

## SCHOOL OF PHYSICS

### SAFETY STATEMENT

2014



#### Acknowledgement

The Physics Health & Safety Advisory Committee wish to thank all members of the academic and technical Staff within the School of Physics for their valuable contributions and assistance in the production of this document.

Version	Date	Name
1.0	18 <sup>th</sup> June 2013	Dr. John Doran
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### **SCHOOL OF PHYSICS CONTACT DETAILS**

<b>Role</b>	<b>Name</b>	<b>Location</b>	<b>Email</b>	<b>Telephone</b>
<b>Head of School</b>	Dr. John Doran	KE1-049B	John.Doran@dit.ie	01 402 4953
<b>Assistant Head of School</b>	Dr. Siobhán Daly	KE1-042	Siobhan.Daly@dit.ie	01 402 4927
<b>Assistant Head of School</b>	Eva Doyle	KE2-026A	Eva.Doyle@dit.ie	01 402 4751
<b>School Secretaries</b>	Mary Casserly	KE1-049A	Mary.Casserly@dit.ie Admin.physics@dit.ie	01 402 4559
	Nuala Cullen	KE1-049A	Admin.physics@dit.ie	01 402 4559
<b>Nominees to Health &amp; Safety Team</b>	Jane Torris	KE1 - 011	Jane.Torris@dit.ie	01 402 4870
<b>School First-aiders</b>	Carol Armstrong	KE2 - 026	Carol.Armstrong@dit.ie	01 402 4932
	Robert Howard	KE3 - 023	Robert.Howard@dit.ie	01 402 4952
	Jane Torris	KE1 - 011	Jane.Torris@dit.ie	01 402 4870

Please see [School Contacts](#) for full listing

### **EMERGENCY CONTACT NUMBERS**

Emergency Services	112/999 (You may need to dial “0” for an outside line)
Hospital	01 410 3000 St. James Switchboard
Dublin City Council	01 222 22 22
Garda Síochána, Kevin Street	01 666 9400
Bord Gáis 24 hour emergency line	1850 20 50 50
ESB 24 hour emergency line	1850 372 999
Health and Safety Authority	1890 289 389
Samaritans	1850 60 90 90
Environmental Protection Agency	1890 33 55 99

**COLLEGE & CAMPUS CONTACT DETAILS**

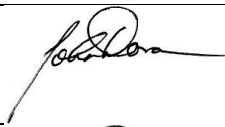


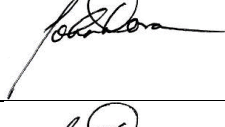


Front Desk/Reception	Kevin St. Main Building	01 402 4625
	Annexe	01 402 4612
	FOCAS	01 402 7900 / 01 402 7902 / 01 402 7903
Incident Controller	Porter on Duty	01 402 4625
Buildings Service Supervisor	Jimmy Kane	01 402 4797
Buildings Maintenance Manager	Colm Gillen	01 402 4646 / 087 2888 294
Occupational Health Officer	Yvonne McArdle	01 402 4127 / 087 9809 135
Health and Safety Officer	Edel Niland	01 402 4192 / 086 3891 080
Student Health Centre	Reception	01 402 3051
Chaplain	Fionnuala Walsh	01 402 4568 / 086 8754 422
Employee Assistance Programme (EAP) Contact	VHI Corporate Solutions	Freephone 1800 995 955 (24 hours / 7 days a week / 365 days a year)
Student Counsellors	Nita Whelan / John Broderick	01 402 3052 / 01 402 3155
Staff Safety Representative	Patricia Ennis	01 402 4780

**School of Physics**

**Committee Members**

Ms J. Torris, (Chairman)  
Dr. S. Daly, Dr. J. Browne, Dr. G. Chambers,  
Dr. I. Naydenova, Dr. T. Hedderman, Mr. D. Hovenden, Ms. C. Armstrong

**LIST OF PERSONS IDENTIFIED AS BEING RESPONSIBLE FOR HEALTH AND SAFETY TASKS**

<b>TASKS</b>	<b>RESPONSIBLE PERSON</b>	<b>SIGNATURE</b>
Coordinating and ensuring records are maintained for training and provision of Personal Protective Equipment	Dr. John Doran	
Ensuring Safety Statement, risk assessments are carried out, updated and communicated	Dr. John Doran	
Ensuring the upkeep of first-aid box and ordering first-aid supplies from Occupational Health Officer	Dr. John Doran	
Co-ordinating contractors activities and dealing with Buildings Office for Work Permits	Dr. John Doran	
Updating the statutory registers and Safety Data Sheets	Dr. John Doran	
Ensuring adequate personnel designated as evacuation marshals and first-aiders	Dr. John Doran	

## INTRODUCTION

Dublin Institute of Technology (DIT) is required under the provisions of the *Safety, Health and Welfare at Work Act 2005*, to have and bring to the attention of all employees, a statement of its policy, organisation and arrangements with respect to health, safety and welfare at work. The Act also embraces all of the activities at DIT and staff, students, visitors, contractors/service providers.

The fundamental aim of the *Safety, Health and Welfare at Work Act* is the prevention of accidents and illnesses at the place of work. Safety consultation procedures and the preparation of a Safety Statement and written risk assessment are the key provisions of the Act.

This Safety Statement has been prepared in compliance with the Act and provides details of the specific hazards relevant to the School of Physics and the controls that have been implemented to adequately safeguard the activities.

This Safety Statement should be read in conjunction with the DIT Framework Safety Statement which is available on the [health and safety website](#).

This document applies to all staff, students, visitors, contractors/service providers and campus users. It will be updated as necessary in the light of new legislation, staff feedback, changes and practical experience. In addition it will be reviewed annually.

## SAFETY POLICY & OBJECTIVE FOR THE SCHOOL OF PHYSICS

**The School of Physics will ensure that:**

- Work activities are managed and conducted in a manner that ensures the safety, health and welfare of our employees, students, visitors and contractors/service providers
- Our Safety Statement is maintained and updated and written risk assessments are carried out and reviewed as required and brought to the attention of all employees at least annually
- Identified protective and preventative measures are implemented and maintained
- Improper conduct likely to put an employee, student, visitor or contractor/service provider's safety and health at risk is prevented
- A safe place of work is provided that is adequately designed and maintained
- A safe means of access and egress is provided
- Safe plant and equipment are provided
- Safe systems of work are provided
- Risks to health from any article or substance are minimised
- Appropriate information, instruction, training and supervision are provided
- Where hazards cannot be eliminated suitable protective clothing and equipment are provided
- Emergency plans are prepared and revised
- Welfare facilities are provided and adequately maintained
- Competent personnel who can advise and assist in securing the safety, health and welfare of employees are employed when required

A guiding principle within the School of Physics is that it has a key responsibility as a training institution, to ensure that Students develop good safety habits that they will carry on into later life. These habits will allow them to do their jobs safely and to handle potentially dangerous materials and equipment with confidence.

All work carried out within the School of Physics must conform to all regulations of the Institute, including those of the DIT Ethics Sub Committee of the DIT Postgraduate and Research Committee. In the Department of Optometry and in the National Optometry Centre, procedures are

routinely carried out on human subjects and volunteers, and these must conform to the guidelines set down by the Ethics Sub Committee. Consent forms shall be used as required and these forms are found at:

<http://www.dit.ie/researchandenterprise/research/researchsupportoffice/ethics/forms/>

The National Optometry Centre and the FOCAS Research Institute have each developed Safety Statements and Staff and Students of the School of Physics who carry out work in these locations shall refer to the relevant Safety Statements.

**Signed:** 

**Head of School of Physics, Dr. John Doran:**

**Date:** 24 June 2014



## **SCOPE OF SAFETY STATEMENT**

The School offers ordinary degree, honours degree, as well as masters (MPhil) and doctorate (PhD) qualifications by research. The School incorporates the Department of Optometry and the National Optometry Centre, with five Staff, and is intrinsically linked with the Department of Optometry.

There is currently a suite of seven degree programmes; six at honours degree level, including physics based programmes, the country's only degree programmes in optometry and clinical measurement science, one at ordinary degree level, and a range of postgraduate modules.

Undergraduate programmes currently offered are: BSc (Ord) Industrial & Environmental Physics, BSc Physics Technology, BSc Optometry, BSc Science with Nanotechnology, BSc Clinical Measurement Science, BSc Physics with Medical Physics & Bioengineering, BSc Physics with Energy & Environment, and Higher Cert Science & Technology.

The School is active in the research areas of biomedical physics, optics and optical engineering, holography, renewable energy, nanomaterials and nanotoxicology, optometry and vision sciences, and physics education.

Three DIT Research Centres are part of the School of Physics:

1. Centre for Industrial and Engineering Optics (IEO)
2. Radiation and Environmental Science Centre (RESC)
3. NanoLab

## **HISTORY OF LOCATION**

Physics has been taught in the Kevin St College since its foundation in 1887. During the 1940s a Department of Pure and Applied Science existed, and out of this the Department of Physics was formed in 1963. The now named School of Physics is a constituent School of the College of Sciences & Health, DIT, Kevin Street, Dublin 8.

The School currently has a total of 28 academic Staff, two of whom are seconded to other roles, and seven Technical Officers. In the current year, the School educates approximately 400 undergraduate Students, 24 full-time research Students and 9 part-time research Students.

The area occupied by the School of Physics Laboratories is 842m<sup>2</sup> which is made up of 671m<sup>2</sup> of undergraduate physics laboratories and 171m<sup>2</sup> of undergraduate optometry laboratories. There are also Staff offices and research areas associated with the School of Physics.

Undergraduate Student work placements take place in external industrial, hospital, research, and clinical locations.

## **SAFETY RESPONSIBILITIES**

In accordance with the DIT Parent Safety Statement, the Head of School of Physics, Dr. John Doran, as part of his management function, is responsible for ensuring, so far as is reasonably practicable, the health and safety of persons working, studying or visiting his area of responsibility. In particular he is responsible for the following:

1. To ensure a Safety Statement relevant to operations is prepared which complies with Section 20 of the Safety, Health and Welfare at Work Act
2. To ensure that the Safety Statement is reviewed at least annually and that the DIT Senior Leadership Team (SLT) Health and Safety Sub-committee is notified that the review has

been completed and is provided with any updated document which may result from such a review

3. To ensure that all hazards are identified and risks controlled
4. To ensure that regular safety inspections/audits are carried out to monitor compliance with the Safety Statement and legal requirements and to ensure appropriate follow-up action is taken
5. To investigate all accidents to staff/students/visitors in their area of responsibility and to complete the Incident Report Form as appropriate
6. To ensure that local emergency plans and first-aid procedures are implemented and that sufficient evacuation marshals/first-aid personnel are available
7. To ensure that staff are appropriately trained to carry out their duties safely and to ensure the attendance of staff at designated training courses as appropriate
8. To ensure that all contractors/service providers carrying out work in the area operate under the Buildings Office 'Permit to Work' system
9. Based on risk assessment, to arrange for the provision of adequate and appropriate personal protective equipment for employees

### **All Institute Staff**

All employees/staff have a duty to take responsibility for their own safety, health & welfare and for that of visitors and any other person who may be affected by their acts or omissions while at work.

### **Statutory Requirement**

*Chapter 2, Sections 13 & 14 of the Safety Health and Welfare at Work Act 2005 places a number of obligations on employees whilst at work as outlined in this section:*

**13.—(1)** An employee shall, while at work—

- (a) comply with the relevant statutory provisions, as appropriate, and take reasonable care to protect his or her safety, health and welfare and the safety, health and welfare of any other person who may be affected by the employee's acts or omissions at work,
- (b) ensure that he or she is not under the influence of an intoxicant to the extent that he or she is in such a state as to endanger his or her own safety, health or welfare at work or that of any other person,
- (c) if reasonably required by his or her employer, submit to any appropriate, reasonable and proportionate tests for intoxicants by, or under the supervision of, a registered medical practitioner who is a competent person, as may be prescribed,
- (d) co-operate with his or her employer or any other person so far as is necessary to enable his or her employer or the other person to comply with the relevant statutory provisions, as appropriate,
- (e) not engage in improper conduct or other behaviour that is likely to endanger his or her own safety, health and welfare at work or that of any other person,
- (f) attend such training and, as appropriate, undergo such assessment as may reasonably be required by his or her employer or as may be prescribed relating to safety, health and welfare at work or relating to the work carried out by the employee,
- (g) having regard to his or her training and the instructions given by his or her employer, make correct use of any article or substance provided for use by the employee at work or for the protection of his or her safety, health and welfare at work, including protective clothing or equipment,
- (h) report to his or her employer or to any other appropriate person, as soon as practicable—
  - (i) any work being carried on, or likely to be carried on, in a manner which may endanger the safety, health or welfare at work of the employee or that of any other person,
  - (ii) any defect in the place of work, the systems of work, any article or substance which might endanger the safety, health or welfare at work of the employee or that of any other person, or
  - (iii) any contravention of the relevant statutory provisions which may endanger the safety, health and welfare at work of the employee or that of any other person, of which he or she is aware.

(2) An employee shall not, on entering into a contract of employment, misrepresent himself or herself to an employer with regard to the level of training as may be prescribed under *subsection (1)(f)*.

**14.**—A person shall not intentionally, recklessly or without reasonable cause—

- (a) interfere with, misuse or damage anything provided under the relevant statutory provisions or otherwise for securing the safety, health and welfare of persons at work, or
- (b) place at risk the safety, health or welfare of persons in connection with work activities

*In addition, staff have the following responsibilities:*

- To participate in and put into practice all training provided by DIT, to ensure compliance with safety, health & welfare legislation
- To co-operate with those responsible for health and safety
- To familiarise themselves with the contents of the Health and Safety Statement, safety policies and procedures and Codes of Practice
- To assist in the preparation and updating of the School of Physics Safety Statements
- To assist and co-operate with periodic safety inspections/audits
- To assist in the completion of standard hazard identification control sheets and co-operate with the reporting and investigation of incidents
- To ensure that equipment is operated in a safe manner and good housekeeping standards are maintained at all times
- To promote safe work practices
- To ensure that all safety rules are communicated to students, contractors and visitors, other campus users
- To use equipment only if authorised and trained
- To ensure that any safety measures associated with new equipment/machinery is brought to the attention of the Head of School of Physics, Dr. John Doran, implemented, documented in the Health and Safety Statement and communicated effectively
- To ensure that they do not carry out repairs or servicing on plant/equipment/machinery unless they are trained to do so, it is isolated and they should ensure that any guards removed to carry out repairs are properly replaced
- To wear appropriate personal protective equipment where required
- To report to the Head of School of Physics, Dr. John Doran any person abusing facilities or equipment
- To select and appoint a Safety Representative
- To notify the Health & Safety Officer of any perceived shortcomings in the safety arrangements

### **Undergraduate/Postgraduate Students**

Students have a legal responsibility not to endanger themselves or others by their acts or omissions. Thus they must:

- Take reasonable care of their own safety and the safety of others
- Co-operate fully with all safety rules and regulations issued by DIT e.g. smoking etc.
- Co-operate with those with responsibility for health and safety
- Not interfere or misuse any specified items of safety equipment or any safety device
- Ensure that equipment is operated in a safe manner and good housekeeping standards are maintained
- Use personal protective equipment (PPE) as necessary. (Students are required to provide their own PPE – laboratory coat, safety glasses etc.)
- Not access or use laboratory/workshop facilities and equipment without the permission of their academic supervisor and where necessary the staff member in charge of these facilities

- Use equipment only if authorised and properly trained
- Report any incident, dangerous occurrence, defective equipment or potential safety hazard to the Head of School of Physics, Dr. John Doran
- To participate in any safety training programmes facilitated by the Health & Safety Office
- Only undertake work in laboratories that has been risk assessed in conjunction with their supervisor and signed off

### **Contractors/Service Providers**

*The following responsibilities are allocated to contractors/service providers:*

- All contractors/service providers will be expected to comply with the Institute's Policy for safety health and welfare and must ensure that their own Safety Statement is made available whilst work is being carried out. It is the Institutes policy that all contractor/service providers have a Safety Statement in accordance with the *Safety, Health and Welfare at Work Act 2005*
- All work must be carried out in accordance with relevant statutory provisions and taking into account the safety of others on the site. The contractor/service provider must have adequate insurance cover
- Contractors/service providers must not commence with any work on the premises or project site until the Contractor Safety Guidelines and other relevant safety procedures are read, understood and accepted (available from Buildings Office). They must complete the e-learning programme for contractors/service providers
- Contractors/service providers will take reasonable care of themselves and others who may be affected by their acts or omissions and will co-operate as appropriate with DIT employees as necessary
- Contractors/service providers must supply at tender stage a Safety Statement, relevant method statements, copies of their public and employers liability insurance and complete the Contractors Compliance Form CCF1 before a contract is awarded
- They will liaise with the local Building Maintenance Manager and obtain work permits as required
- Scaffolding and other access equipment used by contractor's/service provider's employees must be erected and maintained in accordance with current legislation and Codes of Practice
- All plant and equipment brought onto the site by contractors/service providers must be safe and in good working order, fitted with any necessary guards and safety devices and have all necessary certificates available for inspection
- All transformers, generators, extension leads, plugs and sockets must be suitable for industrial use and in good condition. No power tools or electrical equipment of greater than 110 volts should be used outdoors. If it is necessary to use equipment operating from a 220-volt supply, a residual current device with a rated tripping current of 30mA and operation of 30m sec must be used
- Any injury sustained by a contractor's/service provider's employee must be reported immediately to the local Building Maintenance Manager
- Contractors/service providers must comply with any safety instructions given by DIT
- DIT may carry out safety inspections. Contractors/service providers informed of any hazards or defects identified during these inspections will be expected to take immediate action
- DIT must be notified of any material or substance brought onto the site which has health, fire or explosive risks. Such materials must be stored and used in accordance with current recommendations
- Contractors/service providers will be accountable for the maintenance of good housekeeping practices at all times within their respective areas of work

- Contractors/service providers are not allowed to use equipment owned by the Institute unless written permission is received from the Head of School and a competent person passes it as being safe
- Contractors/service providers must wear PPE as appropriate/prescribed

#### **Visitors (a person other than an employee or contractor/service provider)**

- Visitors may not be aware of the potential hazards associated with DIT and also may lack familiarity with the Institute's premises/facilities and are therefore a potential risk to themselves and others. All visitors must identify themselves to the relevant DIT personnel and follow all DIT's safety procedures and policies
- Visitors must not enter any area where they do not have the authority to do so. Hazardous areas will be restricted
- They must not interfere with any of the Institutes property, equipment, materials or substances unless they have permission to do so from the person in charge
- They must not remain on the premises any longer than necessary and should return PPE on leaving
- In the event of an evacuation, they will be led to the Assembly Point by their DIT host
- A safety booklet and wallet card is available at Front desk/Reception area and on request
- The DIT Parent Safety Statement is available on the safety website [www.dit.ie/safework](http://www.dit.ie/safework)
- DIT has a [Child Protection Policy](#) available on the DIT website

#### **DISCIPLINARY ACTION**

Any member of staff/student who contravenes or fails to manage to work in accordance with current safety health and welfare legislation, the DIT Framework Safety Statement and codes of practice may be subject to the Institute's disciplinary procedures. The Buildings Officer will address any contraventions by contractors/service providers.

#### **HEALTH AND SAFETY CONSULTATION**

Employers are obliged under *The Safety, Health and Welfare at Work Act 2005*, to consult with and take account of any representations made by employees regarding health, safety and welfare. The School of Physics ensures that health and safety is an agenda item at all relevant meetings and ensures that working groups are appointed to deal with certain health and safety items if required.

A nominee from the School of Physics sits on the College of Sciences & Health, Health and Safety Team. This team meets periodically throughout the year, usually every two months.

Consultation takes place when there is a change, update or modification to a particular work process, when new machines or processes are introduced or when new substances or materials are introduced.

The College of Sciences & Health, Health and Safety Team has selected and appointed Safety Representatives. Details of current Safety Representatives may be found on the health and safety website ([www.dit.ie/safework](http://www.dit.ie/safework))

## PROVISION OF INFORMATION

**Staff, students and others are made aware of safety matters by the following means:**

- Agenda item at Team/School meeting
- Desktop Emergency Response Flip charts
- Health & Safety notice boards
- Health & Safety Newsletters
- Toolbox talks
- Health & Safety Induction
- Health & Safety Training courses
- Signage:
  - Safety notice points
  - Emergency first-aid procedure signs
  - Emergency floor plans
  - Assembly point maps
  - Fire actions notices
- Emergency Response posters
- Safety booklets
- Safety wallet cards
- Website [www.dit.ie/safework](http://www.dit.ie/safework)
- Posters
- Inductions are prepared and delivered by Occupational Health Officers where requested
- School Secretary has an email listing to communicate matters to staff members

## HEALTH AND SAFETY RESOURCES

The School of Physics codes all budgetary spend on activities/spend pertaining to safety, health and welfare. Considerable resources are expended by the School of Physics in securing the health, safety and welfare of employees in terms of personnel, time, materials, equipment and the purchase of goods and services.

Where additional equipment, training etc. is required whether as a result of ongoing risk assessment or legislative change, resources will be allocated on a prioritised basis to meet the identified requirements.

The health and safety website hosts a reference library of videos, texts, literature and other publications on health and safety matters.

## SAFE SYSTEMS OF WORK

It is the policy of DIT to ensure that employees are not asked to perform tasks outside their competence and capacity. Safe systems of work have been designed with this objective in mind.

As some work activities give rise to risks which can only be controlled by adherence to proper procedures, employees are issued with written safe working procedures which should be adhered to at all times.

**Standard Operating Procedures/Safety manuals/Codes of Practice include:**

- Laboratory manuals
- SOP for use of High Pressure Gas Cylinders
- SOP for use of Liquid Nitrogen
- SOP for use in Radioactive Source Procurement, Handling, Storage and Transport
- SOP for use of Lasers
- SOP for use of Didactic X-ray apparatus

Management shall keep a watching brief on safety matters and where necessary adjust or alter systems of work to make them as safe as is reasonably practicable.

## **PROCUREMENT CONTROL**

The purchasing of equipment, plant and substances is subject to the provisions of the *Safety, Health and Welfare at Work Act 2005* and associated regulations, thus all equipment, plant or substances will undergo risk assessment prior to acceptance into the Institute. The School of Physics follows all the guidelines as per the Parent Safety Statement and ensures that a risk assessment is carried out before any chemical agent, equipment/machinery or contractor /service provider is engaged by the School of Physics.

## **INSPECTION PROCEDURES**

All locations of work will be periodically inspected by a representative from the Health & Safety Office accompanied by local management and the Safety Representative. The Head of School of Physics will ensure non-conformances identified are rectified and a log maintained.

Where in the opinion of the Health & Safety Officer or other competent officer, there is a risk of serious injury and immediate risk to individuals, he/she will have the authority to advise that the activity is stopped until adequate steps have been taken to eliminate risk or if possible reduced to an acceptable level. Where the risk cannot be reduced to an acceptable level and finance is not available, the Head of School of Physics shall ensure the activity is ceased.

In accordance with statutory requirements, certain examinations, testing and inspections are carried out on specific items. A list of those items, the frequency of inspection and the testing body is presented below:

### **School of Physics**

## **TESTING & INSPECTION**

<b>Item</b>	<b>Location</b>	<b>Test Frequency</b>	<b>Test Company Details</b>
Sealed radioactive sources	KE1-040	Biennially	RPO
Radioactive sources visual check	KE1-040	Monthly	RPS
Radiation Detector	KE1-040	Annually	RPO
Gas cylinders	KE1-041	Annually	BOC

## TRAINING

Health and Safety training is a legal requirement specified by the Safety, Health and Welfare at Work Act, 2005. It is also Institute Policy that all employees attend such health and safety training and assessment. Please see Health and [Safety Training Policy for Staff](#).

Each employee will be made aware of emergency action plans and arrangements pertinent to their workplace as per section 11 of the 2005 Act at induction by completing the online Emergency Response Training (ERT) programme.

In addition to our statutory duty to employees, DIT seeks to provide such training as is necessary to enable the students to undertake their studies in a manner which, in so far as it is reasonably practicable, is safe and does not give rise to risks to health or expose the individual student or other persons to unacceptable levels of risk. The provision and extent of any necessary training is dependent upon the nature of the academic discipline being pursued, the experience and disposition of the students involved, their familiarity with any equipment/substances to be utilised, the environment/conditions where the activities may be discharged, and the extent to which supervision is necessary and available. Risk assessments will highlight where additional student training is required.

### **Training required for the School of Physics includes:**

#### **Mandatory Training:**

- Emergency Response Training (ERT)
- Manual Handling
- Emergency First-aid for all staff working in laboratories
- Health & Safety Responsibilities: Management Responsibilities
- Health & Safety Responsibilities: Management Workshops

#### **Specialist Training:**

- Gas Safety (where required)
- Occupational First-aid Training
- Radiation Safety and Radiation Awareness Training

## EMERGENCY PLANNING AND RESPONSE

### **SERIOUS INCIDENT/EMERGENCY**

- Dial 112/999 (You may need to dial “0” for an outside line)
- Contact DIT Health & Safety Officer - 086 3891080

### **REQUIRES FIRST-AID**

- Seek School of Physics first-aider – see Contacts page.
- Injured unwell staff/students:

#### Occupational Health Officers

Yvonne McArdle                      087 9809135

- Injured/Unwell Students:

#### Student Health Centres

Southside                      01 402 3051

Northside                      01 402 3614

**If serious/after 5pm/in doubt, go directly to local A & E/local GP**



### **REQUIRES FURTHER ATTENTION**

- Staff members should attend their local GP
- Students should attend the Student Health Centre
- Structural safety matters - Should be referred to the local Buildings Maintenance Manager
- Operational safety matters - Should be documented on a Hazard Report Form and sent to the Health & Safety Office ([www.dit.ie/safework](http://www.dit.ie/safework))

### **FIRE & EVACUATION** **SCHOOL OF PHYSICS STAFF**

#### **INSTRUCTIONS ON DISCOVERING A FIRE (all staff, students, visitors, contractors/service providers etc.)**

- Activate the nearest fire alarm point
- Leave the building using the nearest exit route
- Disperse from the building and move away to place of safety
- Do not use the lift
- Do not re-enter the building until the “all clear” has been given

#### **INSTRUCTIONS ON HEARING THE EVACUATION ALARM OR OTHER WARNING (all staff, students, visitors, contractors/service providers, first-aiders etc.)**

##### **Objectives:**

To outline actions to be taken by the School of Physics staff in the event of an Alarm Activation

##### **Duties:**

##### **On hearing an alarm activation or other warning:**

- Instruct students and staff to leave DIT, Kevin Street (Physics are mainly 1<sup>st</sup> floor, main building)
- All students in classrooms should be led by lecturers/technicians
- All visitors should be escorted to safety by the person they are visiting
- Anyone in common areas or moving between areas, should immediately join the lines of people exiting
- Shut down equipment if safe to do so and time permits
- Close windows and doors to confine smoke/fire
- “Sweep search” the area specify area (laboratories, offices, classrooms, lecture theatres, sanitary facilities, storage areas etc.), evacuate the building immediately by the nearest available exit. Marshals should then leave immediately via the nearest escape route
- If required, assist any individuals to evacuate the area\*
- Form a single file on both sides of the corridor or stairway, leaving the centre passageway clear
- Do not delay or stop to collect personal belongings
- Do not use the lift
- If heavy smoke present, try to find another exit or crouch low to the floor
- All doors should be closed (not locked) by the last person in the line
- Report to your Assembly Points: **New Bride Street and Camden Row**
- All evacuation marshals/sweepers, building maintenance personnel, Heads of School of Physics, first-aiders should assemble at the assembly points to check in, reporting to the Incident Controller details of any casualties or people needing assistance with evacuation. This information is then given by the Incident Controller to the Emergency Services

- Confirm to the Incident Controller that the area has been cleared and report details of any casualties or people needing assistance with evacuation to the Incident Controller
- Do not return to the building until instructed to do so by the Incident Controller

\* Separate personal emergency egress plans (PEEP) have been prepared for people with disabilities

**YOU SHOULD FAMILIARISE YOURSELF WITH THE LOCATIONS OF THE FOLLOWING:**

- Escape routes
- Fire alarm call points
- Fire extinguishers and blankets
- Fire assembly points

The Assembly points for DIT, Kevin Street are:

1. **New Bride Street**
2. **Camden Row**

<p><b>New Bride Street</b></p>	
<p><b>Camden Row</b></p>	

Your Incident Controller is: **Porter on Duty**

**Evacuation Marshals include:**

- Dr. John Doran
- Siobhán Daly
- Eva Doyle
- Jane Torris
- James Callis
- Alexander Campbell
- Anne Scully

The School of Physics will ensure that sufficient evacuation marshals are appointed on an ongoing basis to provide an effective service.

