____

Dr. Mike Murphy,
Director, Faculty of Engineering,
D.I.T. Bolton Street, Dublin 1.

SIGNED: _____ DATE: _____

Dr. Gerald Farrell,
Head of School,
School of Electronic & Communications Engineering,
D.I.T. Kevin Street, Dublin 8.

4 School Safety Committee

The School Safety Committee assists the Head of School in drawing up appropriate safety measures for the School. In consultation with the Head of School the committee is concerned with the identification of all sources of hazard in the School and the drawing up of recommendations for the elimination of the effects of such hazards. The committee members are appointed by the Head of School. It is important that members of the technical staff are represented. The Head of School is an ex-officio member of the Safety Committee.

4.1 Composition

The members of the committee are:

- Derek Gillmor
- Ron Gobl
- Paul Kiernan
- Des Kernan
- Tom Fallon
- Tony Kelly

4.2 Terms of Reference

The School Safety Committee has the following terms of reference:

- The Safety Committee is an advisory committee set up by the Head of School. It represents all occupational interests within the School and shall discuss all aspects of Health, Safety and Welfare within the School.
- Each member will become aware of safety problems within the School through personal knowledge and discussion with colleagues and will be made aware of the results of safety inspections and reported incidents etc.
- The Committee will ensure that necessary precautions are taken in order to minimise the effect of such hazards as exist within the School.

4.3 Operation

- The Committee carries out safety inspections/audits on work practices and operations as required by the DIT Parent Safety Statement, and liaises with staff on safety issues.
- Regular Committee meetings are held and review takes place on an ongoing basis in order to meet the changing needs of the School.
- The Committee will undertake revisions of the School Safety Statement, annually or as circumstances dictate.

4.4 Staff Consultation

Ongoing consultation with staff within the school is facilitated as follows -

1. An up-to-date copy of the complete safety statement is provided in all staff offices.
2. The topic of Safety is discussed at regular Course Committee Meetings and at general School meetings.
3. Memoranda are issued on an ongoing basis to staff in relation to safety topics.

Members of staff within the School are requested to exercise vigilance with regards to safety and are invited to make submissions on safety to any member of the Safety Committee or directly to the Head of School.

5 Brief Description of the Workplace

The School is located on the DIT campus at Kevin Street in Dublin. The School consists of three departments:

- Electronic Engineering
- Communications Engineering
- Computer Engineering

The School currently has a total academic staff complement of 35, inclusive of the Head of School and the Heads of Department. There are a further 9 technician support staff and two administrative staff.

The School offers a variety of engineering programmes at certificate, ordinary degree and honours degree level. A number of part-time and day release programmes are also available. The School is active in research in areas such as RF & Microwave, Pervasive Computing, DSP, Liquid Crystals, Optical Communications and VLSI. Opportunities for research at Masters, Doctoral and Post-Doctoral levels are available.

6 *Specific Hazards*

In addition to generic hazards itemised in the DIT parent safety statement, the following specific hazards have been identified within the school. The location of each hazard, the associated level of risk and control measures used to minimise the hazard are itemised in the following pages.

- 6.1. Printed Circuit Board Preparation**
- 6.2. Workshop Tools**
- 6.3. Soldering**
- 6.4. RF Sources**
- 6.5. Electrical Equipment**
- 6.6. High Voltage Sources**
- 6.7. Laser Sources**
- 6.8. Handling and Moving of Heavy Equipment**
- 6.9. Scrap Optical Fiber**
- 6.10. Bottled Gas**

6.1 Printed Circuit Board Preparation

Printed circuit boards are a commonly used construction method for building electronic circuits. Students will have a requirement for printed circuit boards when undertaking project work. Technical staff will occasionally need to fabricate printed circuit boards for other laboratory activities. The process of printed circuit board preparation and etching involves the use of hazardous chemicals and an ultraviolet light source.

Location: Room 434

Risk: Medium

Controls:

- Students are not permitted to use this equipment unless a member of the lecturing or technician staff is present.
- All chemicals used in the etching process are clearly marked with the appropriate safety symbol.
- All persons using these chemicals must wear protective clothing, gloves and goggles at all times so as to avoid chemical contact with the skin.
- A ventilation and extraction system is provided in the room and is required to be in operation at all times during the processing of printed circuit boards
- Used chemicals from the etching process are disposed of safely.
- The light source is only activated when a protective cover is closed. A safety interlock switch is built into the unit to ensure this.

6.2 Workshop Tools

A drilling machine and a grinding machine are provided in the workshop on the fourth floor in order to allow drilling of printed circuit boards and preparation of enclosures for student projects. A selection of hand tools is provided for the same purpose.

Location: Room 428

Risk: High

Controls:

- Student use of the workshop facilities is permitted only on the authorisation of the lecturer in charge. Students are required to comply with this restriction without exception.
- Students are given clear and specific instructions in the proper handling and use of workshop equipment.
- Suitable protective clothing should be worn by all persons using the drilling and grinding machines.
- An emergency cut-out switch is provided for the drilling and grinding machines.
- The drilling machine and grinding machine are frequently inspected and maintained in a safe state.
- Adequate working room is marked off adjacent to the drilling machine and the grinding machine. The floor within this area to be kept free of obstructions.

6.3 Soldering

The use of soldering and de-soldering equipment is a routine part of the activity of students and staff in many of the laboratories in the School. This equipment operates at a high temperature and serious burns may result from contact with the skin. In addition, such equipment may initiate a fire if left in contact with flammable items.

Location: All Laboratories

Risk: High

Controls:

- Members of the School Technical staff who are involved in the fabrication and repair of laboratory equipment are trained in the safe use of soldering equipment.
- In so far as it is practicable to do so, student laboratory activities will make use of alternative constructional techniques for the building of circuitry.
- Students are given clear and specific instructions in the proper handling and use of soldering equipment.
- Constant vigilance is required on the part of staff supervising laboratories where soldering takes place.
- It is the responsibility of students to maintain their own soldering equipment in a safe condition.
- The School enforces rules governing student conduct and activity within laboratories. Students are issued with a written copy of these rules. A copy of the laboratory rules is included in Appendix I of this document.

6.4 RF Sources

High-power radio frequency sources are located in the laboratories in Room 418 and Room 429 and special care is necessary when working with this equipment as serious burns can result

Location: Rooms 418 and 429

Risk: Low

Controls:

- Students working on RF sources do so under the supervision of lecturers and technical staff who are competent in the handling of such sources.
- Equipment is inspected frequently for safe operation.
- The School enforces rules governing student conduct and activity within laboratories. Students are issued with a written copy of these rules. A copy of the laboratory rules is included in Appendix I of this document.

6.5 Electrical Equipment

Practical laboratory activities within the School involve the use of a selection of electrical equipment. Many of these pieces of equipment operate from the mains supply.

Location: All Laboratories

Risk: Medium

Controls:

- All mains sockets, plugs and flexible cords are maintained in a safe condition.
- Equipment is inspected frequently for safe operation.
- Students are not permitted to work with faulty electrical equipment.
- The repair of faulty equipment is only undertaken by members of the technical staff.
- Laboratories are fitted with residual current protection devices.
- Safety cut-out switches are provided in all laboratories where electrical equipment is in use.
- The School enforces rules governing student conduct and activity within laboratories. Students are issued with a written copy of these rules. A copy of the laboratory rules is included in Appendix I of this document.

6.6 High Voltage Sources

A high voltage source operating from the mains supply forms part of a variety of equipment items used in the laboratories. Such a source is not normally accessible to the user and does not constitute a hazard unless the equipment is dismantled for repair. However, in some laboratory activities high voltage circuitry is deliberately exposed for fault-finding and/or demonstration exercises. Technical staff maintaining equipment may be exposed to high voltage sources. For the purposes of this safety statement, a high voltage is taken to be in excess of 40 volts.

Location: Various Laboratories

Risk: Medium

Controls:

- Staff and students are required to exercise caution when working with high voltage sources, in particular mains electricity.
- The School enforces rules governing student conduct and activity within laboratories. Students are issued with a written copy of these rules. A copy of the laboratory rules is included in Appendix I of this document.
- An appropriate isolating transformer should be used.
- No work should take place on the equipment while any live part of the equipment is exposed or inadequately protected. Protection should eliminate the possibility of contact with any live part of a piece of mains powered equipment or high voltage circuit or appliance.
- A switch should be provided within easy reach of the person working on mains or high voltage equipment or circuits in order that the equipment or circuit can be switched off.
- The equipment should be switched off before any work on the equipment takes place.
- Any operational measurements or modifications to be made on the equipment or circuit should be set up with the equipment switched off. Once adequate protection is in place, the measurement may be made by switching the equipment on for the duration of the measurement.
- Should a new measurement be required, the equipment should be switched off while the connections for the new measurement are made.

6.7 Laser Sources

Laser sources can cause injury and damage to human sight. A variety of semiconductor and other laser sources with classifications from Class 1 to Class 3B as per IS EN60825-1 (2001) with wavelengths from about 600 nm to 1620 nm are in use in the School. In addition laser pointing devices are occasionally used by lecturers during classes. In the teaching laboratory room 429 there are two laser sources - a Helium Neon (HeNe) Class 2 laser and a Class 3B 850 nm Vertical Cavity Surface Emitting Laser (VCSEL). The Class 2B HeNe laser operates in free space. The Class 3B VCSEL laser is used as a fiber coupled laser for improved efficiency and safety. The sources currently in use for research in the Applied Optoelectronics Center are a Class 3B tunable source and a Class 3B Superluminescent diode source.