Your Incident Controller is: **Porter on Duty**

General Rule of Thumb – all staff should act as “sweepers” in the event of an emergency, checking laboratories, offices, classrooms, lecture theatres, sanitary facilities, storage areas etc. as they exit to ensure that as they exit everywhere has been cleared.

## **YOU SHOULD NOT PUT YOURSELF IN DANGER AT ANY TIME**

### **FIRST-AID**

- An emergency first-aid kit and automatic external defibrillator (AED) is available at the front desk/reception area
- A list of Institute Staff who have completed training in first-aid/AED is available on the [health and safety website](#)
- First-aid kits are available in each laboratory within the School of Physics
- All Staff working in a laboratory within the School of Physics must complete one-day emergency first-aid training. This is as per the DIT Health & Safety Training Policy.

### **Trained First-aiders include:**

<b>Name</b>	<b>Department</b>	<b>Location</b>	<b>Extension</b>	<b>Expiry Date</b>
Carol Armstrong	Optometry	KE2 - 026	4932	8-11-2014
Robert Howard	Physics	KE3 - 023	4952	9-01-2015
Jane Torris	Physics	KE1 - 011	4870	9-03-2016

### **First-aid kits are located in:**

- Laboratory KE1 010
- Laboratory KE1 012
- Workshop KE1 011
- Laboratory KE1 016 - Research
- Laboratory KE1 034
- Laboratory KE1 035
- Laboratory KE1 039
- Laboratory KE1 040
- Laboratory KE1 041
- Laboratory KE2 015 - Optometry
- Laboratory KE2 028 - Optometry
- Office B32 - IEO

Please report any used items to the designated person in charge who is responsible for monitoring the contents and ensuring their replacement.

### **Further Treatment/Incident Report Forms**

- Staff may refer students to the Student Health Centre in DIT, Aungier Street at 01 402 3051 or contact the Emergency Services on 112/0999 if an incident is urgent
- Incident Report forms are available from the Front desk/Reception. When completed and signed the top white copy should be sent the DIT Health & Safety Officer
- An Occupational Health Officer (Yvonne McArdle) is available at 087 9809135 weekdays 9:00 am – 5:00 pm to deal with the occupational health, safety and welfare needs of all staff and students and to provide a backup first-aid service

## **INCIDENT REPORTING AND INVESTIGATION**

The Institute has a statutory duty to record all incidents and report certain types of incidents and dangerous occurrences to the Health and Safety Authority (HSA). Therefore all incidents resulting in personal injury, damage to property, dangerous occurrences or near miss e.g. must be reported immediately to your Manager/Supervisor.

The incident report form must be forwarded to the Health & Safety Officer within 24 hours of the incident occurring or as soon as possible. Incident report forms are available at the front desk/reception area.

## **HAZARD REPORTING**

DIT recognises the part that its staff/students/visitors and contractors/service providers have to play in the reporting of hazards in the workplace. There is a report form to formally identify and report hazards. If the hazard is a structural issue, it should be reported immediately to the local Building Maintenance Manager and if it is an operational safety issue, it should be reported to local management using the Institute's Hazard Report Form available on the [health and safety website](#).

## **RADIATION SAFETY**

In its use of radiation sources the School of Physics operates according to the procedures approved by the Radiation Protection Advisory Committee. The Radiation Protection Supervisor for the School is Jane Torris. Copies of the Radiation Protection Manual are available in all of the laboratories in which radiation sources may be used and is available on the school's web-based Staff collaborative area. Detailed procedures for the management and checking of radiation sources have long been in place, and have been reviewed, and reinforced during 2014.

## **MANAGEMENT OF CONTRACTORS/SERVICE PROVIDERS**

All work undertaken by outside contractors/service providers on behalf of the School of Physics must be carried out under a Buildings Office 'Permit to Work'.

## **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

It is the policy of DIT to eliminate all hazards where reasonably practicable. DIT will assess what PPE appropriate to the task/work environment is required only as a last resort when further risk reduction is not feasible.

All PPE and safety equipment purchased by the School of Physics must be of approved standards and comply with relevant EC Directives regarding design and manufacture. Defects shall be reported to Managers/Supervisors.

The various areas where PPE must be worn are outlined in the departmental risk assessments. This is further complemented with signage. PPE shall be provided and worn in designated areas and whilst carrying out specific tasks, based on the risk assessments.

All PPE must be appropriate for the risks involved without it leading to increased risk. It should be chosen based on assessment and in consultation with staff members. The PPE should be used only for the purpose specified and where it is necessary to wear simultaneously more than one item of PPE, they must be compatible with each other and continue to be effective against the risks involved. Staff should report immediately when the PPE is faulty or defective or if they have any medical condition that may affect the correct use of the PPE.

PPE should be of a type suitable for the conditions in the workplace and take account of the user's state of health. It is in principle intended for one's personal use only, however if it is necessary for an item of PPE to be worn or used by more than one person, measures should be taken to ensure that it does not create any health or hygiene problems for the users. The supply, issue and recording of all PPE is the responsibility of Supervisors. Employees and students must be informed of all risks they are being protected from, instructed on the use of the PPE and given adequate information, training and demonstration in the wearing of such equipment and the level of protection afforded by its use. Every person provided with PPE must take reasonable care of such equipment and must make proper use of it where there is a foreseeable risk of injury and where they have been instructed to do so. They must also ensure that it is returned to storage subsequent to use. Supervision and monitoring are required to ensure PPE is used/worn.

Staff shall inform any person in the area including contractors/service providers, students and visitors of the statutory and local policies in place with regard to PPE.

### **PPE in the School of Physics**

In general it is unnecessary to wear PPE in undergraduate laboratories in the School of Physics.

Undergraduate Student projects may require each Student to wear the following:

- A white lab coat
- Disposable gloves
- Goggles

This is indicated at the beginning of the experimental procedure.

Sealed radioactive sources are handled only with tweezers/forceps provided for this purpose.

When working with lasers of 3b or above, it is necessary to wear approved Laser safety goggles.

### **Disinfection Procedures**

The disinfectants used for disinfection of contaminated laboratory equipment and work area are as follows:

- Perasafe Sterilant
- Methylated spirit 70%
- Fortisan Antibacterial hand soap
- Disinfectant Surface Wipes
- Hand Sanitiser Wipes

Perasafe is a chemical sterilant used in the laboratory for safe, effective infection control. It is proven effective against Viruses (including HIV/AIDS, Hepatitis B & C), bacteria (*Ps. Aeruginosa*), Mycobacteria (MIA, TB), fungi and spores. A solution is made up by dissolving 16.2g of Perasafe powder per 1L of tepid water. The instrument/device is then immersed for 10 minutes, rinsed in sterile water and allowed to air dry. The life of the Perasafe solution is for 24 hours after activation and must be discarded after 24 hours use. Methylated spirit is used as an aseptic technique for biological experiments (e.g. to sterilise necks of culture medium bottles). Finally Fortisan Antibacterial soap is used for personal sterilisation of hands.

## **ERGONOMICS**

All new equipment and machines, tools, work methods, work procedures and work stations should be assessed for ergonomic hazards prior to being brought into use. The Health & Safety Officer should be informed of the risk assessment process and will advise of competent people to assist with the risk assessment.

Staff should consider ergonomic standards when designing new workstations and layout of new offices.

It is the responsibility of the Head of School of Physics to ensure that all information on ergonomic controls is communicated to employees and students via circulars, team briefings or other means. He should also ensure that all problems identified are addressed and brought to the attention of the Health & Safety Officer.

## **WELFARE PROVISIONS**

In accordance with legislation, Dublin Institute of Technology is committed to providing welfare facilities which are available to all staff which include the following:

- ✓ Adequate and suitable sanitary and washing and drying facilities with hot and cold running water maintained in a clean and hygienic condition
  - ✓ Adequate number of lavatories and washbasins with hot and cold running water
  - ✓ Adequate and suitable showers for employees if required by the nature of the work
  - ✓ An adequate supply of potable drinking water at suitable points conveniently accessible to all employees, tested by the Buildings Office
  - ✓ Suitable facilities for sitting/other ergonomic support, in the case where work can be done in a seated position
  - ✓ Suitable and adequate facilities for boiling water and taking meals or reasonable access to other suitable and adequate facilities are available in the main canteen (Annexe), the staffroom (4<sup>th</sup> floor, main building) or in the small staffroom (2<sup>nd</sup> floor) when the canteen/staffroom are closed
  - ✓ Easily accessible rest rooms/areas with seats with backs
  - ✓ Adequate provision for drying wet or damp work clothes
  - ✓ Adequate ventilation, temperature and lighting
  - ✓ Fire detection and fire fighting equipment
  - ✓ Emergency routes and exits
  - ✓ Pedestrian and traffic management systems
  - ✓ Clean and well maintained interior walls, floors and traffic routes
  - ✓ Rest facilities for pregnant ladies or breastfeeding mothers are available in Room 225, Kevin Street
- Everyone is obliged to care for these facilities and must not misuse them. All welfare provisions should be maintained in a clean safe condition

- Arrangements for regular cleaning of premises and removal of waste should be made by the local Building Maintenance Manager. Cleaning and waste disposal are managed by Noonan Cleaners. Arrangements for cleaning and waste disposal is outlined in the risk assessments below
- Drinking water is available to all staff in the main canteen (Annexe) and the staffroom (4<sup>th</sup> floor, main building).

## **SENSITIVE WORK GROUPS**

### **Protection of Children and Young Persons**

In cases where children must be present on Institute premises and therefore affected by our acts/omissions, sufficient notification must be given to the Health & Safety Office by the DIT host representative, of the situation, so that an appropriate risk assessment may be carried out. When on DIT property, the parents/guardians/host representative charged with responsibility for bringing the child onsite, must be responsible for that child and ensure that at all times they are supervised and protected from activities, processes, equipment, machinery, agents etc.

#### **Examples where children are on site include:**

- Transition year students
- Open days
- School visits
- Science Week (Primary & Second Level Students)

**All staff must familiarise themselves with the DIT Child Protection Policy. (DIT HR website)**

The School of Physics welcomes between 12 – 15 Transition year students twice per annum during the months of November and March for a structured introduction to college courses and programmes. The transition year students are the responsibility of lecturers/demonstrators for the duration of this introductory session only and the School of Physics takes no responsibility for transition year students before or after this session. Door window panels are in place in all teaching classrooms and laboratories for the protection of students and staff.

The School of Physics also welcomes children and young persons for open days, science week and other similar events. During these events, young persons are under the care and responsibility of teachers/parents/guardians/carers.

### **Pregnant Post-Natal and Breastfeeding Employees/Students**

The *Safety, Health and Welfare at Work (General Application) Regulations 2007*, places a duty on employers to assess the risks to determine any possible effects on new/expectant mothers resulting from any activity at the place of work.

- Each risk assessment will identify hazards in the workplace that could pose a health and safety risk to new and expectant mothers
- Where the assessment reveals a risk, then appropriate preventive or protective measures will be taken.
- Pregnant employees/students should advise their Line Manager and the DIT Health & Safety Office of their condition as soon as they are aware they are pregnant so that a confidential pregnancy risk assessment may be carried out
- On returning to work/college any new mothers who are breastfeeding and require facilities should contact the Health & Safety Office



## **LONE AND OUT OF HOURS ACCESS**

Lone working/out of hours access takes place in the School of Physics in the FOCAS Institute as per the policies and procedures of the FOCAS Institute.

## **WORK PLACEMENT**

Work placement currently takes place in the School of Physics. Within Ireland, students are covered by DIT Liability Insurance and the Work Placement Providers should have Liability Insurance as required by law (Safety, Health and Welfare at Work Act 2005). Students must take out personal insurance when an international placement occurs. Work placements are carefully selected by the School of Physics placement co-ordinators and the placement coordinator liaises closely with placement mentors, supervisors and students. A School of Physics Placement Handbook is provided to all students undertaking a placement position. The handbook outlines the responsibility of each student and the school (see Appendix 1).

Work placement fact sheets are available for all host employers/organisations, DIT students and DIT mentors, and must be studied before arranging and undertaking any work placement.

## **TRIPS/TRAVEL**

Examples of Trips include visits to:

- Educational Institutes
- Hospitals
- Industry

Staff must complete a risk assessment prior to trips(see Appendix 2) and Students must read and sign that they have read and understood their Guidelines for trips/travel (see Appendix 2(A) and 2(B)). The risk assessment must be signed by the Head of School and a copy forwarded to the DIT Health and Safety Office at least one week in advance of the trip.

## **STAFF/STUDENTS WITH DISABILITIES**

When a disability is notified to the Disability Service, Health & Safety Office or the Head of School, specific risk assessments will be completed to ensure that the health and safety needs of staff and students with permanent/temporary disabilities are taken into account. Preventative and proactive measures will be put in place following the risk assessment if specific hazards are identified. Personal emergency egress plans (PEEPs) will also be prepared if required. The Disability Liaison Officer will provide specialist and competent advice and liaise with the Health & Safety Officer, Occupational Health Officers, College Manager and Building Maintenance Manager. The onus is on visitors with a disability to notify staff at the front desk, who may be able to assist in evacuation if required.

Please ensure all staff and students are familiar with the procedure and are referred to relevant services where necessary.

## **HEALTH SURVEILLANCE**

Risk assessments will determine if health surveillance is required. Health Surveillance is made available to all staff appropriate to the health and safety risks present and facilitated by the Health & Safety Office. In certain circumstances, staff and students may be referred to our external

Occupational Health Physician for a health assessment in relation to their work/studies to ensure that we can put in place any additional corrective action if required.

Eye tests are available for regular visual display unit users at the National Optometry Centre. Please familiarise yourself with the eye test policy which is available on the [health and safety website](#). Staff who require glasses are required to have prescription safety glasses which are provided through the NOC.

#### **WORKPLACE DRUGS, INTOXICANTS AND ALCOHOL**

An employee/student must ensure that he or she is not under the influence of an intoxicant to the extent that he or she is in such a state as to endanger his or her own safety, health or welfare or that of any other person. Contraventions will be dealt with as per DIT disciplinary procedures.

#### **DIGNITY AT WORK ANTI BULLYING & HARASSMENT POLICY AND PROCEDURES**

The Institute's Dignity at Work Anti Bullying & Harassment Policy and Procedures deals with complaints against members of staff in the workplace which also includes work associated events such as meetings, conferences and work related social events, whether on the premises or off site. Bullying or harassment of staff/students will not be tolerated. Please ensure that all staff are familiar with the relevant [policy/procedure](#).

#### **STRESS**

The risk assessment will identify any areas where work-related stress is a hazard and controls will be implemented to eliminate this hazard. The HR department should be consulted immediately by the Head of School if an issue regarding stress is highlighted by a staff member or a medical certificate. An Employee Assistance Programme (EAP) is available to all staff. Students should liaise with their tutors in relation to issues regarding stress. Tutors are appointed for groups of students. Students may also seek assistance from the Student Health Centre and Student Counselling Service.

#### **AUDIT, REVIEW AND COMMUNICATION**

The School of Physics ensures that periodic health and safety audits are completed and a review of all Safety Statements and documentation takes place. This will be approved by DIT SLT Health and Safety Sub-Committee. All changes will be communicated to all staff, students, visitors and contractors/service providers. The most recent revision of all Safety Statements will be available on the DIT safety website and from the School of Physics Administrator.

#### **DOCUMENT CONTROL**

This document is a controlled document and as such any updates, review and distribution will be in accordance with DIT's standards for such documents. Only controlled copies will be updated when required.

The Head of School of Physics will issue new documents after appropriate consultation and agreement with relevant parties.

## HAZARD IDENTIFICATION, RISK ASSESSMENT AND CONTROL MEASURES

It is the policy of the Institute to identify hazards in the workplace, assess the risk to safety and health and control these risks as far as is reasonably practicable.

The Parent Safety Statement outlines the generic hazards, which have been identified and the control measures that are in place.

**It is incumbent on those responsible for managing their areas of work, at all levels, not merely to observe the arrangements described in the Parent Safety Statement, but to assess their applicability within their area of authority and where necessary to refine and extend them to deal with particular local situations. The management of the Dublin Institute of Technology is committed to ongoing identification of hazards, assessment of the appropriate risks and the introduction of controls to deal with them. Management at all levels have a responsibility to apply this principle within their area of authority.**

Staff are encouraged to become involved and participate in safety, health & welfare issues. In particular, they are encouraged to identify any potential hazards, which may exist, and to ensure that a risk assessment is carried out.

Ongoing hazard inspections will be carried out periodically to ensure that the information is updated, controls are adequate and where necessary the risks are reassessed.

A **“hazard”** is taken to mean “any substance, article, material or practice which has the potential to cause harm to the safety, health or welfare of staff, students, visitors, contractors/service providers in DIT”. Hazards may be classified as:

- Physical
- Chemical
- Biological
- Operational
- Human Factors

**“Risk”** is a measure of the probability of the event occurring and the severity and extent of the injury, ill health or damage it may cause if it did occur.

Risks may be classified as:

- High
- Medium
- Low

High	Occurrence is probable, and could cause a fatality, serious injury or serious ill health to an individual or group of people.
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Medium	Occurrence is possible and could cause injury or ill health to an individual or a small group of people.
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Low	Occurrence is possible but unlikely, only minor injury would be caused and would probably be limited to a single individual.
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The classification of hazards should be used to develop the priority of control measures, remedial actions, and the allocation of resources. As a general rule, the control measures will seek to eliminate any risk classified as high and reduce the potential of risks classified as medium or low.

Risk control measures are a combination of:

<b>Elimination</b>	Where the hazard is removed
<b>Substitution</b>	Where the hazard is exchanged for one of lesser classification
<b>Isolation</b>	Where the hazard is contained (e.g. Enclosures, guards etc.)
<b>Engineering</b>	Where common systems are used to protect all exposed to risk (e.g. Fire alarms, ventilation systems etc.)
<b>Procedure</b>	Where procedural controls are used. This will include procedures such as Standard Operating Procedures and training and the provision of information may apply to any and all of the above control measures
<b>Personal Protection</b>	Whereby the above means, the risk cannot be reasonably be reduced further, but an unacceptable level of risk remains, the team members are individually protected from the risk

**Risk Assessments for School of Physics**

Risk Assessments for School of Physics							
PHYSICAL			Control Measures		Risk H/M/L	Person(s) Responsible	Target Date / Status
Ref	Hazard	Hazard Potential & Consequences	Current Controls	Further Actions Required			
001	<b>Fire Emergency Response &amp; Evacuation</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Staff unfamiliar with evacuation procedure</li> <li>• Lack of evacuation drills</li> <li>• Use of naked flames</li> <li>• Improper storage of flammable or combustible materials</li> <li>• Smoking in undesignated areas</li> <li>• Faulty electrics</li> <li>• Inadequate emergency equipment</li> <li>• Misuse of equipment</li> <li>• Gas leak</li> </ul>	<ul style="list-style-type: none"> <li>• Staff trained in ERT</li> <li>• Sufficient firefighting equipment available (break glass units, fire extinguishers, fire blankets)</li> <li>• Sufficient fire extinguishers in place</li> <li>• Firefighting equipment and detection systems maintained and tested</li> <li>• Evacuation signage in place</li> <li>• Emergency and first-aid procedures posted</li> <li>• Good housekeeping standards maintained</li> <li>• Several means of escape present and known to occupants</li> <li>• Evacuation procedure practiced each semester</li> <li>• Assembly point known to occupants</li> </ul>	<ul style="list-style-type: none"> <li>• Remove any material that blocks vision panels on doors</li> <li>• Reduce fire load, especially of paper, in offices</li> <li>• Maintain current controls</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Buildings Office</b>	<b>Ongoing</b>

			<ul style="list-style-type: none"> <li>• Occupants escort visitors out</li> <li>• All exits are clear and free from obstructions</li> <li>• Staff members act as evacuation marshals</li> <li>• No smoking policy in place</li> <li>• Scheduled maintenance of buildings services takes place (heating, electricity, ventilation etc.)</li> <li>• Hot work permit system in place where needed</li> <li>• Compliance with building regulations</li> <li>• Site-specific Emergency Manuals available</li> <li>• Vision panels on doors where required</li> <li>• Fire blankets available in each lab</li> <li>• Please see Bunsen Burners</li> <li>• Signage on lab doors re unauthorised access</li> </ul>				
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PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
002	<b>Manual Handling</b>  <b>Examples: Moving apparatus, furniture, and gas cylinders etc.</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Manual Handling-related injuries, e.g. back injury</li> <li>• Slips, trips, falls</li> <li>• Contact with hazardous materials, substances etc.</li> </ul>	<ul style="list-style-type: none"> <li>• All staff compliant with and adhere to mandatory manual handling training</li> <li>• Trolleys, step ladders and stools available for staff</li> <li>• Manual handling risk assessments available to all staff, contact local Occupational Health Officer</li> <li>• PPE used/worn where necessary</li> <li>• Good housekeeping</li> <li>• Suitable environment</li> <li>• Implement team lifting were required (from colleagues)</li> <li>• Adequate lighting maintained</li> <li>• Report issues to Line manager</li> <li>• Items not stored above shoulder height</li> <li>• Lift used instead of stairs</li> </ul>	<ul style="list-style-type: none"> <li>• Implement manual handling training</li> <li>• Refresher training to be carried out where necessary</li> <li>• Maintain controls</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	School of Physics Staff and Students	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
003	<b>Work Equipment, Machinery &amp; Tools</b>  <a href="#">See Specific Hazards Risk Assessments</a>	<ul style="list-style-type: none"> <li>Noise</li> <li>Vibration</li> <li>Entanglement/ crushing</li> <li>Electrics</li> <li>Fumes/dust</li> <li>Contact with moving parts</li> </ul>	<ul style="list-style-type: none"> <li>Safety Guards</li> <li>SOP; use and maintenance</li> <li>Training given and records kept</li> <li>Service and maintenance</li> <li>Signage in place</li> <li>Supervision of students</li> <li>Visual check before use</li> <li>Report defects to line manager</li> <li>Emergency stop</li> <li>PPE worn/used</li> <li>Follow manufacturer's instructions</li> <li>Shut down after use and end of day</li> <li>CE mark or equivalent mark as minimum</li> <li>Damaged equipment marked and taken out of service</li> </ul>	<ul style="list-style-type: none"> <li>Maintain current controls</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	School of Physics Staff and Students	Ongoing



PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
004	<b>Portable Appliances &amp; Handheld Equipment</b>  <b>e.g. Laptops</b>	<ul style="list-style-type: none"> <li>• Entanglement/ crushing</li> <li>• Electrics</li> <li>• Fumes/dust</li> <li>• Slips, trips and falls from cables</li> <li>• See also Ergonomics</li> </ul>	<ul style="list-style-type: none"> <li>• Service and maintenance (PAT) where required</li> <li>• Visual check before use</li> <li>• Report defects to Line Manager</li> <li>• CE mark</li> <li>• Shut down after use and end of day</li> <li>• Follow manufacturer's instructions</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain current controls</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	<b>School of Physics Staff and Students</b>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
005	<b>Noise</b>  <b>Examples:</b> <ul style="list-style-type: none"> <li>• Noise measurement experiments</li> </ul> <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Hearing loss/damage</li> <li>• Disruption/ distraction</li> <li>• Interference with communications and warning signals</li> <li>• Fatigue</li> <li>• Tinnitus</li> <li>• Students unable to hear instructions</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure times very short</li> <li>• Noise &lt;80dB</li> <li>• Monitoring can be carried out by the DIT Health &amp; Safety Office where need arises</li> <li>• Engineering controls</li> <li>• Information and training provided to staff and students</li> <li>• Follow manufacturer's instructions</li> </ul>	<ul style="list-style-type: none"> <li>• Contact DIT Health &amp; Safety Office where circumstances change / monitoring is required</li> </ul>	<b>With current controls:</b> <b>L</b>  <b>With Actions applied:</b> <b>L</b>	School of Physics Staff and Students	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
006	<p><b>Structural:</b> Floors Walls Ceilings Doors Fixed Shelving</p> <p><b>Who is harmed:</b></p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Personal Injury</li> <li>• Slips, Trips and Falls</li> <li>• Collapse</li> <li>• Trapping</li> </ul>	<ul style="list-style-type: none"> <li>• Building appears to be structurally sound</li> <li>• Defects and hazards are reported to the Buildings Office through online hazard reporting</li> <li>• Doors open and close safely</li> <li>• Vision panels in place on doors where required</li> </ul>	<ul style="list-style-type: none"> <li>• Remove any material that blocks vision panels on doors</li> <li>• Replace ceiling tiles that are missing</li> <li>• Repair loose/missing door handles</li> <li>• Repair door locks</li> <li>• Contact Buildings Office if problems arise</li> </ul>	<p><b>With current controls:</b> <b>L</b></p> <p><b>With Actions applied:</b> <b>L</b></p>	<p><b>School of Physics Staff and Students</b></p> <p><b>DIT Buildings Office</b></p>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
007	<p><b>Slips, Trips &amp; Falls</b></p> <p>Flooring is carpet in offices; tiles or non-slip linoleum is present in labs</p> <p>Who is harmed:</p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Slips, trips and falls</li> <li>• Uneven surfaces</li> <li>• Wet floor conditions</li> <li>• Raised obstacles</li> </ul>	<ul style="list-style-type: none"> <li>• All routes kept clear and unobstructed</li> <li>• Door mats provided at entrance (main entrance)</li> <li>• Handrail on steps/stairs</li> <li>• Stair nosing fitted with anti-slip finish</li> <li>• Adequate lighting</li> <li>• SOP for cleaning – floors generally cleaned early morning See Noonan risk assessment</li> <li>• SOP for spillages</li> <li>• Use of warning signage where appropriate</li> <li>• Hazards are reported</li> <li>• Changes in floor levels identified and marked</li> <li>• Good housekeeping</li> <li>• Retort stands stored above waist height</li> </ul>	<ul style="list-style-type: none"> <li>• Cables to be positioned/fixed so as to avoid slips, trips or falls</li> <li>• Fire load to be reduced (especially of paper) in offices</li> <li>• Housekeeping to be improved</li> <li>• Maintain current controls</li> <li>• Buildings Office to ensure upkeep and maintenance of internal and external access and egress routes e.g. walkways, paths, driveways, floors, corridors, steps and stairs</li> </ul>	<p>With current controls: <b>L</b></p> <p>With Actions applied: <b>L</b></p>	<p>School of Physics Staff and Students</p> <p>DIT Buildings Office</p>	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
008	<p><b>Access and Egress</b></p> <p><b>Opening Times:</b> See DIT website</p> <p><b>Who is harmed:</b></p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Security threats</li> <li>• Threats from public</li> <li>• Violence / Assault</li> <li>• Unwanted visitors</li> <li>• Unauthorised access</li> </ul>	<ul style="list-style-type: none"> <li>• Front desk/Reception is manned by a Porter</li> <li>• CCTV in place</li> <li>• Suspicious activity reported to Porters</li> <li>• ERT covers procedure for suspicious activity</li> <li>• Good housekeeping</li> </ul> <p><b>Laboratories</b></p> <ul style="list-style-type: none"> <li>• Students are not permitted to enter labs without a staff member</li> <li>• Signage present on lab doors regarding unauthorised access</li> <li>• Appropriate signage on lab doors where hazardous substances are in use/stored</li> <li>• Hazardous chemical stores locked and chemical inventory is updated and maintained</li> <li>• All Labs locked when not in use</li> </ul>	<ul style="list-style-type: none"> <li>• Report suspicious activity to Porters or Gardaí immediately</li> <li>• Ensure all substances are put away as soon as possible where practicable and necessary</li> </ul>	<p><b>With current controls:</b> L</p> <p><b>With Actions applied:</b> L</p>	<p>School of Physics Staff and Students</p> <p>DIT Buildings Office</p>	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
009	<b>Photocopiers &amp; Printers</b>  <b>Shared staff printers: Photocopiers available in School Administration Office &amp; Staff Offices</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Changing toner etc.: chemical contact</li> <li>• Clearing jams: burns</li> <li>• Not wearing gloves</li> <li>• Not turning off electrical supply</li> <li>• Incorrect disposal</li> <li>• Personal injury</li> <li>• Lack of information / training</li> </ul>	<ul style="list-style-type: none"> <li>• Toner / print cartridges changed by staff members who wash hands after use</li> <li>• Follow instructions on printer when clearing jams</li> <li>• Disposal as per manufacturer's directions</li> <li>• Printer Maintenance by DIT IS where required</li> <li>• Photocopier maintenance by MJ Flood where required</li> <li>• Correct disposal of waste cartridges</li> <li>• Follow manufacturer's instructions</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Gloves to be supplied and worn while changing toner</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT IS</b>  <b>MJ Flood</b>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
010	<b>Ergonomics: Office / Workstation</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• MSD's</li> <li>• Upper limb disorders</li> <li>• Poor posture</li> <li>• Back problems</li> <li>• Fatigue</li> <li>• Slips, trips and falls</li> </ul>	<ul style="list-style-type: none"> <li>• Online eLearning programme available</li> <li>• Workstation risk assessments and information and training available from the Health &amp; Safety Office on request</li> <li>• Contact OHO if risk assessments are required</li> <li>• Eye tests available to staff</li> <li>• Adequate services (heating, lighting ventilation) in place</li> <li>• Follow manufacturer's instructions when using equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Maintain Good Housekeeping</li> <li>• Good cable management required</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Health &amp; Safety Office</b>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
011	Mechanical Lifting Systems  • None present	• N/A	• N/A	• N/A	• N/A	• N/A	• N/A



PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
012	<b>Vehicles/ deliveries on site</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Injury to person/struck by vehicle</li> <li>• Poor access and egress</li> </ul>	<ul style="list-style-type: none"> <li>• Deliveries handled by Goods Inwards</li> <li>• Designated area for loading and unloading goods present</li> <li>• Designated walk ways</li> <li>• Separate pedestrian access to car park available from Kevin St.</li> <li>• Car park is authorised access only</li> <li>• CCTV in place</li> <li>• Safe access and egress maintained</li> <li>• Car park spaces marked out clearly</li> <li>• Speed limit in place</li> <li>• Defects reported to DIT Buildings Office</li> <li>• Adequate lighting in place</li> <li>• Hi-vis clothing worn where required</li> </ul>	<ul style="list-style-type: none"> <li>• Staff and students to use walkways provided</li> <li>• Maintain standards</li> <li>• Ensure parking in designated areas only i.e. not in front gas cylinder stores or gas cages</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Buildings Office</b>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
013	<p><b>Hot Surfaces / Liquids / Solids</b></p> <p><b>E.g. Hot plates; Cups of hot beverages</b></p> <p><b>Please see Specific Hazards Risk Assessment</b></p> <p><b>Who is harmed:</b></p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Contact burns</li> <li>• Scalds</li> <li>• Spillage</li> <li>• Exposure to hazardous chemicals and substances</li> </ul>	<ul style="list-style-type: none"> <li>• Lids available for cups</li> <li>• Notify Front desk/Reception of spillages</li> <li>• Spillages cleaned up immediately</li> <li>• SOP in place for spillages: Noonan</li> <li>• Wet floor signage available for spillages</li> <li>• School SOP available for Spillages</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	<p><b>School of Physics Staff and Students</b></p> <p><b>Noonan Cleaners</b></p>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
014	<b>Pressure Systems</b>  <b>Examples</b> <ul style="list-style-type: none"> <li>• Gas cylinders</li> </ul> <b>Please see Specific Hazards Risk Assessment</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Contact burn</li> <li>• Personal injury</li> <li>• Explosion</li> <li>• Spillage</li> <li>• Release of steam/ fluid / air</li> </ul>	<ul style="list-style-type: none"> <li>• SOP in place</li> <li>• Service and maintenance</li> <li>• Training provided to staff</li> <li>• Defects are reported</li> <li>• PPE worn/used</li> <li>• First-aid kit available</li> <li>• Signage in place where required</li> <li>• Follow manufacturer's instructions</li> <li>• Certificate of test examination</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls:</b> <b>L</b>  <b>With Actions applied:</b> <b>L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Buildings Office</b>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
015	<b>Radiation</b>  <b>See SPECIFIC HAZARDS RISK ASSESSMENT</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Radiation Exposure</li> <li>• Irradiation of the skin</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions given at the start of class</li> <li>• Radiation warning door signage in place when sources are in use</li> <li>• Student &amp; Staff usage logged</li> <li>• Tweezers used for all handling</li> <li>• Sources never to be held near the body, or directed towards eyes</li> <li>• Exposure duration kept as short as possible</li> <li>• Sources to be shielded</li> <li>• Wash hands before leaving the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to Section 1.0 of the Safety Statement &amp; to “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>• In the case of an accident/incident – Dr Jacinta Browne (RPO) and Dr John Doran (Head of School) must be notified immediately</li> </ul>	<ul style="list-style-type: none"> <li>• L</li> </ul>	School of Physics Staff and Students	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
016	Vibration  • None present	• N/A	• N/A	• N/A	• N/A	• N/A	• N/A

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
017	<p><b>Services:</b> <b>Heating</b></p> <p>Gas fired central heating in place throughout DIT, Kevin Street</p> <p><b>Who is harmed:</b></p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Environment too hot or cold</li> <li>• Electrical hazards</li> <li>• Misuse of portable heaters</li> <li>• Leaks</li> <li>• Fire</li> <li>• Burns</li> <li>• Carbon monoxide poisoning</li> </ul>	<ul style="list-style-type: none"> <li>• Electrics appear to be up to standard</li> <li>• Cables neatly positioned</li> <li>• Contact Buildings Office if problems /defects arise</li> <li>• Service and maintenance carried out by competent person</li> <li>• Combustible materials kept away from heat source</li> <li>• Heat source kept clear and free from obstruction</li> <li>• Environmental monitoring from the Health &amp; Safety Office on request</li> <li>• Adequate ventilation by openable windows and AC system</li> <li>• Fire detection systems in place: Main building and Annexe building linked</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Reduce fire load, especially of paper, in offices</li> <li>• Contact Buildings Office if problems arise</li> </ul>	<p><b>With current controls:</b> <b>L</b></p> <p><b>With Actions applied:</b> <b>L</b></p>	<p>School of Physics Staff and Students</p> <p>DIT Buildings Office</p>	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
018	<b>Lighting</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate lighting</li> <li>• Glare</li> <li>• Slips, trips, falls</li> </ul>	<ul style="list-style-type: none"> <li>• Light switches easily accessible (height)</li> <li>• Adequate lighting in place</li> <li>• Defects are reported to the Buildings Office</li> <li>• Protective coverings in place where required</li> <li>• Environmental monitoring available from the Health &amp; Safety Office on request</li> <li>• Service and maintenance carried out by competent person</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Contact Buildings Office to replace missing, flickering or blown bulbs</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Buildings Office</b>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
019	<b>Ventilation and temperature</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Environment too hot or cold</li> <li>• Inadequate ventilation</li> <li>• Falls from heights from windows</li> </ul>	<ul style="list-style-type: none"> <li>• All windows openable</li> <li>• Safety catches in place where required</li> <li>• Blinds in place and in working order where required</li> <li>• Suitable equipment available for the opening and closing of windows</li> <li>• Defects are reported to the Buildings Office</li> <li>• Service and maintenance of ventilation system carried out by competent person</li> <li>• Office temperature of at least 17.5°C (after one hour of work)</li> <li>• Environmental monitoring from the Health &amp; Safety Office on request</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls:</b> L  <b>With Actions applied:</b> L	<b>School of Physics Staff and Students</b>  <b>DIT Buildings Office</b>	Ongoing



PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
020	<b>Electricity</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Electric shock</li> <li>• Electrocution</li> <li>• Ignition source</li> <li>• Fire</li> <li>• Explosion</li> <li>• Death</li> <li>• Electrical arcing</li> <li>• Damaged electrical equipment</li> <li>• Use of faulty equipment</li> <li>• Contact with live parts</li> <li>• Unmarked distribution boards</li> <li>• Inadequate electrical installations</li> </ul>	<ul style="list-style-type: none"> <li>• Sufficient numbers of electrical sockets</li> <li>• Electric leads not trailing and good cable management</li> <li>• Sockets are not overloaded</li> <li>• Competent person to carry out repairs / works</li> <li>• All works servicing and testing is carried out as per regulations</li> <li>• Shut down when not in use and end of day</li> <li>• Contact BuildingsOffice if problems arise</li> <li>• Adequate protection for circuit boards, distribution boards etc.</li> <li>• Report defects, take equipment out of use</li> <li>• Good housekeeping</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Buildings Office</b>	<b>Ongoing</b>

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
021	<b>Asbestos</b>  The School use sealed sample blocks as part of a practical  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure to airborne fibres and subsequent illnesses</li> </ul>	<ul style="list-style-type: none"> <li>• School samples are sealed</li> <li>• Buildings Office take advice from appropriate consultants to ensure asbestos is made safe if suspected</li> <li>• DIT Asbestos Register available from the DIT Buildings Office</li> <li>• All known asbestos is sealed and does not pose a threat</li> <li>• DIT will review locations where there is asbestos insitu</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	With current controls: L  With Actions applied: L	DIT Buildings Office	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
022	Confined Spaces	• N/A	• N/A	• N/A	• N/A	• N/A	• N/A

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
023	<p><b>Lasers</b></p> <p>Please see <b>SPECIFIC HAZARDS 2.0</b></p> <p><b>Who is harmed:</b></p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Skin injury</li> <li>• Eye injury</li> <li>• Unauthorised access to restricted areas</li> </ul>	<ul style="list-style-type: none"> <li>• SOP in place for use</li> <li>• Lasers are only present within pieces of equipment</li> <li>• Beam is reflected</li> <li>• Beams are horizontal</li> <li>• Beams are positioned at waist level</li> <li>• Information and training</li> <li>• High Class Laser beam(above 3A) path is enclosed</li> <li>• Signage on door where required</li> <li>• No reflective items permitted e.g. pens or jewellery</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain current controls</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	School of Physics Staff and Students	Ongoing

PHYSICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
024	<b>Construction / Maintenance Work</b>  <b>Examples:</b> <ul style="list-style-type: none"> <li>Noonan Cleaners</li> <li>Building contractors</li> </ul> <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>Staff members</li> <li>Students</li> <li>Visitors</li> <li>Contractors</li> <li>Young persons</li> <li>Pregnant women</li> <li>Postgraduates</li> <li>People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>Unfamiliar with DIT buildings and safety procedures</li> <li>Injury to contractors, staff, students, members of the public</li> </ul>	<ul style="list-style-type: none"> <li>Buildings Office control all contractors and send communication to staff regarding works</li> <li>Front desk/Reception is manned at all times</li> <li>Sign in required</li> <li>Compliance with DIT code of practice for contractors</li> <li>Signage in place</li> <li>eLearning completed before contractors arrive on DIT premises (this includes the need for PPE in laboratories)</li> <li>DIT Contractor safety badge issued and worn</li> <li>Risk assessment and method statements completed and submitted to the Buildings Office</li> <li>Good housekeeping standards maintained</li> <li>Areas of works cordoned off</li> </ul>	<ul style="list-style-type: none"> <li>Maintain standards</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	School of Physics Staff and Students	Ongoing

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
025	<b>Work Activities / Processes</b>  Please see Specific Hazards Risk Assessments						

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
026	<b>Housekeeping</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Slips, trips and falls</li> <li>• Increased fire load</li> <li>• Falling objects</li> <li>• Collisions</li> <li>• Spillages</li> </ul>	<ul style="list-style-type: none"> <li>• Equipment stored on suitable shelving/in suitable cabinets / containers etc.</li> <li>• Retort stands not stored on floor</li> <li>• Fire load kept to a minimum</li> <li>• All routes kept clear and unobstructed</li> <li>• Wet floor signs in place when required</li> <li>• Spillages cleaned up immediately with spill kit</li> <li>• Adequate lighting in place</li> <li>• Adequate waste disposal</li> <li>• Designated chemical stores and equipment stores in place</li> <li>• See controls for slips, trips &amp; falls</li> <li>• Spillages SOP in place</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Reduce fire load, especially of paper, in offices</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	School of Physics Staff and Students	Ongoing

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
027	<p><b>Cleaning</b></p> <p>Cleaning takes place in general before opening of building by Noonan Cleaners: See Noonan Risk Assessment</p> <p>Who is harmed:</p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of cleanliness or hygiene</li> <li>• Manual handling injury</li> <li>• Exposure to hazardous substances</li> <li>• Spillages: slips, trips and falls</li> <li>• Lack of/inappropriate PPE</li> </ul>	<ul style="list-style-type: none"> <li>• Glassware is cleaned after each session</li> <li>• Daily cleaning is carried out by technical officers</li> <li>• Noonan SOPs in place</li> <li>• Noonans clean floors of laboratories; mostly when building is unoccupied:</li> <li>• PPE used/worn where required</li> <li>• Materials and containers adequately labelled</li> <li>• Training and information (chemicals)</li> <li>• Wet floor signage in place when required</li> <li>• Adequate and designated storage area for cleaning materials and equipment</li> <li>• Use of appropriate cleaning equipment</li> <li>• Report defects and hazards</li> <li>• Manual handling training completed &amp; implemented</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<p>With current controls: L</p> <p>With Actions applied: L</p>	<p>School of Physics Staff and Students</p> <p>Noonan Cleaners</p>	Ongoing



OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
028	<b>Waste Disposal &amp; Removal: General</b>  <b>Removal of waste by Noonan Cleaners usually during cleaning</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Waste accumulation</li> <li>• Fire</li> <li>• Sharps injuries</li> <li>• Exposure to bodily fluids</li> <li>• Manual handling injury</li> <li>• Exposure to hazardous substances</li> <li>• Spillages: slips, trips and falls</li> <li>• Lack of/inappropriate PPE</li> </ul>	<ul style="list-style-type: none"> <li>• Recycling bins available: paper, shredding etc.</li> <li>• See Noonan SOP &amp; risk assessment</li> <li>• General waste segregated by Thorntons</li> <li>• Waste removed on a regular basis</li> <li>• PPE worn/used by Noonan Cleaners</li> <li>• Instruction and training given to operators</li> <li>• Labelling of waste where necessary</li> <li>• Designate waste storage area present</li> <li>• Manual handling training completed/implemented</li> <li>• Equipment for transport of waste e.g. trolleys</li> <li>• DIT policy in place: Safe Handling of Sharps &amp; Needle Sticks Policy</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>Noonan Cleaners</b>	<b>Ongoing</b>

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
029	<b>Signage and Documentation</b>  Please see Specific Hazards Risk Assessments  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of knowledge regarding safety procedures</li> </ul>	<b>Signage in place includes:</b> <ul style="list-style-type: none"> <li>• Signage on lab doors regarding radioactive sources, gases (CO<sub>2</sub>, N<sub>2</sub> Ar) and 'No entry' where relevant</li> <li>• Relevant signage posted as per hazards e.g. PPE (safety glasses/lab coat)</li> <li>• Emergency Exit</li> <li>• Emergency First-aid</li> <li>• Evacuation plan</li> <li>• Safety Notice points</li> <li>• Fire Action Notice Points</li> <li>• No Smoking</li> </ul> <b>Other:</b> <ul style="list-style-type: none"> <li>• Emergency contact numbers at Front desk/Reception</li> <li>• Safety booklets/safety wallet cards available</li> <li>• Defects reported to Buildings Office / Health &amp; Safety Office</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls:</b> L  <b>With Actions applied:</b> L	School of Physics Staff and Students  DIT Buildings Office	Ongoing

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
030	<b>Incidents</b>  <b>Hazard Reporting</b>  <b>First-aid</b>   <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of first-aid supplies</li> <li>• Lack of trained first-aiders</li> <li>• Lack of knowledge of procedure in the event of an incident</li> <li>• No reporting of incident(s)</li> <li>• No reporting of hazards</li> </ul>	<b>Each lab has:</b> <ul style="list-style-type: none"> <li>• First-aid kit</li> <li>• Staff trained in first-aid</li> <li>• Emergency numbers</li> <li>• Emergency first-aid procedure posted</li> </ul> <b>Front desk/Reception:</b> <ul style="list-style-type: none"> <li>• Incident report book</li> <li>• AED &amp; first-aid kit</li> <li>• Emergency numbers</li> </ul> <b>General:</b> <ul style="list-style-type: none"> <li>• All incidents are reported immediately and an incident report form completed</li> <li>• First-aid supplies available from OHO on request</li> <li>• List of trained first-aiders &amp; AED users available on the DIT website</li> <li>• Online hazard reporting facility available</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls:</b> <b>L</b>  <b>With Actions applied:</b> <b>L</b>	School of Physics Staff and Students	Ongoing

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
031	Use of Ladders / Working at Height  Staff are not permitted to use ladders/work at height	• N/A	• N/A	• N/A	• N/A	• N/A	• N/A

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
032	Lone Working/ Out of Hours Access  Please see FOCAS Safety Statement	• N/A	• N/A	• N/A	• N/A	• N/A	• N/A

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
033	<b>Work Placement</b>  <b>Examples:</b> <ul style="list-style-type: none"> <li>• Hospitals</li> <li>• Industry</li> <li>• Research</li> <li>• Educational Institutes</li> <li>• Erasmus</li> </ul> <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Injuries</li> <li>• Accidents and incidents</li> <li>• Lack of familiarity with work environment and work practices</li> </ul>	<ul style="list-style-type: none"> <li>• Work placement factsheets provided to participants: contact the Health &amp; Safety Office</li> <li>• Pre-placement induction safety talks: contact the Health &amp; Safety Office</li> <li>• School of Physics Placement Coordinator available</li> <li>• Student Placement Handbook provided</li> <li>• Rules of Conduct in place which must be read and signed by students</li> <li>• Training and supervision given to students where required</li> <li>• All incidents/accidents are reported to DIT</li> <li>• DIT Liability Insurance</li> <li>• Work Placement Liability Insurance in place within Ireland</li> <li>• Erasmus partnership agreement in place</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain current controls</li> <li>• Ensure Student Placement Declaration and Code of Practice is signed by placement student (see Appendix 1)</li> </ul>	<b>With current controls:</b> L  <b>With Actions applied:</b> L	<b>School of Physics Staff and Students</b>  <b>School of Physics Placement Coordinator</b>  <b>DIT Health &amp; Safety Office</b>	Ongoing

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
034	<b>Trips</b>  <b>Examples:</b> <ul style="list-style-type: none"> <li>• Educational Institutes</li> <li>• Hospitals</li> <li>• Industry</li> </ul> <b>Examples of who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Young persons (Registered DIT students, under 18 yrs)</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Injuries</li> <li>• Medical emergencies</li> <li>• Accidents and incidents</li> <li>• Missing persons</li> <li>• Substance abuse</li> <li>• Road Traffic Accidents</li> <li>• Inclement weather</li> <li>• Physical hazards</li> <li>• Chemical hazards</li> <li>• Biological hazards</li> <li>• Human Factors</li> </ul>	<ul style="list-style-type: none"> <li>• DIT Trip risk assessment in place</li> <li>• DIT trip guidelines in place(Appendix 2(A&amp;B))</li> <li>• Separate trip risk assessment template completed for each trip and control measures implemented</li> <li>• Notification must be given of any medical conditions (Health Questionnaire – Appendix A)</li> <li>• Information provided to trip participants</li> <li>• Contact details communicated</li> <li>• Adherence to local rules and Emergency procedures</li> <li>• E-learning programme available to participants on request: Contact the Health and Safety Office</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Ensure risk assessments are carried out for each trip (Appendix 2)</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Health &amp; Safety Office</b>	<b>Ongoing</b>

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
035	<b>Events Hosting</b>  <b>Examples:</b> <ul style="list-style-type: none"> <li>• Placement Poster Event</li> <li>• Awards Ceremonies</li> </ul> <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Injuries</li> <li>• Accidents and incidents</li> <li>• Unfamiliar with DIT premises and emergency plans</li> </ul>	<ul style="list-style-type: none"> <li>• Risk assessment carried out and control measures implemented</li> <li>• Emergency plans in place as per risk assessment</li> <li>• DIT Host informs visitors of evacuation procedures</li> <li>• Report all incidents and accidents to DIT</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Ensure risk assessments are carried out for all work placements</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	School of Physics Staff and Students	Ongoing

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
036	<b>Conferences / Seminars</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Travel to and from</li> <li>• Road traffic accidents</li> <li>• Unfamiliar with venue</li> <li>• Medical emergency</li> <li>• Missing persons</li> </ul>	<ul style="list-style-type: none"> <li>• Taxi vouchers available to staff</li> <li>• Staff obey rules of the road if driving or cycling</li> <li>• Adequate insurance, tax and NCT on vehicles used for transport</li> <li>• Familiarise yourself with local emergency procedures and first-aid arrangements</li> <li>• Report defects and incidents to venue management or Gardaí where necessary</li> <li>• Approval sought from Line Manager as per DIT procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain current controls</li> </ul>	<b>With current controls:</b> L  <b>With Actions applied:</b> L	School of Physics Staff and Students	Ongoing



OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
037	<b>Storage: General</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Explosion, fire, various reactions as a result of improper/incorrect storage of chemicals</li> <li>• Inadequate storage</li> <li>• Improper storage</li> <li>• Inadequate space for safe manual handling</li> <li>• Poor housekeeping</li> <li>• Slips, trips and falls</li> <li>• Unsafe access and egress</li> <li>• Inadequate lighting and/or ventilation</li> </ul>	<ul style="list-style-type: none"> <li>• Only competent staff enter storage areas</li> <li>• Safe access and egress</li> <li>• Storage avoided above shoulder height where possible</li> <li>• Items stored appropriately and segregated where required</li> <li>• Storage cabinets/units secure and fit for purpose</li> <li>• Locking system in place for storage cabinets/units</li> <li>• Step ladder available for accessing higher shelving units</li> <li>• Staff trained in manual handling</li> <li>• Appropriate signage in place</li> <li>• Items not stored in walkways</li> <li>• Defects reported immediately</li> <li>• Adequate lighting and ventilation in place</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Parking in front of chemical and gas storage areas to be prohibited</li> </ul>	<b>With current controls:</b> <b>L</b>  <b>With Actions applied:</b> <b>L</b>	School of Physics Staff and Students	Ongoing

OPERATIONAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
038	<b>Sensitive Work Groups:</b>  <b>Pregnant Employees /Students &amp; Nursing Mothers</b>	<ul style="list-style-type: none"> <li>• Harm to Mother, unborn child or breastfeeding baby</li> <li>• Physical risks</li> <li>• Chemical risks</li> </ul>	<ul style="list-style-type: none"> <li>• Risk assessment carried out for pregnant employees/students and control measures implemented as identified and necessary by Health &amp; Safety Office</li> <li>• Risk assessment will be completed in conjunction with the Line Manager / a representative from the School where necessary regarding exposure to radiation etc.</li> <li>• Room available (Room KE2-025, DIT, Kevin Street) available for resting, breastfeeding and expressing milk</li> <li>• Follow medical advice</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	<p><b>School of Physics Staff and Students</b></p> <p><b>DIT Health &amp; Safety Office</b></p>	<b>Ongoing</b>

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
039	<b>Sensitive Work Groups:</b>  <b>Young Persons (under 18 years)</b> <ul style="list-style-type: none"> <li>Registered DIT students</li> </ul>	<ul style="list-style-type: none"> <li>Injuries</li> <li>Accidents and incidents</li> <li>Lack of training and experience</li> <li>Lack of familiarity with DIT work environment, work practices and emergency plans</li> <li>Physical risks</li> <li>Chemical risks</li> <li>Biological risks</li> </ul>	<ul style="list-style-type: none"> <li>DIT Child Protection Policy in place</li> <li>Risk assessment carried out and control measures implemented</li> <li>Health &amp; Safety briefing provided, where required</li> <li>Student support services available</li> <li>School of Physics designated tutor in place to assist registered students (under 18 years), in relation to their welfare - Dr Siobhan Daly</li> <li>Notification must be given to the Disability Office/ Head of School in writing of any medical condition or other information relevant to the young person's well being</li> <li>All incidents are reported to DIT</li> </ul>	<ul style="list-style-type: none"> <li>Maintain standards</li> </ul>	<b>With current controls:</b> <b>L</b>  <b>With Actions applied:</b> <b>L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Health &amp; Safety Office</b>  <b>School of Physics Child Protection Support Tutor</b>	<b>Ongoing</b>

			<ul style="list-style-type: none"><li>• Door window panels are in place in all classrooms/laboratories for the protection of staff and students</li><li>• School of Physics Staff may only photograph or video young persons under the terms of Paragraph 18 of the DIT Child Protection Policy</li></ul>				
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HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
040	<b>Sensitive Work Groups:</b>  <b>Young Persons (Non DIT registered - under 18 years)</b>  <b>Examples include:</b> <ul style="list-style-type: none"> <li>• Transition Year Students</li> <li>• Event attendees</li> </ul>	<ul style="list-style-type: none"> <li>• Injuries</li> <li>• Accidents and incidents</li> <li>• Lack of training and experience</li> <li>• Lack of familiarity with DIT work environment, work practices and emergency plans</li> <li>• Physical risks</li> <li>• Chemical risks</li> <li>• Biological risks</li> </ul>	<ul style="list-style-type: none"> <li>• DIT Child Protection Policy in place</li> <li>• Risk assessment carried out and control measures implemented</li> <li>• Health &amp; Safety briefing provided, where required</li> <li>• All incidents are reported to DIT</li> <li>• Garda vetting in place where visiting students work with staff on a one to one basis</li> <li>• Door window panels are in place in all classrooms/laboratories for the protection of staff and students</li> <li>• School of Physics Staff may only photograph or video young persons under the terms of Paragraph 18 of the DIT Child Protection Policy</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Health &amp; Safety Office</b>	<b>Ongoing</b>

			<ul style="list-style-type: none"><li>• General induction process given by School-emergency procedures to be followed in the event of an alarm activation and assembly points indicated</li><li>• DIT emergency plans in place – in the event of an alarm activation, students will be guided by DIT staff/teachers/parents to the assembly point</li></ul>				
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HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
041	<b>Sensitive Work Groups:</b>  <b>People with Disabilities</b>	<ul style="list-style-type: none"> <li>• Lack of access/egress</li> <li>• Difficulty with evacuation</li> <li>• No risk assessment (RA) completed</li> </ul>	<ul style="list-style-type: none"> <li>• DIT Disability Office send information to DIT Health &amp; Safety Office</li> <li>• Risk Assessment carried out by the Health &amp; Safety Office</li> <li>• Personal Emergency Egress Plan (PEEP) completed where necessary</li> <li>• Reasonable accommodation identified in risk assessment</li> <li>• Lifts present and in working order</li> <li>• Disability Support Service available</li> <li>• Disabled toilet: ground floor Annexe &amp; main building ground floor: location marked on building maps</li> <li>• Induction/E-learning available from Health &amp; Safety Office on request</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	<p><b>School of Physics Staff and Students</b></p> <p><b>DIT Buildings Office</b></p> <p><b>DIT Health &amp; Safety Office</b></p> <p><b>DIT Disability Office</b></p>	<b>Ongoing</b>

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
042	<b>Sensitive Work Groups:</b>  <b>New Recruits: Full-time and part-time staff members</b>	<ul style="list-style-type: none"> <li>• Lack of experience</li> <li>• Lack of training</li> <li>• Injuries</li> <li>• Accidents and incidents</li> <li>• Lack of training and experience</li> <li>• Lack of familiarity with DIT work environment, work practices and emergency plans</li> </ul>	<ul style="list-style-type: none"> <li>• Induction available (in person or online) from Staff Training &amp; Development, including a Health &amp; Safety section</li> <li>• Health &amp; Safety E-learning available: contact the DIT Health &amp; Safety Office</li> <li>• Line Manager gives induction for School</li> <li>• Training and supervision in place by management</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• School SOPs to be communicated to new recruits</li> <li>• Mandatory training to be completed as soon as possible after recruitment</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>	<b>Ongoing</b>



HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
043	<b>Sensitive Work Groups:</b>  <b>Undergraduates</b>	<ul style="list-style-type: none"> <li>• Lack of experience</li> <li>• Lack of training</li> <li>• Injuries</li> <li>• Accidents and incidents</li> <li>• Lack of familiarity with DIT work environment, work practices and emergency plans</li> </ul>	<ul style="list-style-type: none"> <li>• Induction available from the DIT Health &amp; Safety Office on request</li> <li>• Elearning available from DIT Health &amp; Safety Office on request</li> <li>• Emergency procedures in place for Kevin Street</li> <li>• First-aid facilities available</li> <li>• Safety induction given by lecturers where required</li> <li>• Task-specific instructions/ demonstrations provided by staff where required</li> <li>• Supervision of students by staff members</li> <li>• Student support services available</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<p><b>With current controls: L</b></p> <p><b>With Actions applied: L</b></p>	<b>School of Physics Staff and Students</b>	<b>Ongoing</b>