Location: Room 429 and the Applied Optoelectronics Center

Risk: Medium

Controls:

- Appropriate laser safety signage is to be provided.
- Lasers must only be used by students or other personnel who have been authorised to do so.
- All operating instructions/laboratory handouts should include written safety instructions on the safe and correct use of laser sources.
- If the laser is to be left unattended, even for a short while, the user should switch the laser output to the off state.
- For fiber coupled lasers it is very important that the laser should not be operated without a fiber patch lead attached. If for any reason the fiber patch lead is to be disconnected at the laser's front panel optical output port, the laser output must be switched off prior to disconnecting the fiber
- A fiber coupled laser should not be operated with the trailing end of the fiber patch lead left unconnected.
- Users must be advised that they must never stare, even for a short time, into the output port of the laser or at the end of any connected fiber patchlead(s) with the laser output on.
- Users must be advised that the ends of fiber patchleads connected to lasers should never be pointed at any person (especially at their eyes) or at reflective surfaces.
- Fiber connector microscopes should not be used to inspect the ferrule of fiber connectors which are attached by a patchlead(s) to a laser.
- Under no circumstances should the laser enclosure or any part of it be removed with the laser output switched on. All maintenance and repair, even of a minor nature, should only be undertaken by authorised personnel and must follow the procedures defined by the manufacturer.
- **Laser Pointers:** These devices should only be activated when directed towards a projector screen, whiteboard or chalkboard.

6.8 Handling and Moving of Heavy Equipment

Certain items of equipment in the laboratories are heavy and muscle or back injury may result if appropriate care is not exercised during moving or lifting.

Location: All Laboratories

Risk: Low

Controls:

- The members of staff with responsibility for moving heavy equipment receive appropriate training.
- Students are required to consult with the responsible staff member before attempting to move or lift such items.

6.9 Scrap Optical Fiber

Termination of optical fiber takes place when terminating or splicing optical fibers, resulting in pieces of scrap fiber. A piece of scrap fiber is a section of bare fiber typically 125 microns in diameter and about 15 mm long or less. Scrap fiber represents a hazard because it can easily pierce the skin or eyes.

Location: Room 429 and the Applied Optoelectronics Centre

Risk: Medium

Controls:

- Guidelines for handling scrap fiber are explained to all users by trained personnel prior to carrying out termination for the first time.
- When undertaking termination all users and spectators must wear safety glasses.
- No smoking or eating is to be allowed as this could lead to accidental ingestion of scrap fiber.
- Scrap fiber pieces are to be collected using a tweezers or some other method which avoid contact with skin
- Scrap fiber is to be disposed of carefully in containers designed for dealing with sharp scraps in laboratories. These containers are designed for disposal by incineration.

6.10 Bottled Gas

A number of bottled gas containers are in use in the workshop. A container of carbon dioxide is used in conjunction with an oven to implement the cooling phase of a thermal cycle. A container of nitrogen is used in conjunction with a soldering station to inhibit oxidation of work-pieces. Neither of these gases constitutes a poisoning hazard. The weight of the gas bottles constitutes a lifting hazard.

Location: Room 428

Risk: Low

Controls:

- Equipment is inspected frequently for safe operation.
- The room has adequate ventilation in the event of a leakage of gas.
- Students do not normally use these appliances. In the event that they do, they do so under the supervision of competent technical staff.
- The members of staff with responsibility for moving heavy equipment receive appropriate training.

7 Emergency Procedures

Emergency telephones are located in boxes in the centre of each laboratory corridor in the main building. Operating the break glass unit gives access to the telephone. The telephone provides access to the porter's office and in addition can be used to directly contact appropriate emergency facilities.

7.1 Emergency Telephone Numbers

Emergency Services	Dial 0	112 or 999
Health and Safety Officer		4619
Occupational Health Officer, Kevin Street		087 9809194
First Aid Personnel		4683 & 4665
Buildings Maintenance Manager		4646
First Aid Officer Paging System	Dial 9	
Medical and First Aid Centre (Aungier Street)		3051
Front Hall Porter (Kevin Street)		4625
St. James Hospital, James Street, Dublin 1.	Dial 0	453-7941
St. Vincent's Hospital, Elm Park, Dublin 4.	Dial 0	269-4533
Garda Station (Kevin Street)	Dial 0	475-2693

7.2 Procedures in the Event of Personal Injury

7.2.1 Minor Injury

For minor injuries appropriate first aid is administered in the School by the first aid personnel. In the event that the first aid personnel are not available, the paging system should be used (telephone 9). If the first aid personnel cannot be located access to the facilities in the First-Aid Room can be obtained by contacting the Main Porter's Office (telephone 4625).