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
044	<b>Sensitive Work Groups:</b>  <b>Postgraduates</b>	<ul style="list-style-type: none"> <li>• Lack of experience</li> <li>• Lack of training</li> <li>• Injuries</li> <li>• Accidents and incidents</li> <li>• Lack of familiarity with DIT work environment, work practices and emergency plans</li> <li>• Remote working</li> </ul>	<ul style="list-style-type: none"> <li>• Induction available (in person or online) from Staff Training &amp; Development, including a Health &amp; Safety section</li> <li>• Health &amp; Safety Elearning available: contact the DIT Health &amp; Safety Office</li> <li>• School SOPs in place</li> <li>• Training and supervision in place by supervisor</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> <li>• Line Manager to give induction for School</li> <li>• School SOPs to be communicated to new recruits</li> <li>• Ensure plans in place with School where remote working takes place</li> <li>• Role of postgraduate supervisor to be outlined clearly and communicated</li> </ul>	<p><b>With current controls:</b> <b>L</b></p> <p><b>With Actions applied:</b> <b>L</b></p>	<p><b>School of Physics Staff and Postgraduate Students</b></p> <p><b>DIT Staff Training &amp; Development</b></p> <p><b>DIT Health &amp; Safety Office</b></p>	<b>Ongoing</b>

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
045	<b>Occupational Stress</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Physical health effects</li> <li>• Mental health effects</li> <li>• Behavioural effects</li> <li>• Cognitive effects</li> <li>• Workload</li> </ul>	<ul style="list-style-type: none"> <li>• Communication between staff and management</li> <li>• Employee Assistance Programme (EAP) in place provided by VHI to all employees</li> <li>• Occupational Stress Management Policy &amp; Procedures in place</li> <li>• Risk Assessment carried out by management</li> <li>• Training courses available on Stress Management, personal skills etc. to staff</li> <li>• Student services and Student Counselling available</li> <li>• Occupational Health Physician available: Medmark</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Staff Training &amp; Development</b>	<b>Ongoing</b>

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
046	<b>Violence (including Cash)</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Theft of money, chemicals etc.</li> <li>• Attacks/assault: verbal, physical etc. between parties i.e. staff, students etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Response Training (ERT) mandatory for staff</li> <li>• CCTV in place</li> <li>• Porters on duty at Front desk/Reception</li> <li>• DIT staff and students report suspect individuals to DIT Buildings Office</li> <li>• Adequate lighting in place</li> <li>• Controlled access to laboratories</li> <li>• Controlled access to storage areas</li> <li>• No handling of cash in the school</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain current controls</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	School of Physics Staff and Students	Ongoing

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
047	<b>Bullying &amp; Harassment</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Effects on physical and mental well-being</li> </ul>	<ul style="list-style-type: none"> <li>• DIT Dignity at Work: Anti Bullying &amp; Harassment Policy in place</li> <li>• Dignity at Work contact persons available</li> <li>• Employee Assistance Programme (EAP) in place provided by VHI available to all DIT employees</li> <li>• DIT Procedure for complaints and investigations</li> <li>• Student support services available</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	School of Physics Staff and Students	Ongoing

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
048	<p><b>Welfare Facilities:</b></p> <p><b>Sanitary Facilities;</b></p> <p><b>Staffroom / Canteen</b></p> <p><b>Who is harmed:</b></p> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate facilities</li> <li>• No potable water</li> <li>• No means for boiling water/heating food</li> <li>• No seating/resting area</li> <li>• No hand-washing facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Hot/cold water available in sanitary facilities</li> <li>• Disabled toilet available on ground floor Annexe and ground floor main building: marked on maps</li> <li>• Adequate sanitary and hand-washing facilities available</li> <li>• Defects reported to the Buildings Office</li> </ul> <p><i>Facilities for seating and taking meals available at:</i></p> <ul style="list-style-type: none"> <li>• Canteen: Ground floor: Annexe</li> <li>• Staff room: 4<sup>th</sup> floor</li> </ul> <p><i>Drinking water available:</i></p> <ul style="list-style-type: none"> <li>• Filtered mains Water in KE1 011</li> <li>• Water fountains in corridors</li> <li>• Canteen and staffroom</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<p><b>With current controls:</b> <b>L</b></p> <p><b>With Actions applied:</b> <b>L</b></p>	<p><b>School of Physics Staff and Students</b></p> <p><b>DIT Buildings Office</b></p>	<b>Ongoing</b>

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
049	<b>Visitors</b>  <b>Examples:</b> <ul style="list-style-type: none"> <li>• Event participants</li> <li>• Erasmus Students</li> <li>• Transition year Students</li> <li>• External Examiners</li> <li>• Guest speakers</li> </ul> <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of experience</li> <li>• Lack of training</li> <li>• Injuries</li> <li>• Accidents and incidents</li> <li>• Lack of familiarity with DIT work environment, work practices and emergency plans</li> </ul>	<ul style="list-style-type: none"> <li>• Front Desk/Reception is manned at all times</li> <li>• Porters on duty</li> <li>• Visitors report to Front desk/Reception</li> <li>• Safety booklets and safety wallet cards available</li> <li>• Emergency and informational signage in place</li> <li>• Risk assessments completed for specific events where groups of visitors are expected</li> <li>• CCTV in place</li> <li>• Deliveries handled by Goods Inwards</li> <li>• Visitors briefed on emergency procedures by the DIT contact they are visiting</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	School of Physics Staff and Students	Ongoing

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
050	<b>Contractors / Service Providers</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Unfamiliar with DIT buildings and safety procedures</li> <li>• Injury to contractors, staff, students, members of the public</li> </ul>	<ul style="list-style-type: none"> <li>• School notify Buildings Office where contractors are coming onsite under their remit</li> <li>• Buildings Office control all contractors who also send communications to staff regarding works</li> <li>• Front desk/Reception is manned at all times by a Porter</li> <li>• Sign in required</li> <li>• Compliance with DIT code of practice for contractors</li> <li>• Signage in place</li> <li>• E-Learning completed before contractors arrive on DIT premises</li> <li>• DIT Contractor safety badge issued and worn</li> <li>• Risk assessment and method statements completed and submitted to the Buildings Office</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	School of Physics Staff and Students	Ongoing



			<ul style="list-style-type: none"><li>• Good housekeeping standards maintained</li><li>• Areas of works cordoned off</li></ul>				
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HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
051	<b>Behaviour</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant women</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Aggression</li> <li>• Violence</li> <li>• Stress</li> <li>• Bullying</li> <li>• Harassment</li> <li>• Voice injury including voice trauma, chronic hoarseness, laryngitis etc. due to shouting / straining by lecturers</li> </ul>	<ul style="list-style-type: none"> <li>• DIT Dignity at Work: Anti Bullying &amp; Harassment Policy in place</li> <li>• Employee Assistance Programme (EAP) in place provided by VHI for all DIT employees</li> <li>• Occupational Stress Management Policy &amp; Procedures in place</li> <li>• All incidents are reported immediately</li> <li>• DIT Disciplinary procedures in place</li> <li>• DIT Procedure in place for the Resolution of Disputes/Grievances</li> <li>• DIT training available on Stress Management, personal skills, voice use etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Follow procedures in DIT's Dignity at Work: Anti Bullying &amp; Harassment Policy</li> <li>• DIT IS and DIT Buildings Office to maintain multimedia systems</li> <li>• Contact IS and Buildings Office if problems arise with multimedia systems</li> <li>• Lecturers to use correct techniques in voice amplification</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT IS</b>  <b>DIT Buildings Office</b>	<b>Ongoing</b>

HUMAN FACTORS							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
052	<b>Personal Protective Equipment (PPE)</b>  <b>PPE used:</b> <b>Students:</b> <ul style="list-style-type: none"> <li>• Lab coat</li> <li>• Safety glasses</li> <li>• Gloves</li> </ul> <b>Staff Members:</b> <ul style="list-style-type: none"> <li>• Lab coat</li> <li>• Safety glasses</li> <li>• Gloves</li> <li>• Face shield</li> </ul> <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Improper fit and use</li> <li>• Incorrect type</li> <li>• Poor maintenance</li> <li>• Lack of training</li> <li>• Exposure to physical or hazardous substances</li> <li>• Slips, trips and falls</li> <li>• Lack of awareness of PPE requirements</li> <li>• Contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Appropriate selection of PPE</li> <li>• Consultation with staff</li> <li>• Inspection and maintenance of PPE</li> <li>• Students are responsible for laundering their own lab coat and having safety glasses</li> <li>• Defects reported</li> <li>• Lockers provided for technical staff</li> <li>• Training, information and supervision</li> <li>• Signage in place where PPE is required e.g. on lab doors</li> <li>• Students are not permitted into the lab without the relevant PPE</li> <li>• Students are supervised by staff while to ensure the wearing of PPE</li> <li>• Follow manufacturer's instructions</li> <li>• PPE: personal use only</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls:</b> <b>L</b>  <b>With Actions applied:</b> <b>L</b>	School of Physics Staff and Students	Ongoing

CHEMICAL							
Ref	Hazard	Hazard Potential & Consequences	Control Measures		Risk H/M/L (with controls)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
053	<b>Gas</b>  <b>Gas Cylinders in KE1-041:</b> <ul style="list-style-type: none"> <li>• Pureshield Argon</li> <li>• Nitrogen</li> <li>• Carbon Dioxide</li> </ul> <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Visitors</li> <li>• Contractors</li> <li>• Young persons</li> <li>• Pregnant</li> <li>• Postgraduates</li> <li>• People with disabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Gas leak</li> <li>• Fire</li> <li>• Explosion</li> <li>• Suffocation</li> <li>• Carbon monoxide poisoning</li> <li>• Asphyxiation</li> <li>• Oxygen may promote flammability in other materials</li> <li>• Toxic/Exposure to gas</li> </ul>	<ul style="list-style-type: none"> <li>• Inspection, Testing and Maintenance/Serviceing</li> <li>• SOP in cylinder use and handling</li> <li>• Detection and monitoring systems in place by MIPS (natural gas, hydrogen, acetylene etc.)</li> <li>• Adequate ventilation</li> <li>• Staff are competent</li> <li>• Strict procurement procedures in place</li> <li>• Registered installer used for all installations, maintenance etc.</li> <li>• Training, information and supervision</li> <li>• Restricted access</li> <li>• Minimum quantities stored on site; gas piped in from outside where possible</li> <li>• Cylinders are stored in an upright manner and chained to the bench or</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>With current controls: L</b>  <b>With Actions applied: L</b>	<b>School of Physics Staff and Students</b>  <b>DIT Buildings Office</b>	<b>Ongoing</b>

			<p>trolley</p> <ul style="list-style-type: none"> <li>• Cylinders, regulators and associated equipment are kept clean and free from grease, oil and other contaminants</li> <li>• A regulator is used when connecting to a lower pressure system</li> <li>• Cylinders are never rolled along the floor/ground. Trolleys which are suitable are used</li> <li>• Leaking or damaged cylinders or those which cannot be properly identified must not be used</li> <li>• Damaged or unidentified cylinders must be returned to the supplier</li> <li>• Members of staff required to move cylinders are trained in manual handling</li> </ul>				
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## SCHOOL OF PHYSICS SPECIFIC HAZARDS RISK ASSESSMENT

1. Hazard: Radiation
2. Hazard: Lasers
3. Hazard: Bunsen Burners
4. Hazard: Rubber and Plastic Tubing
5. Hazard: Mercury Thermometers
6. Hazard: Spillages
7. Hazard: Glassware
8. Hazard: Hot Plates
9. Hazard: Ultra Violet Light Sources (UV Light Box)

### Hazard: Radiation

#### 1.0 DIT Radiological Controls

The DIT regulates the use of all ionizing radiation in the safety document titled *Manual of Regulations for the safe use of sources of ionising radiation, Dublin Institute of Technology, Version 5 - 2011 (reviewed annually and updated as required)*. The code of Practice set out in this document addresses the management, organisation and control of radioisotopes and related equipment on Campus. The DIT satisfies National and International official Regulations controlling ionising radiation. This document covers all relevant issues relating to health and safety including:

- Lines of communication within DIT and with the Radiological Protection Institute of Ireland
- Duties and responsibilities of the Radiological Protection Officer (Dr. Jacinta Browne), the Deputy Radiation Officer (Dr. Steve Meaney) and the DIT Radiation Protection Advisory Committee
- General rules regarding the use of sealed sources of ionising radiation
- Monitoring of work areas
- Purchasing procedures radioisotopes and ionising equipment
- Disposal of all waste
- Log book of all radioactive sources purchased and current stocks
- Staff, postgraduate and undergraduate Student instructions and rules
- Copies of required authorisation forms

The DIT Radiation Protection Advisory Committee administers and advises on all matters relating to radiation safety within DIT. This Committee is responsible for ensuring that safe practices are established and maintained. This Committee works in close liaison with Radiological Protection Institute of Ireland (RPII). The DIT has an up to date site license issued by the Radiological Protection Institute of Ireland for the use of radioisotopes and related equipment on campus.

**Risk Assessment:** Low      **Exposure:** Low

#### Sealed Isotopes in DIT Kevin Street Campus

Radioisotopes are located and used only within the Kevin Street, Campus in accordance with the site license. Sealed (coated solids) radioactive sources are used in the School of Physics laboratories. These are stored in a locked Perspex and lead lined fire proof safe in room KE1-040. Any removal or returning of sources to the safe is strictly controlled and must be recorded in a logbook.

#### 1.1 Radiological Safety Procedures for Low Level Sources

Sealed sources are routinely used in undergraduate courses within the School. The activity from these sources is low and considered safe once the following procedures are followed;

- Handle radioactive sources only with a tweezers or forceps
- Radioactive sources must never be handled directly
- Radioactive sources must be treated with care; tampering must be avoided
- The radioactive source must never be held near the body particularly the eyes
- The sources shall be brought to the laboratories by supervising laboratory technician in a lead container
- The laboratory supervisor and Student are required to sign for receipt of the source in a log book at the commencement of the experiment
- Radioactive sources must be returned to the lead container after completing the experiment
- The laboratory supervisor and Student are required to sign for the returned source at the end of the experiment
- The laboratory supervisor is responsible for ensuring all sources are stored in the lead container and that all sources are present and returned during a practical session
- Sources may not be removed from the laboratory
- In the event that a source is missing the RPO must be informed immediately and action taken
- When not in use, sealed sources shall be held in a locked Perspex and lead lined fire proof safe in KE1-040
- As a precaution, hands must be washed before leaving the laboratory
- No eating, drinking or smoking is permitted in the laboratories

## 1.2 X-ray Systems in DIT Kevin Street Campus

There are three low voltage and low current X-ray systems located in rooms KE1-039 and KE1-040 on the Kevin Street, Campus in accordance with the site license. These X-ray systems are used in the School of Physics senior laboratory. None of the X-ray systems can be removed without prior approval by the RPO / DRPO and the RPII and should only be moved under supervision of the RPO / DRPO.

## 1.3 Radiological Safety Procedures for X-ray Systems

Low voltage and low current X-ray systems are routinely used in undergraduate courses within the School. The ionizing radiation from these X-ray systems is  $< 1 \text{ mSv/h}$  at a distance of 10 cm and therefore considered safe once the following procedures are followed;

- X-ray systems must be treated with care; tampering must be avoided
- Sign and date the logbook related to the X-ray system's use.
- Prior to use of the X-ray system have read and signed the relevant sections of the Local Rules and the X-ray system Safety Guide, which are kept and maintained by the senior laboratory technician on behalf of the RPO/DRPO.
- No eating, drinking or smoking is permitted in the laboratories

### Additional Information

Additional information may be obtained in the *Manual of Regulations for the safe use of sources of ionising radiation Version 6, 2012*. Further information can be found under the Radiological Protection Act, 1991(Ionising Radiation) Order, 2000 (S.I. No 125 of 2000).

**Risk: H/M/L:**

**With current controls:** L

**With actions applied:** L






**Person(s) Responsible:** School of Physics Staff and Students

**Target Date/Status:** Ongoing

## Hazard: Lasers

### 2.0 Lasers

#### Laser Classification

LASER	Description	Examples	Warning Sign
<b>Class 1 Laser</b>	Do not emit hazardous radiation under normal conditions. Higher powered laser systems may be Class 1 as the light produced is enclosed and inaccessible. Interlocks prevent accidental access to the beam. Safe.	Laser printer  Laser disc player	
<b>Class 2 Laser</b>	Low powered lasers <1 mW, which emit visible laser light. Considered reasonably incapable of injuring personnel because of the blink response of the eye. Staring into the laser can cause damage. Limited to visible radiation 400 nm to 700 nm.	Visible continuous HeNe lasers.  Some laser pointers.	
<b>Class 2A Laser</b>	Special purpose lasers that emit accessible visible laser light with less than 1 mW radiant power. Can cause injury when viewed directly for more than 1,000 seconds.	Bar code readers.	
<b>Class 3A Laser</b>	Power levels of 1 to 5 mW: no hazard when viewed for momentary periods with the unaided eye. Pose severe eye hazards when viewed through optical instrument such as microscopes, binoculars or other collecting optics.	Visible continuous wave HeNe lasers.  Solid state laser pointers.	
<b>Class 3B Laser</b>	Power levels 5-500mW for continuous wave lasers, >10 J/cm² for a 0.25 second pulsed laser. Hazardous if viewed directly (includes intra-beam viewing/specular reflections). Viewing unfocused pulsed laser radiation by diffuse reflection is not hazardous.		
<b>Class 4 Laser</b>	High power systems >500 mW for continuous wave lasers or >10 J/cm² for a 0.25 second pulsed laser. Presents serious eye and skin hazard, and can ignite flammable targets, create hazardous airborne contaminants and have a potentially lethal high current high voltage supply.	Note: DIT does not currently have Class 4 Lasers.	



## 2.1 Hazards

The main problems associated with Lasers are:

- **Electrical hazards** e.g. shock, explosion, fire
- **Eye hazards** e.g. ocular damage, inappropriate safety goggle use (leading to goggles shattering or melting), damaged goggles (pitted lenses offer no protection)
- **Skin damage** e.g. burns, carcinogenesis, Erythema, skin cancer, accelerated skin ageing
- **Contact with toxic materials** e.g. laser dyes can be toxic and carcinogenic.
- **Contact with coolants** e.g. cold burns
- **Fire beam hazard** e.g. ignition of a material that cannot withstand the laser output
- **Ultra Violet Radiation**(spectrum between visible light and X-rays)
  - Effect of exposure is determined by dosage, wavelength, portion of the body exposed and sensitivity of the individual.
  - Effects include damage to the skin and eyes.
  - Short-term effects e.g. sunburn
  - Long-term effects e.g. keratoses, skin cancers, premature skin aging and eye damage (photo conjunctivitis and photokeratitis after prolonged exposure, and cataracts and pterygia after repeated exposure)

## Governing Legislation

The Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 2, Chapter 5, No 73

## 2.2 Control Measures

### General

- Warning sign to be posted in laboratory and on laboratory door when laser is in operation (see table for signs)
- Access to the room shall be controlled. Only competent personnel shall operate the laser
- Students should never work alone or unsupervised
- The illumination of the area should be as bright as practicable in order to constrict the eye pupils of experimenters
- Where practical, the laser system or beam should be enclosed to prevent accidental exposure to the beam
- Regardless of the laser Class - Never look into the primary beam
- Do not align a laser using the eye as this could cause retinal damage to the user
- Clear all personnel from the anticipated path of the beam
- Shields shall be used to reduce reflection
- All unnecessary shiny surfaces shall be removed e.g. shiny jewellery
- Windows/light sources outside the room shall be adequately covered
- Active lasers shall not be left unattended unless part of a controlled environment
- Warning devices should be installed for lasers with invisible beams to warn of operation
- Beams should terminate at a beam stop
- All laser beams of Class 2 or higher should be kept at waist height at all times. Where this is not possible the beam should be enclosed. With Class 3b this is a legal obligation
- A laser should be isolated from areas where Staff would be attracted by its operation. Doors shall be closed to keep out unwanted onlookers. For lasers above Class 3b this restricts access to authorised personnel and a sign on the door should indicate this
- Protective clothing shall be worn where deemed necessary and where risk of skin damage
- All materials in the path of the laser shall be of a material than can withstand the laser output. Cloth used in laser installations shall be fire retardant

## **2.3 Eye Exposure and UV Control Measures**

- Minimise eye exposure
- Use appropriate eye protection
- Eye protection devices specifically designed for protection against radiation from the laser system in use should be used when engineering and procedural controls are inadequate to eliminate potential exposures
- The eyes and skin should not be exposed to direct or strongly reflected UV radiation
- A hazard warning sign must be affixed on the doors of laboratories etc. which have ultraviolet light installations
- Adequate eye and skin protection must be worn when working in an irradiated area. Safety glasses with side shields or goggles with solid side pieces must be worn. Skin protection is afforded by face shields, caps, gloves (elbow length if necessary), gowns, etc.
- Lasers 3b or above: goggles must be worn when the laser is in operation. The choice of goggle depends on the power, repetition rate, exposure duration and laser wavelength. Goggles shall fit over spectacles. Defective eye protection shall not be used. Goggles shall be labelled with the optical density and the wavelength(s) the goggle protection relates to

## **2.4 Specific Class 4 Laser Control Measures**

**NOTE: DIT does not currently have Class 4 Lasers but may in the future and will ensure all control measures below are in place.**

- Class 4 lasers shall be operated in a lab specifically designed for their use
- Only authorised access shall be allowed
- Where possible, the entire beam path including the target area should be enclosed. Enclosures should be equipped with inter locks so that the laser system will not operate unless such enclosures are properly installed
- Where the entire beam path has not been closed, reflective surfaces shall be removed. Safety latches or interlocks should be used to prevent unexpected entry into the laser controlled area. This allows rapid egress by the laser personnel and rapid access in an emergency situation
- A panic button should be installed
- Eye protection, which protects against laser radiation, should be used when engineering and procedural controls are inadequate to eliminate potential exposures
- Whenever possible, the laser system should be fired and monitored from remote locations.
- An alarm system, for example an audible sound or non-laser warning light, visible through protective eye-wear, or a verbal countdown command should be used prior to laser activation
- Any Class 4 laser or laser system should be provided with an operative keyed master interlock or switching device. The key should be removable and the device should not be operable when the key is removed
- Operation shall not take place in an atmosphere contaminated with smoke or dust
- Backstop material should be diffused and of such colour or reflectivity as to make positioning possible, but minimise reflection

## **2.5 Light Source Control Measures**

- Lasers above Class 3b should only be operated by persons competent in their use
- Staff and Students using Class 3b or above shall undergo a training exercise in laser safety before commencing work on lasers

**Risk: H/M/L:**

**With current controls:** L

**With actions applied:** L

**Person(s) Responsible:** School of Physics Staff and Students

**Target Date/Status:** Ongoing

## Hazard: Bunsen Burners

### 3.0 Bunsen Burner Risks

- Burns from contact with hot Bunsen Burner and/or hot tubing
- Gas leak from gas left on, damage to tubing etc.
- Fire from naked flame
- Back burn

### 3.1 Control Measures

- Central gas 'shut off' available
- All incidents (burns, defects etc.) are reported to the laboratory technician or lecturer (who is trained in first-aid) and an incident report form completed
- Staff trained in Emergency First Aid, a first-aid kit and an eyewash station are available in the laboratory
- Students receive safety induction from lecturers and a laboratory manual
- Loose clothing is secured, scarves and hats removed and long hair is tied back etc.
- Prior to using Bunsen Burners the gas tubing is checked for damage and the ends are securely fixed onto the gas tap and the burner inlet. Damaged tubing is removed from use immediately
- Flammable materials in containers on work benches near Bunsen Burners must not exceed 50ml, and must be in covered containers at a distance at least 30cm from a lit Bunsen Burner or gas burner.
- Lit Bunsen Burners are never left unattended. They are turned off before leaving the laboratory or moving to another area of the laboratory
- When the Bunsen Burner is being used to sterilize equipment that has been dipped in alcohol, the excess alcohol must be allowed to run off the equipment prior to inserting it into the flame
- Because flames may not be visible in strong sunlight, lights can be dimmed or blinds pulled in order to see the flame more readily
- Bunsen Burners are turned off or turned to the pilot (yellow) flame setting when not in use
- Vessels to be heated over gas burners are securely positioned on tripods or similar apparatus
- Heating of liquids is permitted in glass or Pyrex vessels only. The procedure is carried out in the fume hood (KE1 039) where vapours/fumes are likely to be released. Flammable liquids are not heated to a temperature greater than their flashpoints
- Heated containers are not handled until they have cooled down
- Bunsen Burners can remain hot for a period of time. As a result, they must be stored safely so that others are aware they are still hot. Bunsen Burners should always be handled by the base and not the neck
- Bunsen Burners must be at a sufficient distance from the gas supply point and line that they do not pose a risk of melting or igniting same

**Risk: H/M/L:**

**With current controls:** L

**With actions applied:** L

**Person(s) Responsible:** School of Physics Staff and Students

**Target Date/Status:** Ongoing

**Hazard: Rubber and Plastic Tubing****4.0 Risks**

- Putting rubber tubing onto glassware
- Sudden release of gas or liquid resulting from defective tubing or incorrect securing of tubing to nipples/taps, which can lead to fire or explosion
- Release of hot liquids or mains water under pressure
- Various personal injuries
- Damage to property and structures
- Fire
- Aerosols

**4.1 Control Measures**

- All incidents (burns, defects etc.) are reported to the laboratory technician or lecturer (who is trained in first-aid) and an incident report form completed
- Staff trained in Emergency First Aid, a first-aid kit and an eyewash station are available in the laboratory
- Students and users are instructed, trained and supervised in the use of Bunsen Burners, rubber and/or plastic tubing
- All rubber and plastic tubing is checked periodically for cracks or other damage, prior to use. Replacement is made promptly where necessary
- Checks are made to ensure gas is completely turned off even if no flame is visible as fire can still be present in a Bunsen Burner and the rubber tubing hot
- Rubber tubing is not used on permanent installations connected to laboratory services. Clear Neoprene plastic tubing is used instead
- Excessive lengths of tubing which may lose their identity or which may trail and pose tripping hazards or which may trail into hot/corrosive areas are not used/permitted
- Tubing for use with organic solvents is chosen carefully. The suitability of material is checked for each solvent.
- Tubes to filter pumps and cooling circuits are secured by a jubilee clip fitting. The tube carrying the outflow is firmly anchored in the drain and free from danger of 'kinking'
- Where aerosols could be created, the Bunsen Burner must be used in the fume hood (KE1-039)
- Students receive safety induction from lecturers and a safety laboratory manual
- Fire blanket available in lab
- Running water and first-aid kit available for burns
- Appropriate PPE used/worn, when advised in SOP: lab coat, safety glasses, gloves
- Designated lockers for personal belongings to reduce clutter
- Lab safety rules communicated and strictly adhered to
- Signage in place re unauthorised access to lab
- Emergency plans in place
- Restricted access: students only permitted when staff are present

**Risk: H/M/L:****With current controls:** L**With actions applied:** L**Person(s) Responsible:** School of Physics Staff and Students**Target Date/Status:** Ongoing

### Hazard: Mercury Thermometers

#### 5.0 Mercury Risks

- Poisoning as a result of absorption through the respiratory tract or through unbroken skin. It has cumulative effects
- Metallic taste, nausea, abdominal pain, vomiting, diarrhoea and headache as a result of high exposure concentrations
- Severe nervous disturbance, insomnia, loss of memory, irritability and depression as a result of chronic exposure (from continual exposure to small concentrations)
- Loosening of teeth, dermatitis and kidney damage as a result of severe prolonged absorption
- Chemical reactions e.g.
  - With ammonia to produce an explosive solid
  - It can cause severe corrosion problems because of its ease in forming amalgams

#### 5.1 Control Measures

- Mercury is never handled
- Digital thermometers are used where possible

**Risk: H/M/L:**

**With current controls: L**

**With actions applied: L**

**Person(s) Responsible: School of Physics Staff and Students**

**Target Date/Status: Ongoing**

### Hazard: Spillages

#### 6.0 Risks from Spills

- Contact with materials
- Slips, trips and falls, and increased risk of exposure as a result
- Environmental damage

#### 6.1 Control Measures

- SOP in place
- Materials are correctly stored and accumulation is not allowed to occur
- Staff trained in Emergency First Aid, a first-aid kit and an eyewash station are available in the laboratory

#### 6.2 Spillages procedure and spill kits

- Spill procedure and SOP in place
- Appropriate spill kit(s) in place

#### 6.3 Contents of a Biohazard Spill Kit:

1. PPE: Safety glasses, a disposable white coat, apron, if required, appropriate gloves, safety glasses, shoe coverings, face mask for aerosols
2. A roll of paper towel
3. Fresh 10% bleach solution or other appropriate disinfectant
4. Spray bottle with disinfectant
5. Yellow biohazard bags or autoclave bags
6. Sharps container
7. Lidded container

8. Tape to restrict access
9. Sign restricting access: time and date should be included
10. Incident report form (available from Front Desk/Reception)

**NOTE:** Bleach/sodium hypochlorite loses its effectiveness upon storage, even in concentrated forms and is inactivated in the presence of organic materials. Bleach is also toxic; it denatures rubber and plastic materials, corrodes metal and bleaches fabrics. Materials containing bleach cannot be autoclaved.

**Risk: H/M/L:**

**With current controls:** L

**With actions applied:** L

**Person(s) Responsible:** School of Physics Staff and Students

**Target Date/Status:** Ongoing

#### Hazard: Glassware

##### 7.0 Risks

- Cuts, from damaged or broken glassware e.g. from forcing tubing, teats or bungs into glass tubing, pipettes or condensers which break
- Cuts from flying or ejected pieces of glassware
- Exposure to hazardous substances on contact with containers / receptacles
- Burns from contact with heated glassware

##### 7.1 Control Measures

- Spillages are cleaned up immediately
- All incidents (cuts, burns, defects etc.) are reported to the laboratory technician or lecturer (who is trained in first-aid) and an incident report form completed
- Staff trained in Emergency First Aid, a first-aid kit and an eyewash station are available in the laboratory
- Students and users are instructed and supervised in the use of glassware
- Students receive safety induction from lecturers and a laboratory manual
- Staff are adequately trained and are competent in the use of glassware
- Care is taken in the storage and washing of glassware
- Hand-washing facilities available in the laboratory
- Use plastic as an alternative to glassware whenever possible
- Glassware is visually inspected before use, glassware with cracks, breakages, scratches, chipped etc. is reported to the laboratory technician or lecturer immediately and the glassware is not used
- Glassware is not stored near the edge of work benches in the laboratory
- Great care is taken when using/handling glassware including:
  - Attaching glass to or removing glass from rubber or plastic tubing
  - Removing "frozen" stoppers from glass bottles
  - Breaking glass tubing
  - Washing up glassware
  - Handling broken glassware
- When handling glassware force or excessive pressure should not be applied

- When attaching glass to rubber or plastic tubing; or removing "frozen" stoppers from glass bottles, glassware should be held in a cloth to help prevent slipping and hands kept as close together as possible
- When fitting glassware to tubing, water or glycerol may be used and the plastic tubing softened by brief immersion in hot water
- Glass vessels under vacuum should be enclosed in plastic or wire mesh to prevent fragments being scattered if implosion occurs
- Hot glassware is treated with care and put in a place of safety so that no individual can access it until it has cooled
- Ground glass connections are lubricated before assembling and disassembled immediately after use
- Flasks or containers are never stoppered when hot
- Where a glass stopper seizes, the container is never heated
- Running is not allowed while carrying glassware
- Broken glassware is carried in suitable cages/trays and placed in the sharps container and never the general waste bin.

**Risk: H/M/L:**

**With current controls:** L

**With actions applied:** L

**Person(s) Responsible:** School of Physics Staff and Students

**Target Date/Status:** Ongoing

Hazard: Hot Plates	
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**8.0 Hot Plate Risks**

- Burns as a result of contact with hot surfaces
- Eye or skin damage as a result of splashing liquid
- Fire as a result of heating materials to high temperatures

**8.1 Control Measures**

- Spillages are cleaned up immediately
- All incidents (burns, defects etc.) are reported to the laboratory technician or lecturer (who is trained in first-aid) and an incident report form completed
- Staff trained in Emergency First Aid, a first-aid kit and an eyewash station are available in the laboratory
- Students and users are instructed and supervised in the use of hot plates
- Students receive safety induction from lecturers and a laboratory manual
- Staff are adequately trained and are competent in the use of hot plates
- Hand-washing facilities available in the laboratory
- Hot plates are visually inspected before each use and damaged units reported to management and taken out of use immediately
- PPE worn includes laboratory coat and safety glasses, when necessary
- Liquids are heated or stirred in glass or Pyrex vessels only
- Temperature and rotation speed should be increased gradually to prevent over-heating or splashing
- Flammable liquids must not be heated to a temperature greater than their flashpoints
- If the heating of liquids is likely to release hazardous vapours then the process must be carried out in a fumehood

- Hot plates are not left unattended when in use
- Ensure that the electrical cable to the unit is not touching the hot plate during use
- Units must be switched off when not in use
- Hot plates must be serviced and maintained in accordance with the manufacturer's instructions
- Hot plates are not handled until they have cooled down. They can remain hot for a period of time. As a result, they must be stored safely so that others are aware they are still hot

**Risk: H/M/L:**

**With current controls: L**

**With actions applied: L**

**Person(s) Responsible: School of Physics Staff and Students**

**Target Date/Status: Ongoing**

<b>Hazard: Ultra Violet Light Sources</b>
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**9.0 Risks from Ultra Violet Light**

- Burns to skin
- Eye damage: burns to cornea resulting in temporary blindness and/or cataracts

**9.1 Control Measures – UV Lamps**

- Do not expose eyes and skin to UV light as rays may be harmful to unprotected eyes/skin.

**9.2 Control Measures – UV Light Sources and Lamps (High intensity)**

- Training and instructions given before use
- All UV light sources inspected before use and damaged units are reported to the lecturer in charge and removed from circulation.
- UV light sources should be operated in isolation from general activity. If this is not practicable then the UV light source must be used in a blackened /curtained area.
- A UV face shield is worn when using the light box
- Long sleeves and gloves are worn.
- Hand held lamps must be directed away from the body at all times
- Risk is reduced when exposure times are low/short

**9.3 Control Measures – UV Exposure Unit (KE1 – 041)**

- This exposure unit (RS 559-934) which is used in the preparation of photo-resist circuit boards must be operated with the lid closed.
- This unit emits UV radiation in the 350-400nm range with a peak occurring at 360nm. This output is in the UV-A range which causes less harm to human tissue when compared to shorter wavelengths.
- Prolonged exposure to skin and eyes should be avoided as these can cause sunburn and cataracts

**Risk: H/M/L:**

**With current controls: L**

**With actions applied: L**

**Person(s) Responsible: School of Physics Staff and Student**

**Target Date/Status: Ongoing**



## **SCHOOL OF PHYSICS LABORATORY/ROOM RISK ASSESSMENTS**

- |             |   |
|-------------|---|
| 1. KE1-010  | First Year Physics Laboratory                               |
| 2. KE1-011B | Workshop  |
| 3. KE1-012  | First Year Physics Laboratory                               |
| 4. KE1-013  | Computer Room   |
| 5. KE1-016  | Postgraduate Research                                       |
| 6. KE1-034  | Optics Laboratory   |
| 7. KE1-035  | Clinical Measurements Laboratory                            |
| 8. KE1-039  | Third and Final Year Laboratory                             |
| 9. KE1-040  | Third and Final Year Laboratory                             |
| 10. KE1-041 | Second Year Physics Laboratory                              |
| 11. B32     | Industrial & Engineering Optics Laboratory and Office Space |
| 12. B48     |   |
| 13. KE2-015 | Optometry Laboratory  |
| 14. KE2-026 | Office  |
| 15. KE2-028 | Optometry Laboratory  |

### Room KE1-010: First Year Physics Laboratory

Staff and undergraduate Students use laboratory KE1-010. The laboratory is accessible to Students once a member of Staff is present. The room is locked when not in use. The maximum capacity of the room is 16 people, plus one supervisor and a Technical Officer.

The main activities taking place in this laboratory are as follows:

- First year physics experiments
- Use of chemicals such as paraffin wax tablets, liquid paraffin (flammable), glycerine, methylated spirits (flammable), lycopodium powder (flammable and harmful if taken internally) and copper sulfate granules and solution (harmful if taken internally)
- Use of mercury thermometers for about 4 weeks of the year – replaced by digital thermometers where possible
- Bunsen burners are used for about 10 weeks during the year.
- Use of 633nm class 2 and class 3a lasers
- Use of low dosage encapsulated radioactive sources (Co60) for 4 weeks of the year. These are stored in a lead container during the period.
- The procedure given in section 1.1 for the safe use of radioisotopes is followed and “*The Manual of Regulations for the safe use of sources of ionising radiation*” **Version 6, 2014** is available in the laboratory.

### Observations

The laboratory does not have a phone but is adjacent to the Technical Officer’s office. It has a fire extinguisher, fire blanket and first-aid kit and the Technical Officer working in this laboratory is trained in emergency first-aid as per DIT policy.

Hazard Identification, Risk Assessment and Control Measures specific to room KE1-010

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
007	Slips, Trips & Falls	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Bags &amp; Coats stored in allocated Press</li> <li>Spillages Cleaned up immediately</li> <li>Floor in good condition</li> <li>Good Lighting</li> <li>No Food or Drink permitted in the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>Incident report form to be completed immediately</li> </ul>	M	All DIT Staff and Students	As necessary
054	Gas Bunsen Burners, Tripods & Gauzes	<ul style="list-style-type: none"> <li>Burns</li> <li>Scalds</li> <li>Cuts</li> <li>Breakages</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on Lighting &amp; flame control given to Students</li> <li>Cut off switch available in case of emergency</li> <li>First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> <li>Gas supply isolated at end of class</li> </ul>	<ul style="list-style-type: none"> <li>Routine checks made to Bunsens &amp; Bunsen tubing</li> <li>Staff shall undertake one day Emergency First-aid training</li> </ul>	L	All Staff members	As necessary
002	Heavy Equipment	<ul style="list-style-type: none"> <li>Back strain</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Heavy items stored at easily accessible height</li> <li>Step ladder provided for light items at height</li> <li>Trolley used for transport</li> </ul>	<ul style="list-style-type: none"> <li>Staff members shall ensure compliance with Manual Handling Training</li> </ul>	L	All Staff members	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
7.0	Glassware	<ul style="list-style-type: none"> <li>Breakages</li> <li>Cuts</li> </ul>	<ul style="list-style-type: none"> <li>All glassware checked before use &amp; all broken/chipped glassware placed in marked glass bin</li> <li>Beakers not overfilled</li> <li>Spillages Cleaned up immediately</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls.</li> <li>Empty glass bins when full</li> <li>Incident report form to be completed immediately in event of a cut</li> </ul>	L	All Staff members	As necessary
055	Chemicals – Lycopodium Powder & Copper Sulfate Solution	<ul style="list-style-type: none"> <li>Flammable</li> <li>Harmful if taken Internally</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use of chemicals given to Students</li> <li>Used in small quantities.</li> <li>First-aid kit available in all Laboratories &amp; First aid training available to all Staff</li> <li>Chemical SDS available</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall undertake one day Emergency First aid training</li> </ul>	L	All Staff members	As necessary
5.0	Mercury Thermometers	<ul style="list-style-type: none"> <li>Toxic</li> <li>Cuts from glass if broken</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on handling &amp; placement when not in use given at start of class</li> <li>Breakages of glass and Spills of Mercury cleaned up immediately</li> </ul>	<ul style="list-style-type: none"> <li>Loose mercury is taken in sealed containers to the School of Chemistry who dispose of it</li> <li>Digital thermometers used where possible</li> </ul>	L	All Staff members	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
015	Radioactive Sources	<ul style="list-style-type: none"> <li>Radiation Exposure</li> </ul>	<ul style="list-style-type: none"> <li>Instructions given at start of class</li> <li>Student &amp; Staff usage to be logged</li> <li>Tweezers used for all handling</li> <li>Sources never to be held near the body, particularly the eyes</li> <li>Exposure duration kept as short as possible</li> <li>Wash Hands before leaving the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 1.0 of the Safety Statement &amp; “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>In the case of an accident/incident – Dr Jacinta Browne (RPO) and Dr John Doran (Head of School) must be notified immediately</li> </ul>	L	All Staff members	As necessary
023	Class 2, 3a Lasers	<ul style="list-style-type: none"> <li>Damage to Eyes &amp; Skin</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use given to Students</li> <li>Beam set at waist level</li> <li>All beams pointed in one direction</li> <li>Turn off laser at end of measurement</li> <li>Free eye sight test available with NOC for all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 2.0 of the Risk Assessment for more information</li> <li>Staff can contact NOC as necessary for eye sight test</li> </ul>	L	All Staff members	As necessary

## Room KE1-011B: Workshop

Open Access. Maximum capacity 3.

- The work room is used for equipment fabrication and repairs
- It contains a lathe, grinder, pedestal drill, welding equipment, chop saw and sander

### Observations

The room does not have a phone. It has fire blanket and a first-aid kit. The fire extinguisher is located outside the workshop next to the entrance.

### Actions to be taken

Only competent persons who are adequately trained or are undergoing closely supervised instruction should operate machinery in the workshop

Observe all safety precautions when using all machinery

Always use safety guards

Always ensure that safety interlocks are working

Never leave a machine running unattended

Always use safety equipment provided

### Hot work permit

A hot work permit must be obtained by Staff and Contractors/Service Providers before carrying out work which involves the use of electric arc welding. Hot permits are issued by the Building Maintenance Manager, Colm Gillen, prior to any work commencing. The area where the work is to be undertaken must be inspected to ensure that it complies with the terms of the permit. When the work has ceased the area must be inspected to ascertain that no item of material is smouldering or on fire and a second inspection must be carried out 30 minutes later.

Permission from Dr John Doran (Head of School) must be obtained to reinstate/use the arc welder. Ideally the welder should have a separate area for safety purposes.

Hazard Identification, Risk Assessment and Control Measures specific to room KE1-011B.

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
003	<b>Powered Machinery – Lathe, Drill, Milling Machine</b>	<ul style="list-style-type: none"> <li>Entanglement</li> <li>Cuts</li> <li>Puncturing</li> <li>Drawing in, leading to more serious injury</li> </ul>	<ul style="list-style-type: none"> <li>All machines have guards which are correctly adjusted</li> <li>Emergency Stops are fitted to machines and Emergency Stop control to whole workshop</li> <li>Machinery is kept in good working condition</li> <li>Adequate spacing given between machinery</li> <li>Loose clothing and jewellery must not be worn</li> <li>Long hair must be tied back</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> </ul>	L	All Staff members	As necessary
056	<b>Electric arc welder</b>  <b>Storage Only - Argoshield gas Removed</b>	<ul style="list-style-type: none"> <li>Burns</li> <li>Flame arcs</li> <li>Fire</li> <li>Hot surfaces</li> <li>UV radiation</li> </ul>	<ul style="list-style-type: none"> <li>Hot permit required (and reconnection of gas)</li> <li>Suitable tools for holding and moving hot objects available</li> <li>Heat resistant gloves, welding masks and overalls are used</li> <li>Combustible material removed from area</li> <li>First-aid kit available</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall undertake one day Emergency First-aid and Emergency Response training</li> </ul>	L	All Staff members	As necessary

### Room KE1-012: First Year Physics Laboratory

**Users of room, access, maximum capacity:** About 250 to 300 1<sup>st</sup> Year Students use the laboratory per week. Students are not allowed enter the laboratory unless a Staff member is present. The lab is locked when not in use. The maximum capacity in the laboratory is 32 Students plus 2 Supervisors and 1 Technical Officer.

**The main activities with details specialist equipment/materials:**

- 1<sup>st</sup> Year Physics Practicals
- Small quantities of H<sub>2</sub>SO<sub>4</sub> (couple of mls) stored in laboratory
- Use of chemicals such as paraffin wax tablets, liquid paraffin (flammable), glycerine, methylated spirits (flammable), lycopodium powder (flammable and harmful if taken internally) and copper sulphate granules and solution (harmful if taken internally)
- Bunsen burners are used for about 10 weeks during the year
- Use of mercury thermometers for about 4 weeks of the year - replaced by digital thermometers where possible
- Use of 633nm Class 2 and 3a lasers
- Use of low dosage encapsulated radioactive sources (Co60) for 8 weeks of the year. These are stored in a lead container during the period
- The procedure given in section 1.1 for the safe use of radioisotopes is followed and “*The Manual of Regulations for the safe use of sources of ionising radiation*” **Version 6, 2014** is available in the laboratory.

### Observations

The laboratory does not have a phone but is adjacent to the Technical Officer’s office. It has 2 fire extinguishers, 2 fire blankets and first-aid kit and the Technical Officer working in this laboratory is trained in emergency first-aid as per DIT policy.



Hazard Identification, Risk Assessment and Control Measures specific to room KE1-012

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
007	Slips, Trips & Falls	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Bags &amp; Coats stored neatly under workbench</li> <li>Spillages Cleaned up immediately</li> <li>Floor in good condition</li> <li>Good Lighting</li> <li>No Food and Drink permitted in the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>Incident report form to be completed immediately</li> </ul>	M	All Staff members	As necessary
054	Gas Bunsen Burners, Tripods & Gauzes	<ul style="list-style-type: none"> <li>Burns</li> <li>Scalds</li> <li>Cuts</li> <li>Breakages</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on Lighting &amp; flame control given to Students</li> <li>Cut off switch available in case of emergency</li> <li>First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> <li>Gas supply isolated at end of class</li> </ul>	<ul style="list-style-type: none"> <li>Routine checks made to Bunsens &amp; Bunsen tubing</li> <li>Staff shall undertake one day emergency First-aid training</li> </ul>	L	All Staff members	As necessary
002	Heavy Equipment	<ul style="list-style-type: none"> <li>Back strain</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Heavy items stored at easily accessible height</li> <li>Step ladder provided for light items at height</li> <li>Trolley used for transport</li> </ul>	<ul style="list-style-type: none"> <li>Staff members shall ensure compliance with Manual Handling Training</li> </ul>	L	All Staff members	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
7.0	Glassware	<ul style="list-style-type: none"> <li>Breakages</li> <li>Cuts</li> </ul>	<ul style="list-style-type: none"> <li>All glassware checked before use &amp; all broken/chipped glassware placed in marked glass bin</li> <li>Beakers not overfilled</li> <li>Spillages Cleaned up immediately</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls.</li> <li>Empty glass bins when full</li> <li>Incident report form to be completed immediately in event of a cut</li> </ul>	L	All Staff members	As necessary
055	Chemicals – Lycopodium Powder & Copper Sulfate Solution	<ul style="list-style-type: none"> <li>Flammable</li> <li>Harmful if taken Internally</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use of chemicals given to Students</li> <li>Used in small quantities</li> <li>First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> <li>Chemical SDS available</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall undertake one day Emergency First-aid training</li> </ul>	L	All Staff members	As necessary
5.0	Mercury Thermometers	<ul style="list-style-type: none"> <li>Toxic</li> <li>Cuts from glass if broken</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on handling &amp; placement when not in use given at start of class</li> <li>Breakages of glass and Spills of Mercury cleaned up immediately</li> </ul>	<ul style="list-style-type: none"> <li>Mercury disposal via School of Chemistry</li> <li>Digital thermometers used where possible</li> </ul>	L	All Staff members	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
015	Radioactive Sources	<ul style="list-style-type: none"> <li>Radiation Exposure</li> </ul>	<ul style="list-style-type: none"> <li>Instructions given at start of class</li> <li>Student &amp; Staff usage to be logged</li> <li>Tweezers used for all handling</li> <li>Sources never to be held near the body, particularly the eyes</li> <li>Exposure duration kept as short as possible</li> <li>Wash Hands before leaving the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 1.0 of the Safety Statement &amp; “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>In the case of an accident/incident – Dr Jacinta Browne(RPO) and Dr John Doran (Head of School) must be notified immediately</li> </ul>	L	All Staff members	As necessary
023	Class 2, 3a Lasers	<ul style="list-style-type: none"> <li>Damage to Eyes &amp; Skin</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use given to Students</li> <li>Beam set at waist level</li> <li>All beams pointed in one direction</li> <li>Turn off laser at end of measurement</li> <li>Free eye sight test available with NOC for all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 2.0 of the Risk Assessment for more information</li> <li>Staff can contact NOC as necessary for eye sight test</li> </ul>	L	All Staff members	As necessary

### Room KE1-013: Computer Room

The room is used by Staff/Students and is an open access room. The capacity is 25 Students plus one member of Staff - occasionally this capacity is exceeded by up to 2 additional students using personal computers.

The main activities are;

- Learning through the medium of Information Technology

Specialist equipment;

- 26 PCs,
- 2 Network Hubs,
- Network wiring,
- Overhead Projector

### Hazard Identification, Risk Assessment and Control Measures specific to room KE1-013

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
017 018 019 020	<u>Services:</u> <b>Heating</b> <b>Lighting</b> <b>Ventilation</b> <b>Windows</b> <b>Electricity</b>	<ul style="list-style-type: none"> <li>• Environment too hot or too cold</li> <li>• Inadequate lighting</li> <li>• Inadequate ventilation due to heat from computers</li> <li>• Electrical hazards</li> <li>• Insufficient electrical sockets</li> </ul>	<ul style="list-style-type: none"> <li>• Air conditioning and natural ventilation present</li> <li>• Windows openable</li> <li>• Blinds in place and in working order</li> <li>• Electrics up to standard. Cables neatly positioned</li> <li>• Sufficient numbers of electrical sockets</li> <li>• Light switches easily accessible (height)</li> </ul>	<ul style="list-style-type: none"> <li>• No Eating or Drinking in Lab</li> <li>• Pre use checks on cables, plugs and faulty sockets for all electrical devices by Technical Officer</li> <li>• Contact Building Maintenance Manager if problems arise</li> </ul>	<b>L</b>	<b>School of Physics Staff</b>  <b>DIT Buildings Office</b>	<b>As necessary</b>

## Room KE1-016: Postgraduate Research

### Room KE1-016 Postgraduate Research

The room is used by Staff, postgraduates and undergraduates under supervision. It contains 3 medical ultrasound scanners, B-mode test phantom, 3 pump-motor systems, flow phantom (with blood mimicking fluid) and string phantom. The room is locked when not in use. The room has maximum capacity of 8.

The main activities taking place in this laboratory are as follows:

- Postgraduate and Undergraduate Research Projects
- Use but not preparation of Chemicals (propanol, glycerol, agar, PVA-C, small amounts of organic solvents and flammables)
- Ultrasound imaging and Doppler ultrasound measurements

### Observations

The research laboratory does have a phone. It has a fire extinguisher and first-aid kit

Hazard Identification, Risk Assessment and Control Measures specific to room KE1-016.

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
7.0	Glassware	<ul style="list-style-type: none"> <li>Breakages</li> <li>Cuts</li> </ul>	<ul style="list-style-type: none"> <li>All glassware checked before use &amp; all broken/chipped glassware placed in marked glass bin</li> <li>Beakers not overfilled</li> <li>Care taken in cleaning and storing of glassware</li> <li>Spillages Cleaned up immediately</li> </ul>	<ul style="list-style-type: none"> <li>Training &amp; Awareness</li> <li>Empty glass bins when full</li> <li>Incident report form to be completed immediately in event of a cut</li> </ul>	L	All Staff members	As necessary
055	<p>Chemicals – Propanol, Orgasol,</p> <p>Glycerol, Agar, Dextran, PVA-C</p>	<ul style="list-style-type: none"> <li>Flammable</li> <li>Harmful if taken Internally</li> <li>Irritating to eyes</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use given by lecturer to Students</li> <li>Use in small quantities and Store Correctly</li> <li>Use PPE as necessary</li> <li>First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> <li>Chemical SDS available</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall undertake one day Emergency First-aid training</li> </ul>	L	All Staff members	As necessary

### Room KE1-034: Optics Laboratory

The room is used by 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> year physics Students for both laboratory experiments and project work. Students are not allowed enter the laboratory unless a Staff member is present. The laboratory is locked when not in use. Its maximum capacity is 20 Students plus two Supervisors and one Technical Officer.

#### **Observations**

The laboratory does have a phone. It has a fire extinguisher and first-aid kit and the Technical Officer working in this laboratory is trained in emergency first-aid as per DIT policy



Hazard Identification, Risk Assessment and Control Measures specific to room KE1-034.

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
007	Slips, Trips & Falls  Risk increased due to work being carried out in a dark environment	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Bags &amp; Coats stored neatly under workbench</li> <li>Each workstation has own individual light source</li> <li>Light switches easily accessible</li> <li>Floor in good condition</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>Incident report form to be completed immediately</li> </ul>	M	All Staff members	As necessary
023	Class 2, 3a Lasers	<ul style="list-style-type: none"> <li>Damage to Eyes</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use given by lecturers to Students</li> <li>Beam set at waist level</li> <li>All beams pointed in one direction</li> <li>Turn off laser at end of measurement</li> <li>Free eye sight test available with NOC for all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 2.0 of the Risk Assessment for more information</li> <li>Staff can contact NOC as necessary for eye sight test</li> </ul>	L	All Staff members	As necessary
023	Class 3b Laser	<ul style="list-style-type: none"> <li>Damage to Eyes</li> <li>Avoid direct eye exposure</li> </ul>	<ul style="list-style-type: none"> <li>Used for Demonstration purpose only by lecturer in charge of laboratory</li> </ul>	<ul style="list-style-type: none"> <li>Eye protection goggles required by all exposed to Class 3b Laser</li> <li>Refer to Section 2.5</li> <li>Maintain Controls</li> </ul>	L	All Staff members	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
057	High Voltage from Spectral Lamp Power Supplies	<ul style="list-style-type: none"> <li>Electrical Shock</li> <li>Burns</li> <li>Fire</li> </ul>	<ul style="list-style-type: none"> <li>Students instructed to plug in lamps only for duration of experiment</li> <li>Students instructed to plug out device before changing bulbs &amp; to check before removing bulb that it is cool to touch</li> <li>Electrics up to standard. Cables neatly positioned</li> <li>First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Pre use checks on cables, plugs and faulty sockets for all electrical devices by Technical Officer</li> <li>Staff shall undertake one day Emergency First-aid training</li> </ul>	L	School of Physics Staff	As necessary
002	Heavy Equipment	<ul style="list-style-type: none"> <li>Back strain</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Heavy items stored at easily accessible height</li> <li>All Lecturers/Students advised not to lift heavy items. Only Trained Technical Officer to move items</li> </ul>	<ul style="list-style-type: none"> <li>Maintain Controls</li> <li>Staff members shall ensure compliance with Manual Handling Training</li> </ul>	L	All Staff members	As necessary

### Room KE1-035: Clinical Measurement Laboratory

This room is used by 3<sup>rd</sup> and 4<sup>th</sup> year physics Students for both laboratory experiments and for lectures. The room is locked when not in use. The room has maximum capacity of 30.

The main activities taking place in this laboratory are as follows:

- Ultrasound imaging and Doppler ultrasound measurements
- ECG and EEG Testing
- Range of Pulmonary function, sleep diagnostic and non-invasive ventilation testing
- Postgraduate and Undergraduate Research Presentations

#### **Observations/action to be taken**

The laboratory does have a phone. It has a fire extinguisher and first-aid kit.

Hazard Identification, Risk Assessment and Control Measures specific to rooms KE1-035

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
010	<b>Ergonomics</b>	<ul style="list-style-type: none"> <li>MSD's</li> <li>Upper limb disorders</li> <li>Poor posture</li> <li>Back problems</li> <li>Eye strain / fatigue</li> </ul>	<ul style="list-style-type: none"> <li>Workstation risk assessments available to all Staff</li> <li>Elearning programme available to all Staff</li> <li>Free eye sight tests available to all Staff with the NOC every 2 years</li> </ul>	<ul style="list-style-type: none"> <li>Staff shall contact Yvonne McArdle for enrolment on online courses or risk assessment</li> <li>Staff can contact NOC as necessary</li> </ul>	<b>L</b>	<b>School of Physics Staff</b>	<b>As necessary</b>
002	<b>Manual Handling</b>	<ul style="list-style-type: none"> <li>Manual handling injuries/back strain</li> <li>Pushing/pulling of machines on carts</li> </ul>	<ul style="list-style-type: none"> <li>Manual handling training mandatory for all DIT Staff</li> <li>Carts in good condition and well maintained</li> </ul>	<ul style="list-style-type: none"> <li>Staff shall ensure compliance with manual handling training</li> <li>Maintain controls</li> </ul>	<b>L</b>	<b>School of Physics Staff</b>	<b>Ongoing</b>
026	<b>Housekeeping</b>	Slips, trips and falls Increased fire load	<ul style="list-style-type: none"> <li>Instructions on door and stacking of chairs at rear when not in use</li> <li>All routes kept clear and unobstructed</li> <li>Fire load kept to a minimum</li> <li>Waste removed on a regular basis</li> </ul>	<ul style="list-style-type: none"> <li>Ensure routes, corridors and exits are clear and unobstructed</li> </ul>	<b>M</b>	<b>All Staff members</b>	<b>Ongoing</b>

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
003	Electrical Equipment and Machinery	<ul style="list-style-type: none"> <li>Electrical Shock or burns</li> <li>Injury from fall</li> <li>Fire</li> <li>Lack of information and/or training</li> </ul>	<ul style="list-style-type: none"> <li>All Equipment designed with fail safe trip switches</li> <li>Fused plugs</li> <li>First-aid Kits available</li> <li>On the job training for Students by lecturers</li> <li>All whole timeStaff trained in Emergency First-aid</li> <li>Emergency Response training available to all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall ensure compliance with Emergency Response Training and Emergency First-aid Training</li> </ul>	L	School of Physics Staff	Ongoing
052	High Pressure Gas Cylinders	<ul style="list-style-type: none"> <li>Leakage</li> <li>Fire/explosion</li> <li>Inhalation of harmful fumes</li> <li>Asphyxiation</li> <li>High pressure hosing</li> <li>Cylinder regulators</li> </ul>	<ul style="list-style-type: none"> <li>Signage for compressed gas</li> <li>Cylinders stored Upright and Securely fastened to walls</li> <li>First-aid Kits available</li> <li>All whole timeStaff trained in Emergency First-aid</li> </ul>	<ul style="list-style-type: none"> <li>Staff shall ensure compliance with training.</li> <li>Maintain controls and maintenance</li> <li>Routine inspections such as balloon valve and regulator leak tests</li> <li>See APPENDIX 4: SOP on Use of High Pressure Gas Cylinders</li> </ul>	L	School of Physics Staff	Ongoing

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
058	Incident during stress testing for ECG or pulmonary function testing	<ul style="list-style-type: none"> <li>Notification of prior medical conditions requested before use</li> <li>Skin irritation from adhesive electrode patches</li> </ul>	<ul style="list-style-type: none"> <li>First-aid Kits available</li> <li>All whole time Staff trained in Emergency First-aid</li> </ul>	<ul style="list-style-type: none"> <li>Staff shall ensure compliance with training</li> <li>Routine inspections and maintenance</li> </ul>	L	School of Physics Staff	Ongoing
059	Infection Control	<ul style="list-style-type: none"> <li>Contamination of medical devices</li> <li>Cross Infection</li> <li>Lack of information and/or training</li> </ul>	<ul style="list-style-type: none"> <li>Usage of single use mouthpieces and disposable items ( filters, nose clips and tissues)</li> <li>Alcohol cleaning wipes used</li> <li>Cleaning protocol for decontamination of surfaces and medical device parts</li> <li>Device appropriate cleaning agents used</li> <li>Appropriate waste disposal and labeling of waste where necessary</li> <li>PPE used/worn where required - Latex free gloves and white lab coat</li> <li>First-aid Kits available</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Routine inspections and maintenance</li> <li>Staff shall keep abreast of changes in this area</li> <li>Staff shall ensure compliance with Emergency Response Training and Emergency First-aid Training</li> </ul>	L	School of Physics Staff	Ongoing

### Room KE1-039: Third and Final Year Laboratory

The room is used for both laboratory experiments and project work. There is open access to the laboratory. The maximum capacity in this laboratory is 16 Students due to the nature of the experiments and the amount of equipment required for the respective experiment or project.