7.2.2 Serious Injury

In these cases immediate contact should be made with the first aid personnel, and arrangements should be made with the Dublin Fire Brigade/Ambulance Service/Emergency Services for transport to accident hospital on call.

7.3 First Aid Facilities in the School of Electronic & Communications Engineering

First aid equipment is available in all laboratories on the fourth floor. Designated members of staff have received training in the use of this equipment and in first aid. In the event of an incident, one of the occupational first aid personnel should be contacted.

At this time, the occupational first aid personnel within the school are: -

<i>Name</i>	<i>Telephone Extension No.</i>
Tom Fallon	4683
Deirdre Staunton	4665

8 Incident Reporting

It is the policy of the Institute to maintain accurate records of all personal injuries, dangerous occurrences and damage to property, which occur, and to carry out a thorough investigation of the factors surrounding such incidents. In addition, “near miss” incidents that could have resulted in injury or damage are recorded and investigated.

All such incidents are required to be logged, by the completion of a Preliminary Incident Report Form, which should be forwarded to the Health and Safety Officer and to the Faculty Administrator within twenty-four hours. Incident Report Forms are available from the following:

Contact:	Room:	Telephone:
School Secretary	439a	4575
Main porters office	Porters Office	4625

In all cases an Incident Report Form must be completed, and returned to the Health and Safety Officer and the Faculty Administrator.

Appendix I – Laboratory Rules

Student Safety in Laboratories

Introduction

As a student of the School of Electronic & Communications Engineering, your safety is paramount. Health and safety at work is addressed within the Institute through the medium of The DIT Safety Statement (available at <http://www.dit.ie/DIT/healthandsafety>). This statement identifies hazards within the Institute and specifies control procedures to minimise the risk associated with each specific hazard.

Your compliance with the rules of the Institute together with a common sense approach to your activities within the Institute will ensure your safety.

Safety within The School of Electronic & Communications Engineering

In addition to the DIT Safety Statement, The School of Electronic & Communications Engineering maintains a supplemental safety statement addressing specific hazards within the School (available at <http://www.electronics.dit.ie>). These hazards are associated with normal student learning activities in the School's laboratories.

Specific hazards include but are not limited to –

- Possibility of electric shock when working with electric and electronic circuits and equipment
- Possibility of fire resulting from use of defective electrical equipment
- Possibility of burns when using soldering equipment
- Possibility of cuts and eye injury when using tools such as pliers and knives

The laboratory rules are enforced to ensure your safety when undertaking laboratory activities. The rules also govern general student conduct in laboratories. The rules are reproduced on the following page –

Laboratory Rules

General Rules of Conduct in Laboratories:

1. You are expected to arrive on time and not depart before the end of a laboratory.
2. You must not enter a lab unless you have permission from a technician or lecturer.
3. You are expected to comply with instructions, written or oral, that the laboratory instructor gives you during the course of the laboratory session.
4. You should behave in an orderly fashion at all times in the lab.
5. You must not stand on the stools or benches in the laboratory.
6. Keep the workbench tidy and do not place coats and bags on the benches.
7. You must ensure that at the end of the laboratory session all equipment used is stored away where you found it.
8. You must put all rubbish such as paper outside in the corridor bins. Broken components should be returned to the lab technician for safe disposal.
9. You must not remove test equipment, test leads or power cables from any lab without permission.
10. Eating, smoking and drinking in the laboratories are forbidden.
11. The use of mobile phones during laboratory sessions is forbidden.
12. The use of email or messaging software for personal communications during laboratory sessions is forbidden.
13. Playing computer games in laboratories is forbidden.

Specific Safety Rules for Laboratories:

1. You must not damage or tamper with the equipment or leads.
2. You should inspect laboratory equipment for visible damage before using it. If there is a problem with a piece of equipment report it to the technician or lecturer. DO NOT return faulty equipment to a storage area
3. You should not work on circuits where the supply voltage exceeds 40 volts without very specific approval from your lab supervisor. If you need to work on such circuits, you should contact your supervisor for approval and instruction on how to do this safely before commencing the work.
4. Always use an appropriate stand for holding your soldering iron.
5. Turn off your soldering iron if it is unlikely to be used for more than 10 minutes.
6. Never leave a hot soldering iron unattended.
7. Never touch a soldering iron element or bit unless the iron has been disconnected from the mains and has had adequate time to cool down.
8. Never strip insulation from a wire with your teeth or a knife, always use an appropriate wire stripping tool.
9. Shield wire with your hands when cutting it with a pliers to prevent bits of wire flying about the bench.