- Electrical measurement devices including power supplies and oscilloscopes
- Signal generators, wavetek universal calibration system
- Instron tester, vacuum system
- Materials preparation equipment including small circular cutting saw, lapping and polishing machine, fume hood, microscope
- Optical spectrometers with pc's
- Bunsen burners for melting lead and tin
- Temperature controlled oven
- Computer and peripherals
- $\lambda$  Spectrometer which uses radioactive sources
- X –ray Didactic apparatus
- Scintillation detector
- NMR/ESR Student unit including magnet and power supplies
- The fume hood is also used by Students in Eutectic Experiments and Etching experiments which use a Phosphoric Acetic Nitric (acid) mix

#### Observations

The laboratory does not have a phone. It has a first-aid kit, one powder fire extinguisher, two CO<sub>2</sub> fire extinguishers and a fire blanket.

### Hazard Identification, Risk Assessment and Control Measures specific to room KE1-039

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
057	<b>High Voltage Electrical Equipment and Machinery</b>	<ul style="list-style-type: none"> <li>Electrical Shock or burns</li> <li>Injury from fall</li> <li>Compression Injury – Instron Machine</li> <li>Fire</li> <li>Lack of information and/or training</li> </ul>	<ul style="list-style-type: none"> <li>Instructions given for use to Students by lecturers</li> <li>All Equipment designed with fail safe trip switches</li> <li>Fused plugs</li> <li>PPE (Safety Glasses) must be worn where indicated</li> <li>First-aid Kits available</li> <li>All whole time Staff trained in Emergency First-aid</li> <li>Emergency Response training available to all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall ensure compliance with Emergency Response Training and Emergency First-aid Training</li> </ul>	L	School of Physics Staff	Ongoing
054	<b>Gas Bunsen Burners, Tripods &amp; Gauzes</b>	<ul style="list-style-type: none"> <li>Burns</li> <li>Scalds</li> <li>Cuts</li> <li>Breakages</li> </ul>	<ul style="list-style-type: none"> <li>Cut off switch available in case of emergency</li> <li>First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> <li>Gas supply isolated at end of class</li> </ul>	<ul style="list-style-type: none"> <li>Routine checks made to Bunsen Burners &amp; Bunsen tubing</li> <li>Staff shall undertake one day emergency First-aid training</li> </ul>	L	All Staff members	As necessary



Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
060	<b>X –rays</b>  <b>Didactic X –ray apparatus</b>  <b>Who is harmed:</b> <ul style="list-style-type: none"> <li>• Staff members</li> <li>• Students</li> <li>• Postgraduates</li> <li>• Service Engineers</li> </ul>	<ul style="list-style-type: none"> <li>• Localised Radiation Exposure in the form of burns to skin and eyes</li> <li>• Erythema</li> <li>• Epilation</li> <li>• Dermatitis</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions and training on instrument given before use</li> <li>• X-ray SOPs in place</li> <li>• Safety warning signs</li> <li>• Engineered control measures</li> <li>• In built shielding</li> <li>• Automatic Safety door Interlock which unlocks the doors only when no rays are being produced</li> <li>• Warning light when X-rays are being produced</li> <li>• Any service of equipment to be undertaken by trained personnel only</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>• In the case of an accident/incident –Dr Jacinta Browne (RPO) and Dr John Doran (Head of School) must be notified immediately</li> </ul>	L	<b>School of Physics Staff and Students</b>  <b>Service Engineers</b>	Ongoing
010	<b>Ergonomics – Strain from VDU usage</b>	<ul style="list-style-type: none"> <li>• Musculo-skeletal Disorders (MSD’s)</li> <li>• Upper limb disorders</li> <li>• Poor posture</li> <li>• Back problems</li> <li>• Eye strain / fatigue</li> </ul>	<ul style="list-style-type: none"> <li>• Workstation equipment up to standard and positioned to allow for freedom of movement</li> <li>• Online E-learning programme available to all Staff</li> <li>• Free eye sight tests available to all Staff with the NOC every 2 years</li> </ul>	<ul style="list-style-type: none"> <li>• Short Frequent breaks advised</li> <li>• Staff shall contact Yvonne McArdle for enrolment on online courses or risk assessment</li> <li>• Contact NOC as necessary</li> </ul>	L	<b>School of Physics Staff</b>	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
055	<b>Chemicals – Eutectic Experiment and Etching Experiment</b>	<ul style="list-style-type: none"> <li>Fumes</li> <li>Vapours irritating to eyes, nose &amp; respiratory tract</li> <li>Chemical burns</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use given by lecturer to Students</li> <li>Use Only in Fume Hood</li> <li>Use in small quantities and Store Correctly</li> <li>Use PPE as necessary</li> <li>First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> <li>Chemical SDS available for tin/lead mix</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall undertake one day Emergency First-aid training</li> </ul>	<b>L</b>	<b>All Staff members</b>	<b>As necessary</b>
015	<b>Radioactive Sources</b>	<ul style="list-style-type: none"> <li>Radiation Exposure</li> </ul>	<ul style="list-style-type: none"> <li>Instructions given at start of class</li> <li>Tweezers used for all handling.</li> <li>Sources never to be held near the body, particularly the eyes</li> <li>Student &amp; Staff usage to be logged</li> <li>Wash Hands before leaving the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 1.0 of the Safety Statement &amp; “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>In the case of an accident/incident Dr Jacinta Browne (RPO) and Dr John Doran (Head of School) must be notified</li> </ul>	<b>L</b>	<b>All Staff members</b>	<b>As necessary</b>

### Room KE1-040: Third and Final Year Laboratory

The laboratory is used by third and fourth year undergraduate Students to perform both experiments and projects.

Access is by key only as the laboratory is locked when a Staff member is not present, the only exception being where a Staff member gives a Student permission to use the facilities outside laboratory hours, under these circumstances a Staff member would be present in the department.

- Laboratory experiments in the area of Physics, including electrical, vacuum, radioactivity, refrigeration, Student x-ray unit, computer based experiments, project construction.
- Equipment used: power supplies, oscilloscopes, signal generators  $\alpha$  spectrometer, Student x-ray unit, refrigeration demonstration unit, computers and monitors.
- Liquid nitrogen

#### Observations

The laboratory does have a phone. It has a first-aid kit and fire extinguisher and the Technical Officer working in the laboratory is trained in emergency first-aid as per DIT policy.

**Hazard Identification, Risk Assessment and Control Measures specific to room KE1-040.**

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
061	Liquid Nitrogen	<ul style="list-style-type: none"> <li>• Cryogenic burns</li> <li>• Frostbite</li> <li>• Asphyxiation</li> </ul>	<ul style="list-style-type: none"> <li>• Precautions on use given to Students</li> <li>• PPE – gloves and facemask/goggles should be worn</li> <li>• Decant into clamp-held serrated container</li> <li>• Storage containers maintained in good working order.</li> </ul>	<ul style="list-style-type: none"> <li>• Routine inspections and maintenance of storage container</li> <li>• Refer to Appendix 4 for more information</li> </ul>	L	School of Physics Staff	Ongoing
015	Radioactive Sources	<ul style="list-style-type: none"> <li>• Radiation Exposure</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions given at start of class</li> <li>• Tweezers used for all handling</li> <li>• Sources never to be held near the body, particularly the eyes</li> <li>• Student &amp; Staff usage to be logged</li> <li>• Wash Hands before leaving the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to Section 1.0 of the Safety Statement &amp; “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>• In the case of an accident/incident Dr Jacinta Browne (RPO) and Dr John Doran (Head of School) must be notified immediately</li> </ul>	L	All Staff members	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
055	Chemicals	<ul style="list-style-type: none"> <li>• Toxic</li> <li>• Flammable</li> <li>• Combustible</li> <li>• Harmful if taken Internally</li> <li>• Irritating to eyes</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions on use given by lecturer to Students.</li> <li>• Use in small quantities and Store Correctly</li> <li>• Use PPE as necessary.</li> <li>• First-aid kit available in all Laboratories &amp; First-aid training available to all Staff</li> <li>• Chemical SDS available</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain controls.</li> <li>• Staff shall undertake one day Emergency First-aid training.</li> </ul>	L	All Staff members	As necessary
060	X-ray Spectrometer	<ul style="list-style-type: none"> <li>• Radiation</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions on use given by lecturer to students at start of class</li> <li>• Signage for x-rays present next to apparatus and at entrance</li> <li>• Interlocked chamber encloses the beam</li> <li>• Interference with chamber cover cuts off power to the unit</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to Section 1.2 of the Safety Statement &amp; “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>• In the case of an accident, an Incident report form is to be completed and the RPO and Head of School notified immediately</li> </ul>	L	All Staff members	As necessary

### Room KE1-041: Second Year Physics Laboratory

The room is used by 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> year physics Students. Students are not allowed enter the laboratory unless a Staff member is present. The lab is locked when not in use. Its maximum capacity is twenty Students plus three Staff members. This capacity may be exceeded if computer users are included.

The main activities with details specialist equipment/materials:

- Second year physics practicals
- Computer applications

#### **Observations**

The laboratory has a phone, a first-aid kit and fire extinguisher. The Technical Officer working in the laboratory is trained in emergency first aid, Gas safety awareness and manual handling dealing with the moving of compressed gas cylinders.

**Hazard Identification, Risk Assessment and Control Measures specific to room KE1-041**

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
7.0	<b>Glassware</b>	<ul style="list-style-type: none"> <li>• Breakages</li> <li>• Cuts</li> </ul>	<ul style="list-style-type: none"> <li>• All glassware checked before use &amp; all broken/chipped glassware placed in marked glass bin</li> <li>• Beakers not overfilled</li> <li>• Spillages Cleaned up immediately</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain controls.</li> <li>• Empty glass bins when full</li> <li>• Incident report form to be completed immediately in event of a cut</li> </ul>	<b>L</b>	<b>All Staff and Students</b>	<b>As necessary</b>
8.0	<b>Hot Plates</b>	<ul style="list-style-type: none"> <li>• Burns from hot surfaces</li> <li>• Scalds from liquids heated on hotplate</li> <li>• Fire due to flammable materials placed too close</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions on use given by lecturers to Students</li> <li>• Indicator light visible</li> <li>• Small quantities of liquids heated</li> <li>• Hotplate not left unattended</li> <li>• Hotplate turned off after use</li> </ul>	<ul style="list-style-type: none"> <li>• Routine checks made to Hot Plate to check for corrosion and to check electrical wiring</li> </ul>	<b>L</b>	<b>All Staff and Students</b>	<b>As necessary</b>
5.0	<b>Mercury Thermometers</b>	<ul style="list-style-type: none"> <li>• Toxic</li> <li>• Cuts from glass if broken and vapour inhalation</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions on handling &amp; placement when not in use given at start of class</li> <li>• Breakages of glass and Spills of Mercury cleaned up immediately</li> </ul>	<ul style="list-style-type: none"> <li>• Mercury disposed of via School of Chemistry</li> <li>• Digital thermometers to be used where possible</li> </ul>	<b>L</b>	<b>All Staff members</b>	<b>As necessary</b>

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
015	Radioactive Sources	<ul style="list-style-type: none"> <li>Radiation Exposure</li> </ul>	<ul style="list-style-type: none"> <li>Instructions given at start of class</li> <li>Student &amp; Staff usage to be logged</li> <li>Student protection guidelines read &amp; signed</li> <li>Tweezers used for all handling.</li> <li>Sources never to be held near the body, particularly the eyes</li> <li>Wash Hands before leaving the laboratory</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 1.0 of the Safety Statement &amp; “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>In the case of an accident/incident –Dr Jacinta Browne (RPO) and Dr John Doran (Head of School) must be notified immediately</li> </ul>	L	All Staff members	As necessary
023	Class 2, 3a Lasers	<ul style="list-style-type: none"> <li>Damage to Eyes &amp; Skin</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use given by lecturers to Students</li> <li>Beam set at waist level</li> <li>All beams pointed in one direction</li> <li>Turn off laser at end of measurement</li> <li>Free eye sight test available with NOC for all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 2.0 of the Risk Assessment for more information</li> <li>Staff can contact NOC as necessary for eye sight test</li> </ul>	L	All Staff members	As necessary



Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
057	<b>High Voltage Electrical Equipment – Thompson E/M, Electron Diffraction, Spectral Lamps (Na and H)</b>	<ul style="list-style-type: none"> <li>Electrical Shock or burns</li> <li>Injury from fall</li> <li>Fire</li> </ul>	<ul style="list-style-type: none"> <li>All Equipment designed with fail safe trip switches</li> <li>Fused plugs</li> <li>First-aid Kits available</li> <li>On the job training for Students by lecturers</li> <li>All wholetime Staff trained in Emergency First-aid</li> <li>Emergency Response training available to all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall ensure compliance with Emergency Response Training and Emergency First-aid Training</li> </ul>	<b>L</b>	<b>School of Physics Staff</b>	<b>Ongoing</b>
053	<b>High Pressure Gas Cylinders – Carbon Dioxide, Nitrogen and Pureshield Argon</b>	<ul style="list-style-type: none"> <li>Leakage</li> <li>Fire/explosion</li> <li>Inhalation of harmful fumes</li> <li>Asphyxiation</li> </ul>	<ul style="list-style-type: none"> <li>Gas released for experiment by Technical Officer in charge</li> <li>Signage for compressed gas</li> <li>Cylinders stored Upright and Securely fastened to walls</li> <li>First-aid Kits available</li> <li>All wholetime Staff trained in Emergency First-aid</li> </ul>	<ul style="list-style-type: none"> <li>Staff shall ensure compliance with training</li> <li>Routine inspections and maintenance</li> <li>See APPENDIX 1: SOP on Use of High Pressure Gas Cylinders</li> </ul>	<b>L</b>	<b>School of Physics Staff</b>	<b>Ongoing</b>

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
005	Noise	<ul style="list-style-type: none"> <li>Hearing loss / damage</li> <li>Disruption</li> </ul>	<ul style="list-style-type: none"> <li>No noise over 90dB</li> <li>Sound level monitored when speaker is on</li> <li>Sound generated in sound tube is set to less than 90dB</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Routine safety checks</li> </ul>	L	School of Physics Staff	Ongoing
007	Slips, Trips & Falls  Risk increased due to work being carried out in a darkroom environment	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Bags &amp; Coats stored neatly under workbench.</li> <li>First-aid Kit available</li> <li>All wholetime Staff trained in Emergency First-aid</li> <li>Light switches accessible inside door</li> <li>Floor in good condition</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>Incident report form to be completed immediately</li> </ul>	M	All Staff members	As necessary
058	ECG, EEG, EOG, nerve conductance or pulmonary function testing	<ul style="list-style-type: none"> <li>Notification of prior medical conditions sought before use</li> <li>Skin irritation from adhesive electrode patches</li> </ul>	<ul style="list-style-type: none"> <li>First-aid Kits available</li> <li>All wholetime Staff trained in Emergency First-aid.</li> </ul>	<ul style="list-style-type: none"> <li>Staff shall ensure compliance with training</li> <li>Routine inspections and maintenance</li> </ul>	L	School of Physics Staff	Ongoing

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
062	Microwave Diffraction experiment – Freq=10Ghz, wavelength=2.8cm	<ul style="list-style-type: none"> <li>Lipid peroxidation</li> </ul>	<ul style="list-style-type: none"> <li>Instructions given to Students before use</li> <li>Apparatus switched off after measurement</li> <li>Unpulsed Beam directed and focused in a controlled manner</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Routine safety checks</li> </ul>	L	School of Physics Staff	Ongoing
063	Wire Snap – Young's Modulus experiment	<ul style="list-style-type: none"> <li>Injuries</li> <li>Cuts to skin</li> <li>Cuts to eyes</li> </ul>	<ul style="list-style-type: none"> <li>Limit on mass applied</li> <li>Students advised to remove mass at end of measurement</li> <li>Guard used on apparatus</li> <li>First-aid Kit available</li> <li>All wholetime Staff trained in Emergency First-aid</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Incident report form to be completed immediately</li> </ul>	L	All Staff and Students	As necessary
010	Ergonomics – Strain from VDU usage	<ul style="list-style-type: none"> <li>Musculo-skeletal Disorders (MSD's)</li> <li>Upper limb disorders</li> <li>Poor posture</li> <li>Back problems</li> <li>Eye strain / fatigue</li> </ul>	<ul style="list-style-type: none"> <li>Workstation equipment up to standard and positioned to allow for freedom of movement</li> <li>Online workstation Essential Elearning programme available</li> <li>Free eye sight tests available with the NOC</li> </ul>	<ul style="list-style-type: none"> <li>Short Frequent breaks advised</li> <li>Staff shall contact Yvonne McArdle for enrolment on online courses or risk assessment</li> <li>Contact NOC as necessary</li> </ul>	L	All Staff members	As necessary

### Room B32: Industrial and Engineering Optics Laboratory and Office Space

Academic Staff, research Staff, postdoctoral fellows, graduate and undergraduate Students use the room. It is kept locked when not in use. All laboratory space is separated from office space and only accessible from the corridor by magnetic card. These are only held by IEO Staff, IEO postgraduate Students and associated academic members. The maximum capacity of the office area is 9 people. The total maximum capacity of the laboratories is 10.

- Experimental projects (undergraduate, postgraduate, industrial consultancy, R and D by IEO research Staff and academic Staff)
- Use of dry materials/layers, which have chemicals constituents (small amounts of suspected carcinogens). These materials are handled with latex gloves.
- HeNe lasers Class II and IIIb, Argon ion laser Class IV, diode lasers Class III. Appropriate spectacles are available for each laser.
- Use of air floated optical tables and associated compressed air/nitrogen gas tanks
- Use of loading equipment for stressing samples. Some risk of eye injury if sample shatters.
- Use of 75W arc lamp and power source. Ozone produced by some bulbs.

#### **Observations:**

B32 has a complex substructure of rooms available to authorised Staff and Students only. The room has a phone, a first-aid kit and a fire extinguisher.

### Hazard Identification, Risk Assessment and Control Measures specific to room B32

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
7.0	Glassware – Microscope slides	<ul style="list-style-type: none"> <li>Breakages</li> <li>Cuts</li> </ul>	<ul style="list-style-type: none"> <li>All glassware checked before use &amp; all broken/chipped &amp; used glassware placed in appropriate glass bin in Focas</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Minor cuts to be treated immediately</li> </ul>	L	All Staff members	As necessary
055	Chemicals - acrylamide	<ul style="list-style-type: none"> <li>Exposure to suspected carcinogens</li> </ul>	<ul style="list-style-type: none"> <li>Used in small quantities</li> <li>Safety gloves worn</li> <li>First-aid kit &amp; eye station available &amp; First-aid training available to all Staff</li> <li>Chemical SDS available</li> </ul>	<ul style="list-style-type: none"> <li>Handle with latex gloves</li> <li>Staff shall undertake one day Emergency First-aid training</li> </ul>	M	All Staff members	As necessary
053	High Pressure Gas Cylinders - Nitrogen	<ul style="list-style-type: none"> <li>Fire/explosion</li> <li>Inhalation of harmful fumes</li> <li>Asphyxiation</li> </ul>	<ul style="list-style-type: none"> <li>Signage for compressed gas</li> <li>Cylinders Upright and Securely wall fastened</li> <li>First-aid Kits available</li> <li>All wholtime Staff trained in Emergency First-aid</li> </ul>	<ul style="list-style-type: none"> <li>Staff shall ensure compliance with training</li> <li>Routine inspections and maintenance</li> <li>See APPENDIX 4: SOP on Use of High Pressure Gas Cylinders</li> </ul>	L	All Staff members	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
007	Slips, Trips & Falls  Risk increased due to work being carried out in a darkened environment	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Bags &amp; Coats stored outside the test space</li> <li>Light switches accessible inside door</li> <li>Floor in good condition</li> <li>First-aid Kit available</li> <li>All wholetime Staff trained in Emergency First-aid</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>In the case of an accident – An Incident report form is to be completed immediately</li> </ul>	M	All Staff members	As necessary
023	Class 2 Lasers	<ul style="list-style-type: none"> <li>Damage to Eyes</li> </ul>	<ul style="list-style-type: none"> <li>Instructions on use given before use</li> <li>Beam set at waist level</li> <li>All beams pointed in a controlled direction</li> <li>Laser turned off at end of measurement</li> <li>Free eye sight test available with NOC for all Staff</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 2.0 of the Risk Assessment for more information</li> <li>Staff can contact NOC as necessary for eye sight test</li> </ul>	L	All Staff members	As necessary
023	Class 3b,4 Lasers	<ul style="list-style-type: none"> <li>Damage to Eyes - Avoid direct eye exposure</li> <li>Damage to skin – avoid direct prolonged exposure</li> </ul>	<ul style="list-style-type: none"> <li>Use restricted to trained Staff &amp; Students only</li> <li>Isolated work area</li> <li>Beam set at waist level</li> <li>All beams pointed in a controlled direction</li> <li>Free eye sight test available with NOC</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 2.0 for more information</li> <li>Eye protection goggles required by all exposed to Class 3b and 4 Lasers</li> <li>Maintain Controls</li> </ul>	L	All Staff members	As necessary

### Room B48

Users of room, access, maximum capacity; Restricted to RPO, DRPO and Building Maintenance Manager. Locked at all times.  
This room has a Monitored Fire Detector.

The main activities with details specialist equipment/materials:

- Long term storage of radioactive isotopes in purpose made lead lined fire proof safe.

#### Hazard Identification, Risk Assessment and Control Measures specific to room B48.

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
015	<b>Radioactive Sources</b>	<ul style="list-style-type: none"> <li>• Radiation Exposure</li> </ul>	<ul style="list-style-type: none"> <li>• Restricted access controlled by RPO (Dr Jacinta Browne) and Deputy RPO(Dr Stephen Meaney)</li> <li>• Storage of sources in fireproof lead lined safe with periodic checks</li> <li>• PPE used for all handling</li> <li>• Sources never to be held near the body, particularly the eyes</li> <li>• Wash Hands in warm soapy water at end of handling session</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to “The Manual for the Safe Use of Sources of Ionising Radiation” which is available in all laboratories</li> <li>• Refer to Section 1.0 for more info</li> <li>• In the case of an incident, contact RPO/DRPO immediately and prevent unauthorized access to the site</li> </ul>	L	RPO, deputy RPO and BMM	As necessary With periodic wipe tests carried out by RPO

### Room KE2-015: Optometry

Users of room are Staff, Students and patients (on occasion). Room locked when not in use. Capacity: 18

The main activities with details specialist equipment/materials:

- Student lecturers and labs
- Research Laboratory
- Examinations

#### **Observations**

The laboratory has a first-aid kit and a fire extinguisher. The research area towards the back of the laboratory has a phone.



Hazard Identification, Risk Assessment and Control Measures specific to room KE2-015 lab.

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
007	Slips, Trips & Falls  Risk increased due to work being carried out in a dark environment	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Bags &amp; Coats stored neatly under workbench or in allocated area</li> <li>Each cubicle has own individual controllable light source</li> <li>Light switches easily accessible</li> <li>Floor in good condition</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>Incident report form to be completed immediately</li> </ul>	M	All Staff members	As necessary
010	Ergonomics – Strain from VDU usage	<ul style="list-style-type: none"> <li>Musculo-skeletal Disorders (MSD's)</li> <li>Upper limb disorders</li> <li>Poor posture</li> <li>Back problems</li> <li>Eye strain / fatigue</li> </ul>	<ul style="list-style-type: none"> <li>Workstation equipment up to standard and positioned to allow for freedom of movement</li> <li>Online workstation Essential Elearning programme available</li> <li>Free eye sight tests available with the NOC</li> </ul>	<ul style="list-style-type: none"> <li>Short Frequent breaks advised</li> <li>Staff shall contact Yvonne McArdle for enrolment on online courses or risk assessment</li> <li>Contact NOC as necessary</li> </ul>	L	All Staff members	As necessary
064	Slit Lamp Biomicroscope	<ul style="list-style-type: none"> <li>Cross contamination on Chin rest and Forehead bar contact</li> </ul>	<ul style="list-style-type: none"> <li>Cleaned between users with disinfectant wipes</li> </ul>	<ul style="list-style-type: none"> <li>Incident report form to be completed immediately</li> </ul>	L	All Staff and Students	As necessary
055	Chemical Contact Lens Solutions	<ul style="list-style-type: none"> <li>Contact with eye</li> <li>Hypersensitivity</li> <li>Allergic reaction</li> <li>Incorrect solution instilled into eye</li> </ul>	<ul style="list-style-type: none"> <li>Follow label &amp; lecturers instructions</li> <li>Follow procedure</li> <li>Store correctly</li> </ul>	<ul style="list-style-type: none"> <li>Examine Anterior Eye -manage appropriately</li> <li>Rinse eye with appropriate soln</li> </ul>	L	All Staff and Students	As necessary

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
065	<b>Trial Frame</b>	<ul style="list-style-type: none"> <li>• Cross contamination between users</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaned between users with disinfectant wipes</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>L</b>	<b>All Staff and Students</b>	<b>As necessary</b>
066	<b>Scanning/imaging Equipment</b>	<ul style="list-style-type: none"> <li>• Cross contamination between users</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaned between users with disinfectant wipes</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	<b>L</b>	<b>All Staff and Students</b>	<b>As necessary</b>
067	<b>Trial contact lenses</b>	<ul style="list-style-type: none"> <li>• Contact with eye</li> <li>• Disposable</li> </ul>	<ul style="list-style-type: none"> <li>• Instructions given to users</li> <li>• Dispose after use</li> </ul>	<ul style="list-style-type: none"> <li>• Follow procedure</li> <li>• Students to sign off on manual</li> </ul>	<b>L</b>	<b>All Staff and Students</b>	<b>As necessary</b>
068	<b>Contact Tonometer</b>	<ul style="list-style-type: none"> <li>• Contact with eye</li> <li>• Scratching of cornea when using contact tonometer</li> <li>• Reusable tips used on occasion</li> </ul>	<ul style="list-style-type: none"> <li>• Disposable tips used when possible</li> <li>• Disinfection procedure in place for non disposable tips as per Student manual</li> </ul>	<ul style="list-style-type: none"> <li>• Follow procedure</li> <li>• Students to sign off on manual</li> </ul>	<b>L</b>	<b>All Staff and Students</b>	<b>As necessary</b>
055	<b>Chemicals – Topical anaesthetic (Proxymethacaine / Oxybuprocaine) Fluorescein Mydriatic Cycloplegic Eye drops - other</b>	<ul style="list-style-type: none"> <li>• Contact with eye</li> <li>• Hypersensitivity</li> <li>• Allergic reaction</li> <li>• Do not expose eyes to direct sunlight</li> <li>• Do not drive until dilation effect wears off</li> <li>• Protect eye from dust and contamination.</li> <li>• Protect eye from trauma.</li> </ul>	<ul style="list-style-type: none"> <li>• Follow label &amp; lecturers instructions</li> <li>• Store correctly</li> </ul>	<ul style="list-style-type: none"> <li>• Follow procedure</li> </ul>	<b>L</b>	<b>All Staff and Students</b>	<b>As necessary</b>

## Room KE2-026: Front and Back Office

### Room KE2-026

#### Front Office

Users of room are Staff and Students. Door always open when occupied. Capacity: 1

This office has a phone.

The main activities with details specialist equipment/materials:

- Technical Officer Workstation
- Photocopying room.
- Laser printer room.
- Small equipment storage area

### Room KE2-026 (A)

#### Back Office

This room is used as the office of the Head of the Department of Optometry. Room locked when not in use. Capacity: 1

This office has a phone.

The main activities with details specialist equipment/materials:

- Working desks for Head of School of Optometry
- Computer terminal
- Storage of books, manuals
- Small meeting area

Hazard Identification, Risk Assessment and Control Measures specific to room KE2-026 front office.

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
009	Photocopiers / Photocopying Rooms	<ul style="list-style-type: none"> <li>Changing toner etc.: chemical contact</li> <li>Clearing jams: burns</li> <li>Not wearing gloves</li> <li>Not turning off electrical supply</li> <li>Incorrect disposal</li> <li>Inadequate electrical sockets</li> </ul>	<ul style="list-style-type: none"> <li>The maintenance of all photocopiers is outsourced to MJ Flood</li> <li>Staff do not maintain photocopiers</li> <li>Sockets shall not be overloaded</li> </ul>	<ul style="list-style-type: none"> <li>MJ Flood to be contacted regarding photocopier issues</li> </ul>	L	School of Physics Staff	Ongoing
007	Slips, Trips & Falls	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Light switches easily accessible.</li> <li>Floor in good condition</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>Incident report form to be completed immediately</li> </ul>	M	All Staff members	As necessary

### Room KE2-028: Optometry Laboratory

Users of room are Staff, Students, and patients. Room locked when not in use. Capacity: 24 Students, 2 Supervisors and 1 Technical Officer.

The main activities with details specialist equipment/materials:

- Student lectures and laboratories
- Examinations

#### **Observations**

The laboratory does not have a phone but is adjacent to the Technical Officer's Office. It has a fire extinguisher and first-aid kit and the Technical Officer working in this laboratory is trained in emergency first-aid as per DIT policy.

Hazard Identification, Risk Assessment and Control Measures specific to Laboratory KE2-028.

Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
007	Slips, Trips & Falls  Risk increased due to work being carried out in a dark environment	<ul style="list-style-type: none"> <li>Breakages</li> <li>Injuries</li> </ul>	<ul style="list-style-type: none"> <li>Bags &amp; Coats stored neatly under workbench or in allocated area</li> <li>Each cubicle has own individual controllable light source</li> <li>Light switches easily accessible</li> <li>Floor in good condition</li> </ul>	<ul style="list-style-type: none"> <li>All routes kept clear &amp; unobstructed</li> <li>Incident report form to be completed immediately</li> </ul>	M	All Staff members	As necessary
004	Electrical Equipment	<ul style="list-style-type: none"> <li>Electrical Shock or burns</li> <li>Injury from fall</li> <li>Fire</li> </ul>	<ul style="list-style-type: none"> <li>All Equipment designed with fail safe trip switches</li> <li>Fused plugs</li> <li>First-aid Kits available</li> <li>On the job training for Students by lecturers</li> <li>All whole timeStaff trained in Emergency First-aid and Emergency Response training</li> </ul>	<ul style="list-style-type: none"> <li>Maintain controls</li> <li>Staff shall ensure compliance with Emergency Response Training and Emergency First-aid Training</li> </ul>	L	All Staff members	Ongoing
064	Slit Lamp Biomicroscope	<ul style="list-style-type: none"> <li>Cross contamination on Chin rest and Forehead bar contact</li> </ul>	<ul style="list-style-type: none"> <li>Cleaned between users with disinfectant wipes</li> </ul>	<ul style="list-style-type: none"> <li>Incident report form to be completed immediately</li> </ul>	L	All Staff and Students	As necessary
065	Trial Frame	<ul style="list-style-type: none"> <li>Cross contamination between users</li> </ul>	<ul style="list-style-type: none"> <li>Cleaned between users with disinfectant wipes</li> </ul>	<ul style="list-style-type: none"> <li>Maintain standards</li> </ul>	L	All Staff and Students	As necessary

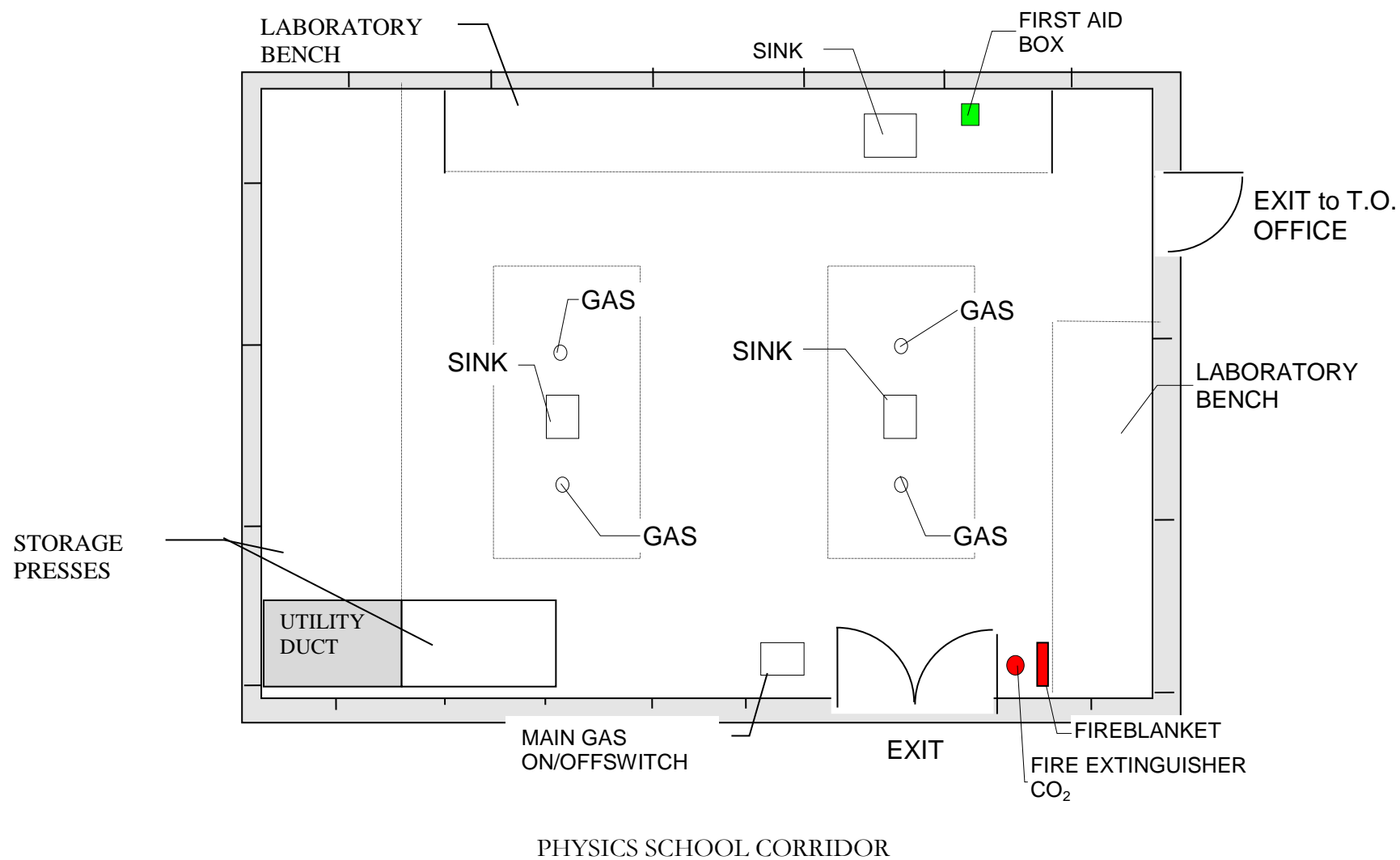
Ref	Hazard	Risk(s) Associated / Description	Control Measures		Risk H/M/L (with Controls /Actions)	Person(s) Responsible	Target Date / Status
			Current Controls	Further Actions Required			
066	Scanning/imaging Equipment	<ul style="list-style-type: none"> <li>• Cross contamination between users</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaned between users with disinfectant wipes</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain standards</li> </ul>	L	All Staff and Students	As necessary
067	Contact Tonometer	<ul style="list-style-type: none"> <li>• Contact with eye</li> <li>• Scratching of cornea when using contact tonometer</li> <li>• Reusable tips used on occasion</li> </ul>	<ul style="list-style-type: none"> <li>• Disposable tips used when possible</li> <li>• Disinfection procedure in place for non-disposable tips as per Student manual</li> </ul>	<ul style="list-style-type: none"> <li>• Follow procedure</li> <li>• Students to sign off on manual</li> </ul>	L	All Staff and Students	As necessary
055	Chemicals– Topical anaesthetic (Proxymethacaine / Oxybuprocaine) Fluorescein Mydriatic Cycloplegic Eye drops - other	<ul style="list-style-type: none"> <li>• Contact with eye</li> <li>• Hypersensitivity</li> <li>• Allergic reaction</li> <li>• Do not expose eyes to direct sunlight</li> <li>• Do not drive until dilation effect wears off</li> <li>• Protect eye from dust /trauma /contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Follow label &amp; lecturers instructions</li> <li>• Store correctly</li> </ul>	<ul style="list-style-type: none"> <li>• Follow procedure</li> </ul>	L	All Staff and Students	As necessary
010	Ergonomics – Strain from VDU usage	<ul style="list-style-type: none"> <li>• Musculo-skeletal Disorders (MSD's)</li> <li>• Upper limb disorders</li> <li>• Poor posture</li> <li>• Back problems</li> <li>• Eye strain / fatigue</li> </ul>	<ul style="list-style-type: none"> <li>• Workstation equipment up to standard and positioned to allow for freedom of movement</li> <li>• Online workstation Essential Elearning programme available</li> <li>• Free eye sight tests available with the NOC</li> </ul>	<ul style="list-style-type: none"> <li>• Short Frequent breaks advised</li> <li>• Staff shall contact Yvonne McArdle for enrolment on online courses</li> <li>• Contact NOC as necessary</li> </ul>	L	All Staff members	As necessary

## **School Of Physics Floor Plans**

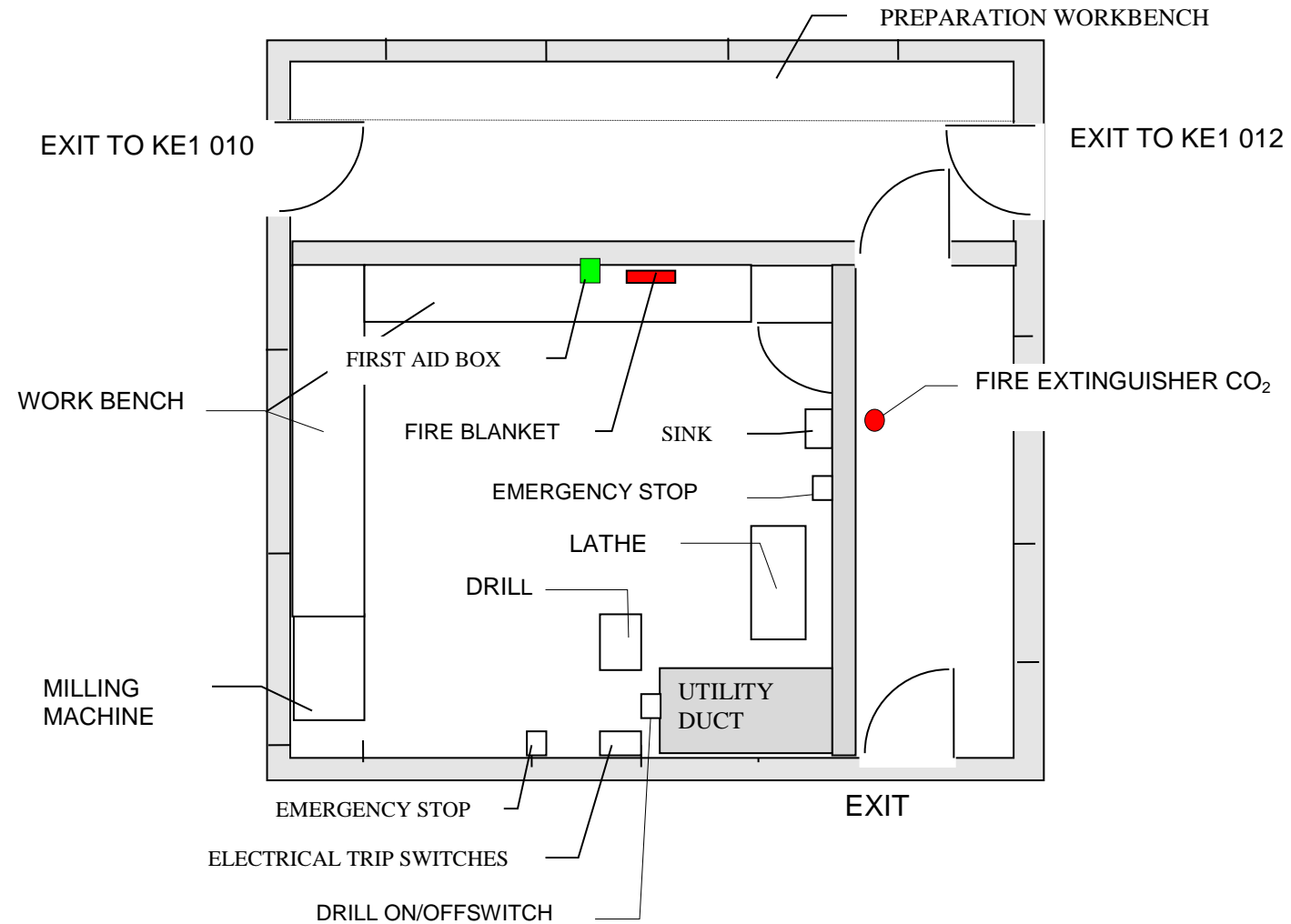


### Room KE1-010 Laboratory

(8m x 7.8m = 62.4m<sup>2</sup>)

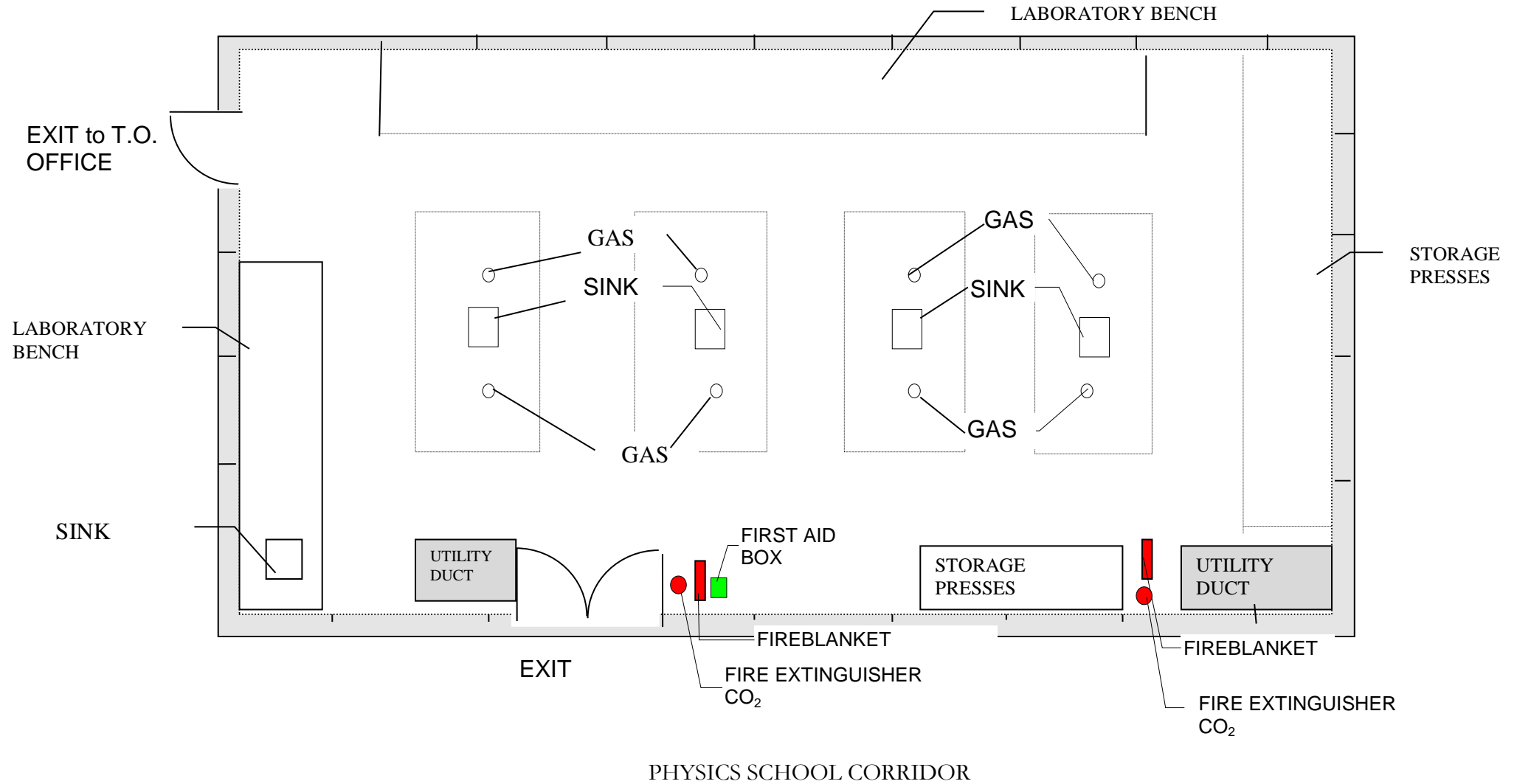


### Room KE1-011a and KE1-011b (Workshop)

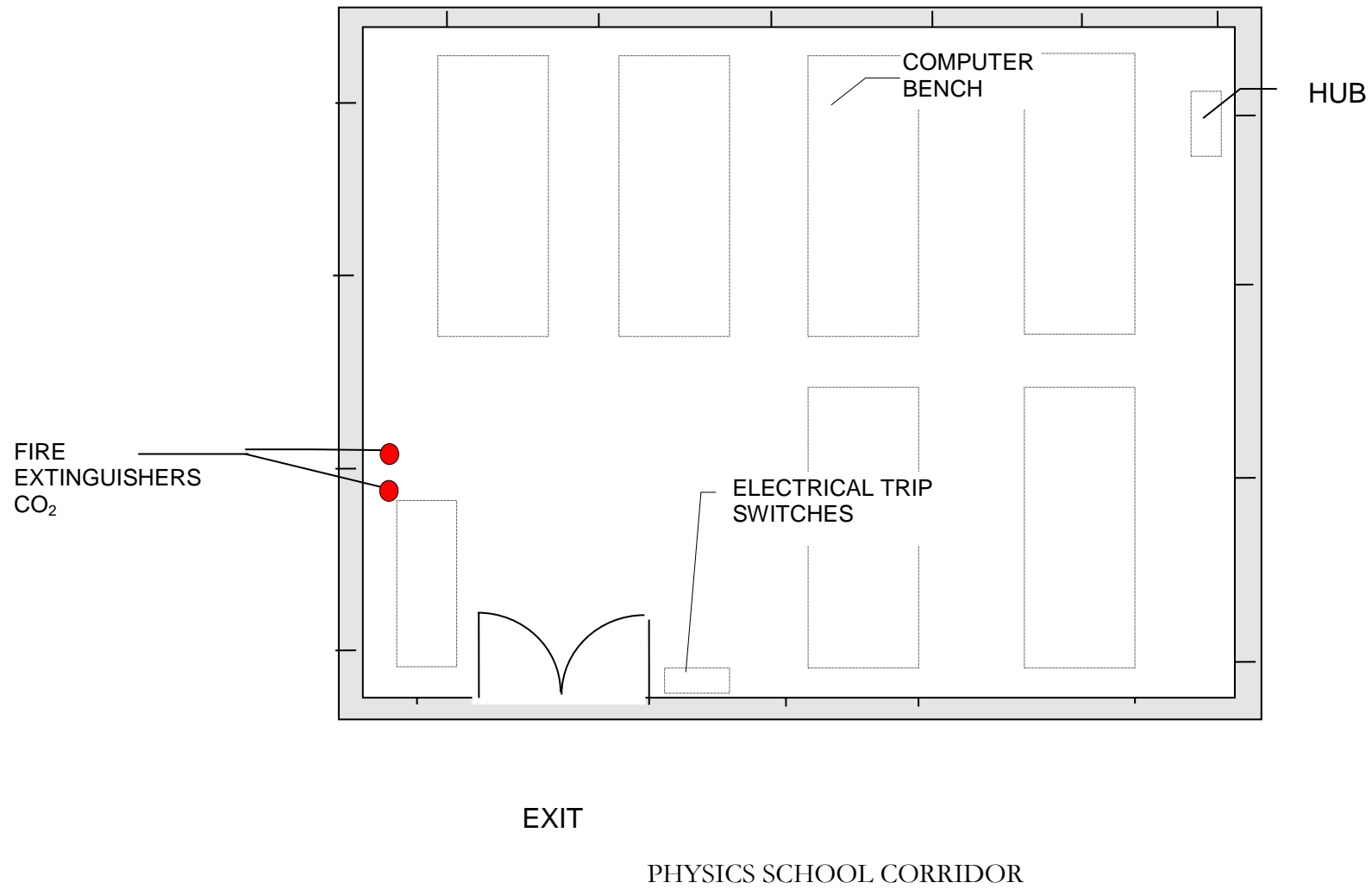


# Room KE1-012 Laboratory

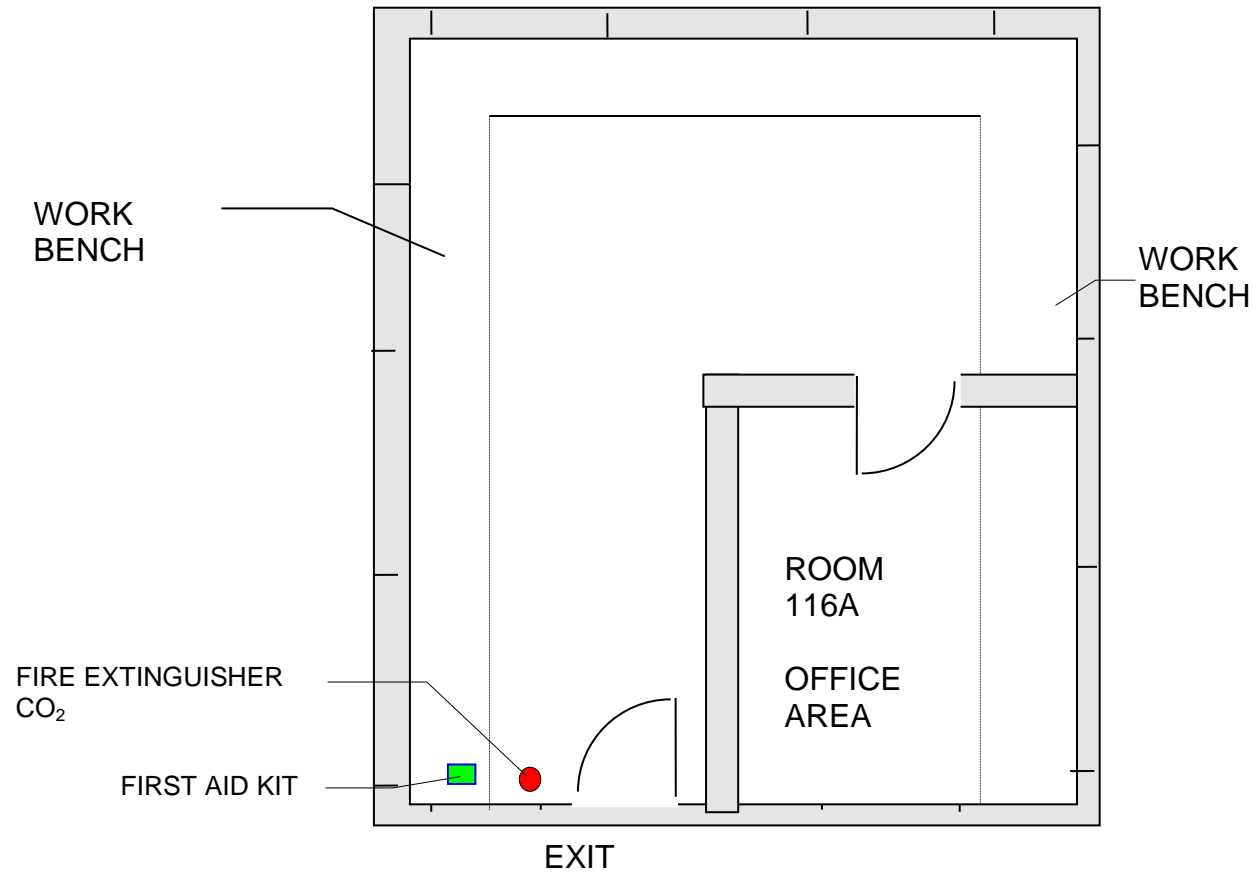
(16m x 7.8m = 124.8m<sup>2</sup>)



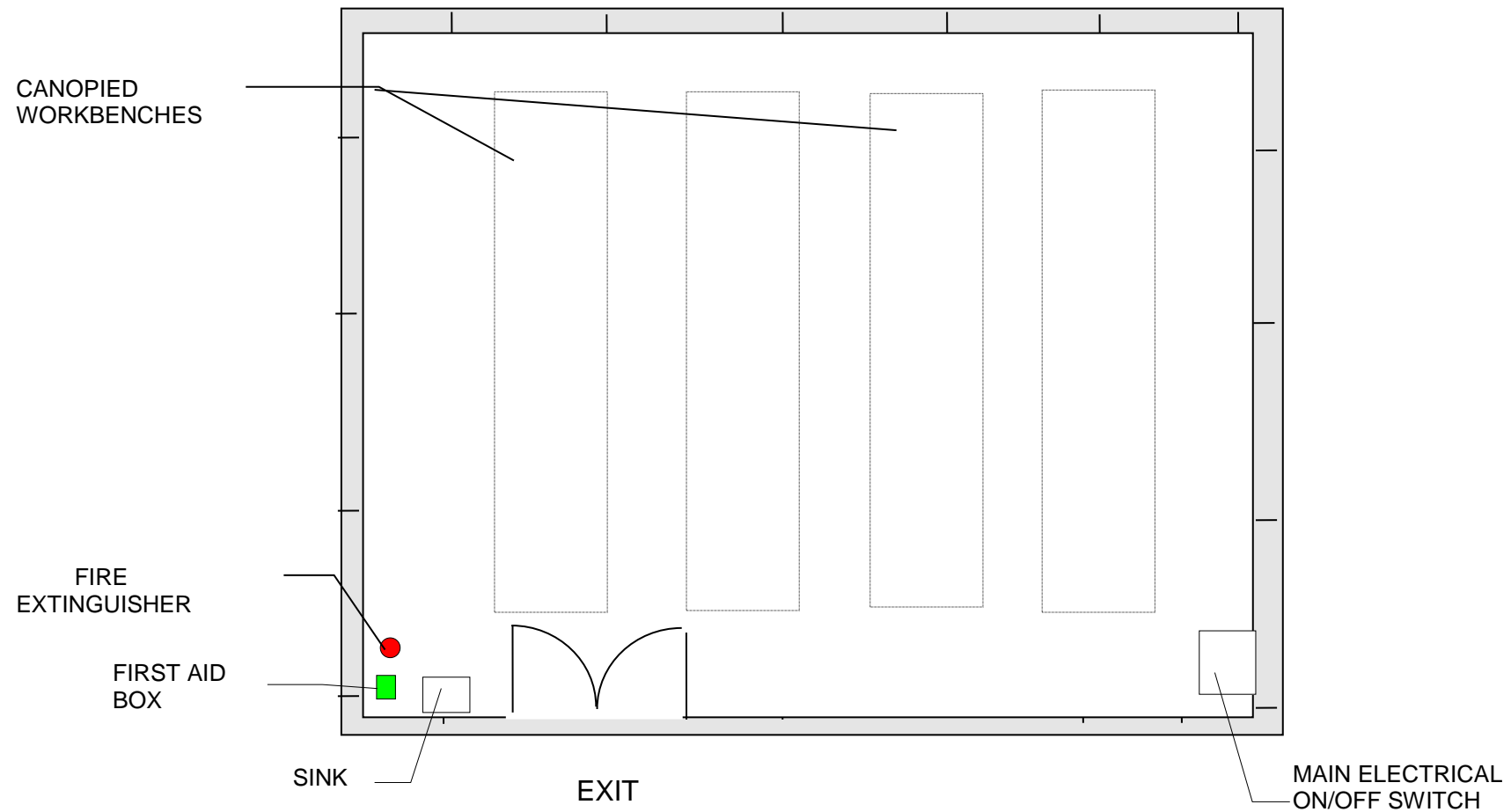
# Room KE1-013 Computer Laboratory



**Room KE1-016**  
(4m x 7.8m = 31.2m<sup>2</sup>)



**Room KE1-034 Optics Laboratory**  
(10m x 7.8m = 78m<sup>2</sup>)



### Room KE1-035 Laboratory

(8m x 7.8m = 62.4m<sup>2</sup>)

SINKS

WORK BENCH

MEDICAL O<sub>2</sub>

C<sub>2</sub>H<sub>2</sub>/CH<sub>4</sub>/CO/O<sub>2</sub> MIX

26% O<sub>2</sub>

4% CO<sub>2</sub>/16% O<sub>2</sub> MIX

CH<sub>4</sub>/CO/O<sub>2</sub> MIX

STORE ROOM

(6m x 1.65m = 9.9m<sup>2</sup>)

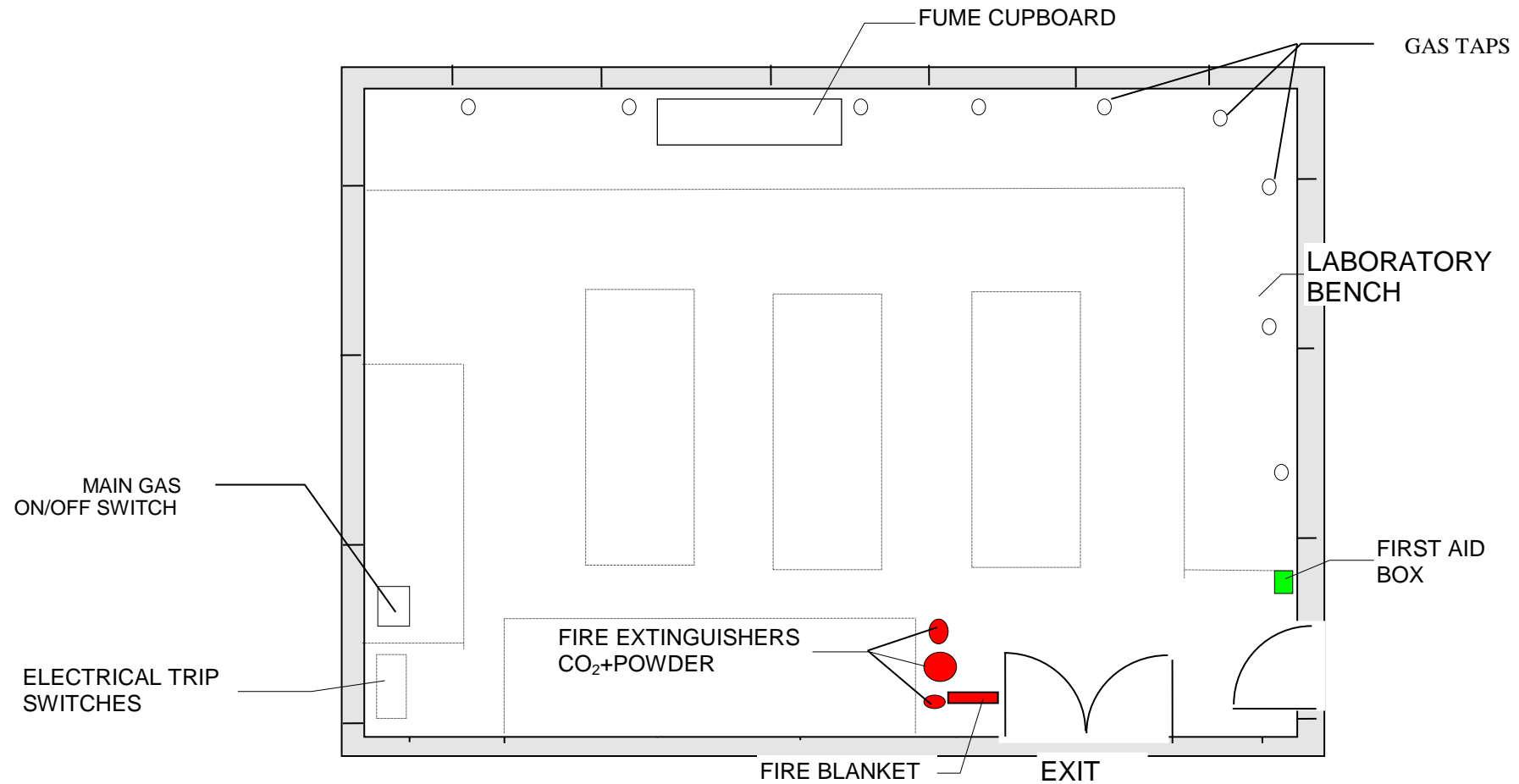
FIRST AID BOX

FIRE EXTINGUISHER CO<sub>2</sub>

PHYSICS SCHOOL CORRIDOR

### Room KE1-039 Laboratory

(12m x 7.8m = 93.6m<sup>2</sup>)

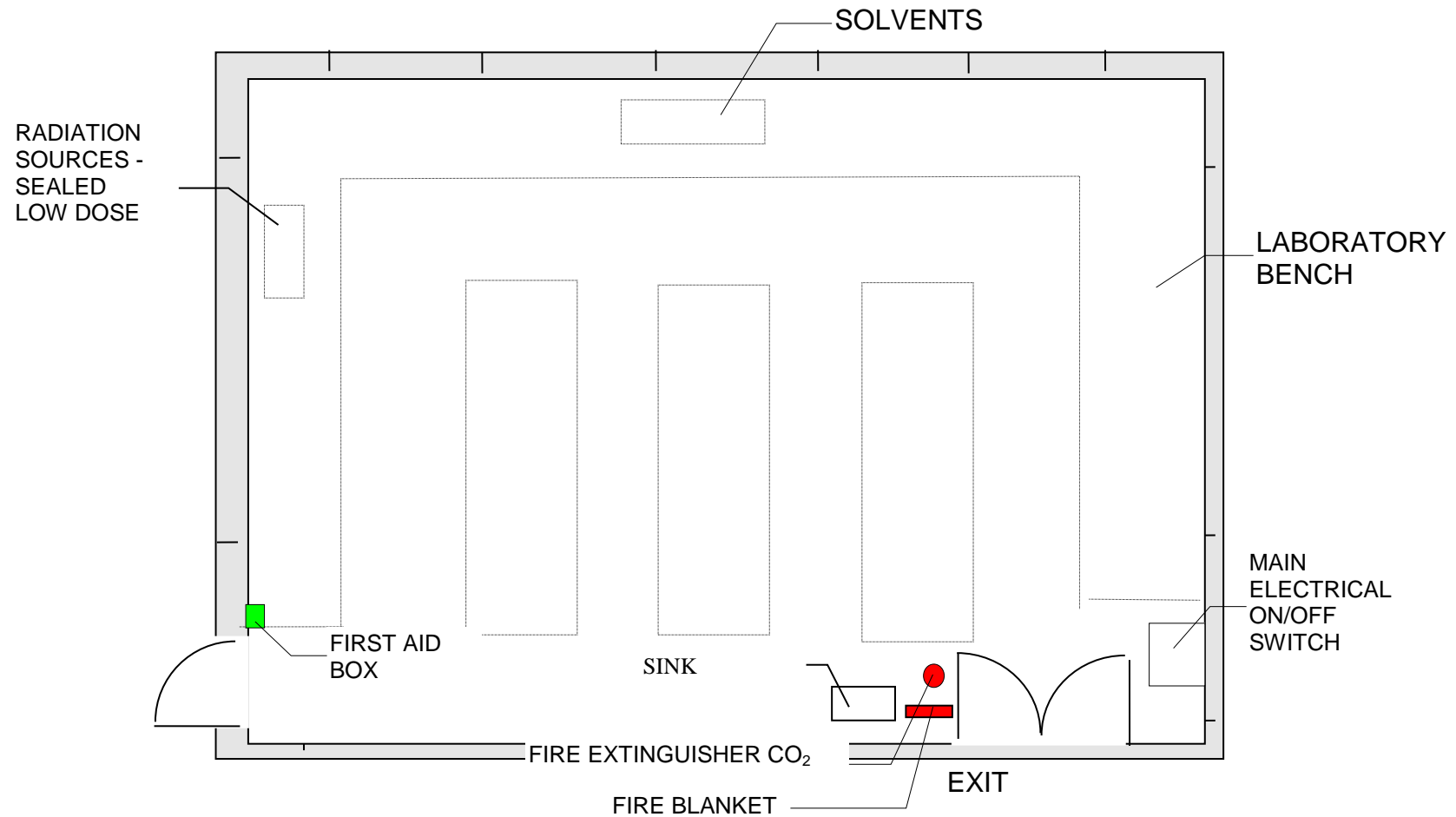


PHYSICS SCHOOL CORRIDOR

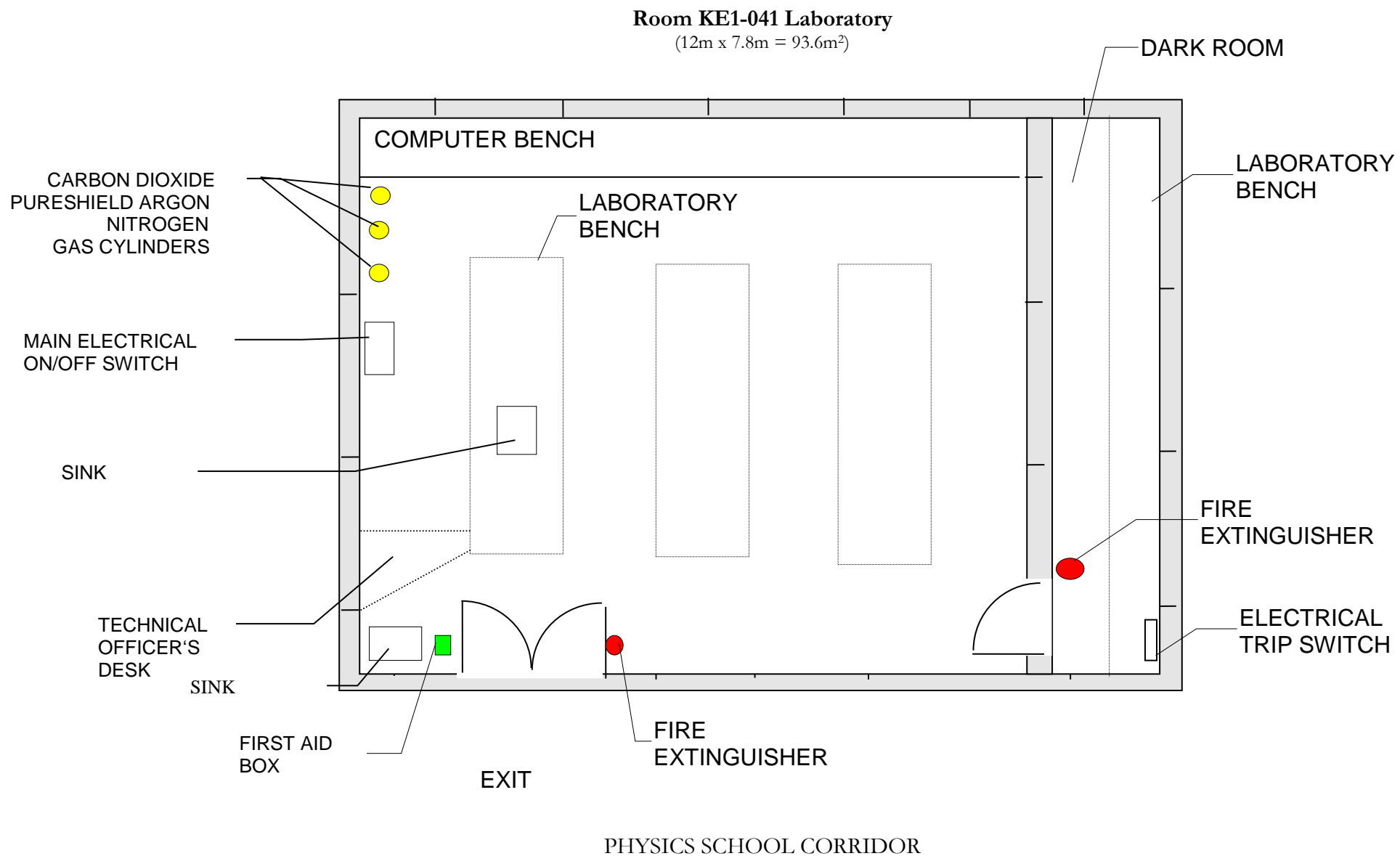


### Room KE1-040 Laboratory

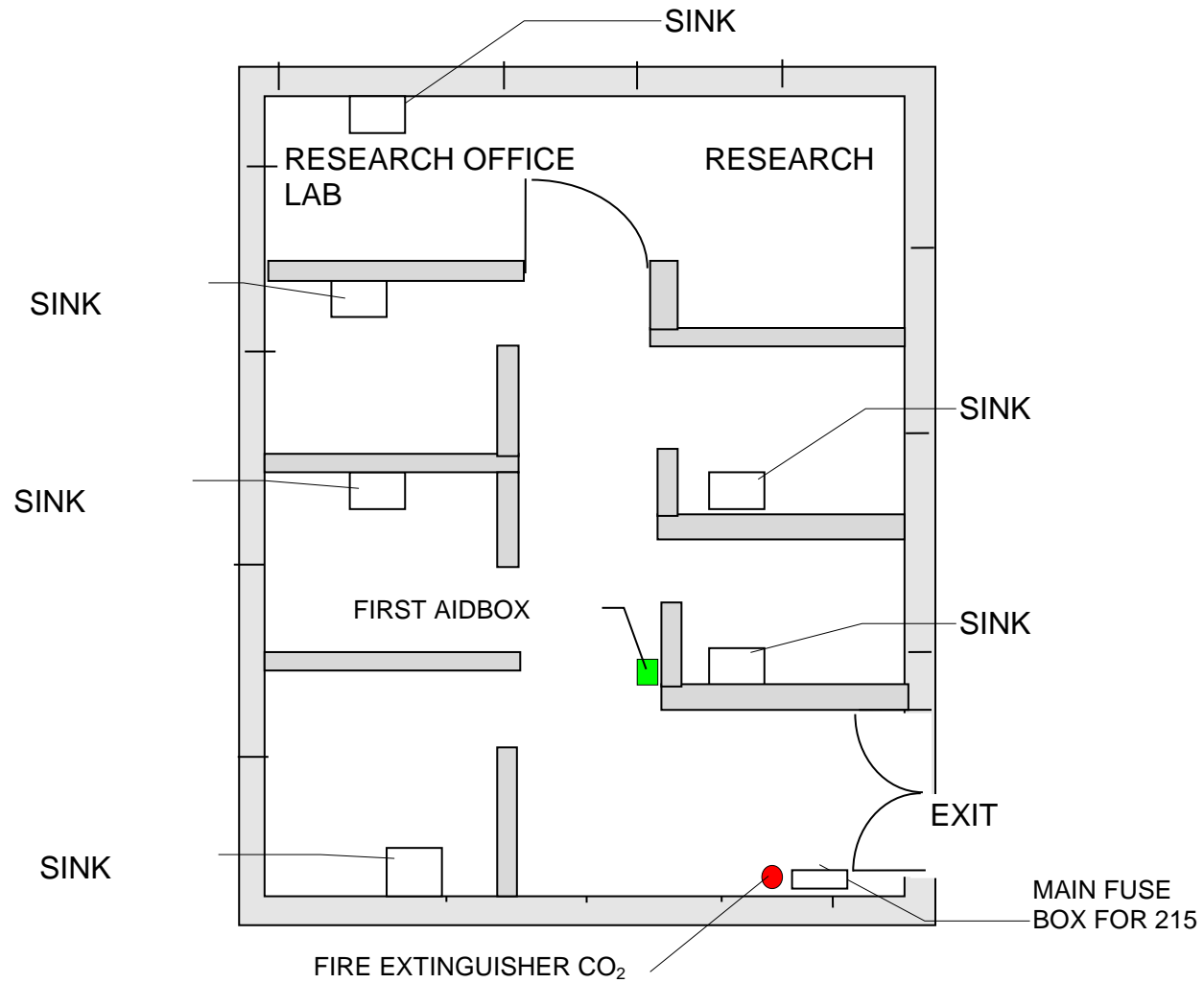
(12m x 7.8m = 93.6m<sup>2</sup>)



PHYSICS SCHOOL CORRIDOR

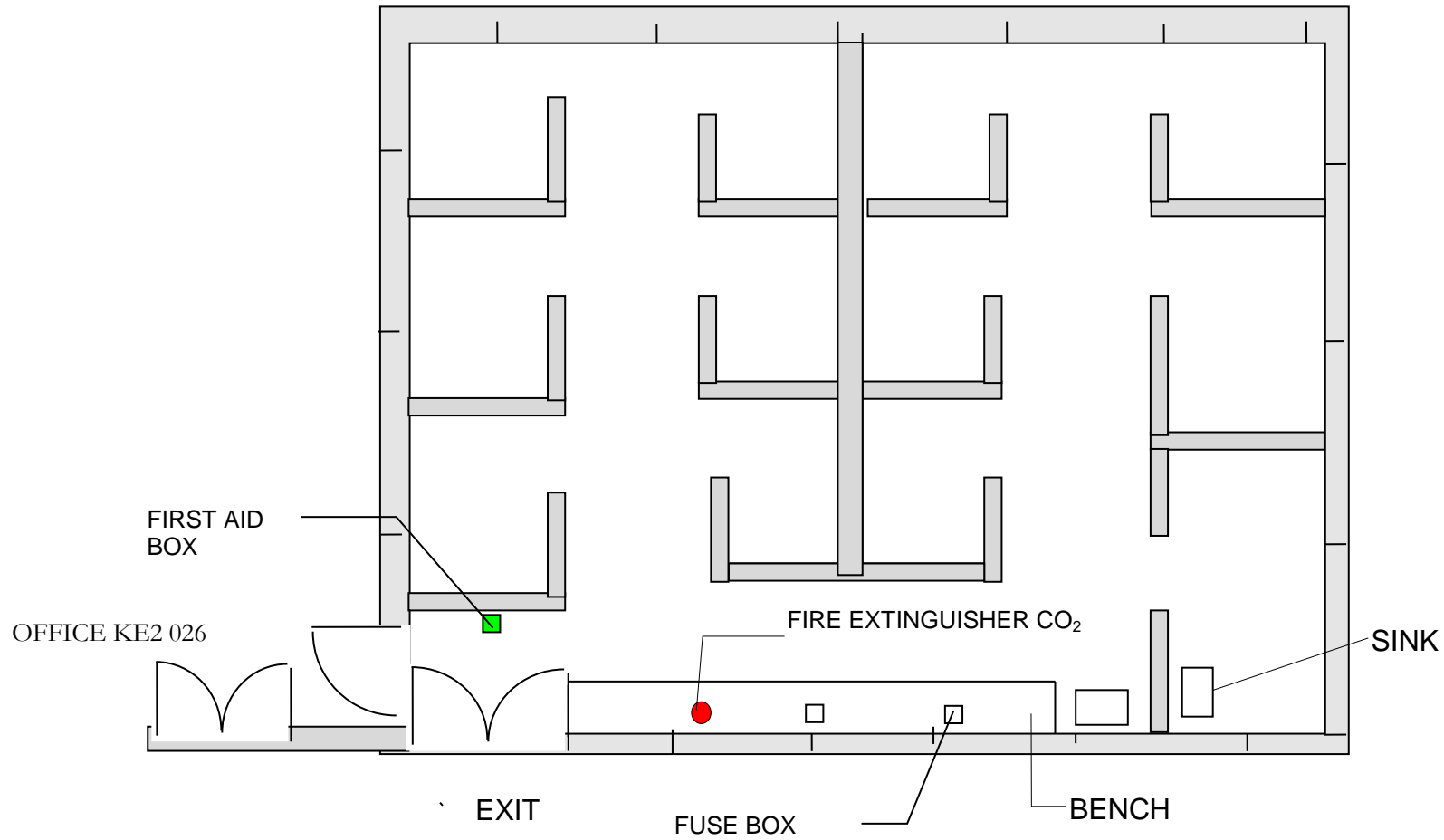


**Room KE2-015 (Optometry)**  
(9.9m x 7.8m = 77.2m<sup>2</sup>)



### Room KE2-028 (Optometry)

(12m x 7.8m = 93.6m<sup>2</sup>)



## **APPENDICES**

## **Appendix 1: Procedures for School of Physics Level 8 Work Placement Students**

The school at all times tries to insure that all work placement undertaken by a student shall be in accordance with that usual to the trade or business of the Company or Organisation and that all work undertaken by a student shall be in accordance with that usual to the course of study by the student.

All placements activities undertaken by a student are to be confirmed to, and approved by, the relevant Head of School/Department, or College Manager.

The school has a list of all students on placement with all relevant information including, student name, home address, email address, home and mobile numbers.

The school has a comprehensive list identifying all placement providers' details; this list is completed by each student on placement and returned to the school. Details include; placement company, placement address, placement telephone number. Details regarding the person supervising the placement are recorded including; placement supervisor's name, position, work and mobile and email address. The start and finishing dates are recorded. The Student Work-Placement contract form must be returned by the student within two weeks of placement commencement – it is the student's responsibility to insure that all placement information supplied is accurate.

Each student is assigned a school monitor (school lecturer) to oversee the placement. The monitor will make at least one site visit to the placement location and will satisfy themselves that the placement is progressing smoothly. Students are in contact with their monitors on a weekly basis via their weekly logs/reports which must be returned to the school. Any issues/problems with the placement are initially addressed by the school monitor.

Prior to placement commencement, students are required to attend a seminar outlining all issues relating the placement. Issues relating to Placement regulations, Ethics, Confidentiality, IT Privacy, Health & Safety are discussed.

All students are supplied with a "Placement Handbook" that outlines the placement process and the responsibility of the school and the student. This handbook is available on web courses. All students are required to sign and return the "Student Placement Declaration" which clearly identifies the responsibilities of the student while on placement. The school will keep a copy of this document. The document is reproduced below.

### **Student Placement Declaration**

I accept that I am required to;

- Obtain, read and abide by the Placement Handbook and other material provided.
- Submit my CV, to the required standard, by the deadline date.
- Meet all other deadlines set by the Placement Coordinators.
- Carefully research all selected companies: company details/locations/job descriptions and be prepared for interview with selected companies.
- Correctly complete and submit on-line requests by the specified deadline.
- Inform the Placement Coordinator in week one of Placement year, if you plan to organise your own Placement. Make sure it complies with the required criteria.
- Attend all scheduled Placement interviews.
- Prepare well for interview in advance of the day and adhere to dress code.
- Accept the first offer of Placement made to you. Do not attend any other interviews and discontinue your search for own Placement, if you have been looking.
- Follow employer requirements regarding work contracts and medicals.
- Apply for Garda vetting if required.

- Know the requirements that apply to international placements, in particular buying travel insurance for the entire duration of the trip.
- Adhere to the deadlines for Visa application for Placements in the US.
- Obtain required social insurance and tax details before you start Placement (if required).
- If relocating, arrange your new accommodation well in advance of the start date.
- Familiarise yourself with the location of your employer.
- Start and finish work on dates agreed with my employer. Familiarise myself with and abide by the companies practices, paying particular attention to rules on use of email, internet and telephone. Abide by employer rules on hours of work and dress code.
- Organise my commute in advance and get to workplace on time on a daily basis.
- Take care of my own Health and Safety and that of others, who may be affected by my actions.
- Comply with any reasonable request and carry out the work directed by my employer.
- Approach my work diligently, take responsibility and use my initiative.
- Be professional in my dealings with your employer, recognizing that I am a representative of DIT.
- Complete my log book daily and get it signed monthly by the Industrial Supervisor at the end of each month.
- Make contact with my Placement Monitor and my Placement Coordinators at the agreed Intervals.
- Inform my Placement Monitor and Industrial Supervisor of any problems during Placement.
- Never leave my Placement, without the permission of my Placement Monitor and Academic Supervisor.
- If you have to repeat exams, strictly follow the guidelines given on agreeing time off with my Industrial Supervisor/ Placement Coordinator/Placement Monitor.
- Follow the guidelines given in writing up my weekly log Book, Placement Report and Placement Presentation and Industrial Appraisal Form.
- Ask my Industrial Supervisor to check, approve and sign off my log Book, Placement Report and Placement Presentation, to ensure that the content meets with company policy on confidential Information.
- Never disclose any private or confidential patient information. Never publicise any Intellectual Property – if in doubt, ask your Industrial Supervisor.
- Submit my Placement documents on or before the deadline date. Keep a copy of my log Book and Placement Report for future reference.

Signed by: \_\_\_\_\_

Date: \_\_\_\_\_

### **Code of Practice for School of Physics Level 8 Work Placement Students**

All students going on placement are required to sign and return the Code of Practice Document to the school. The code of practice document highlights issues relating placement Health and Safety, Ethics, Confidentiality, Working Hours and IT & Computer Regulations in the placement workplace. The document is reproduced below.

- 1 Students MUST dress appropriately, with neat semi-formal clothing. The student must also observe normal hygiene criteria in relation to their own appearance in the workplace.
- 2 The use of cosmetics, jewellery, long finger nails and uncovered long hair may be restricted or unsuitable in certain work placement situations, so students must follow whatever regulations are applicable within the work placement environment. The advice and approval of their supervisor should be obtained in relation to these issues.

- 3 At induction the student will be briefed on the work placement environment ethics and regulations and students should follow these regulations throughout their placement period.
- 4 Students will be provided with Health and Safety regulations within the work placement environment and they should follow these regulations throughout their placement period and not deviate from these regulations and put themselves and their work colleagues in harm through their actions.
- 5 Students, who have been placed in a Hospital, should be aware that there are patients who are quiet often unwell and so they should be aware of this and treat the patient with respect and dignity. The confidentiality and wishes of the patient must be respected at all times.
- 6 Confidentiality: under no circumstances is a student allowed to discuss or disclose any material relating to the research study which they are involved with outside of the workplace, without the explicit approval of the work placement laboratory, industry or hospital. This includes material which is included in the weekly logs, work placement report and work placement presentation.
- 7 The student must adhere to the IT & Computer Regulations governing their work placement environment.
- 8 Normally students will be required to work from 9.00am to 5.00pm five days a week during placement; however these times may be altered by agreement with their work placement supervisor.
- 9 Students must follow all relevant instructions from their work placement supervisor.
- 10 Each student is required to maintain a logbook which is a record of the work they have carried out or observed during their work placement, (the logbook will consist of weekly logs which are to be sent to their internal placement monitor).
- 11 The standard DIT student regulations 2014/15 will also apply for the full duration of the placement.

I \_\_\_\_\_ agree to comply with the above as part of the conditions of my work placement. I understand that if I do not comply with the conditions as set out in the “Code of practice for School of Physics Level 8 Work Placement Students”, that I my work placement can be discontinued.

Students will generally be offered a contract of employment which outlines the issues relating to each unique workplace. The school does not negotiate each contract individually, however, the contract should identify working hours, pay and conditions and health and safety issues. All contacts and placement employments are covered the employee rights legislation operating in Ireland.

Details relating to each student going on placement are forwarded to the faculty manager’s office for their records. All students are covered by DIT Liability Insurance. Work Placement Providers should have Liability Insurance as required by law (Safety, Health and Welfare at Work Act 2005). Any documentation requested in relation to DIT insurance is sent directly to the Work Placement Provider.

Any student completing a placement outside Ireland is required to take out travel/medical insurance. It is important to advise the travel insurance provider that students are travelling for work experience, rather than a social visit, to ensure correct cover is provided. Insurance policies are subject to limits and exclusions, e.g. for hazardous activities, or where the student is under the influence of alcohol or drugs etc.



## Appendix 2: Trip Risk Assessment Form



### TRIP

#### RISK ASSESSMENT FORM

*Please complete all sections of this form in advance of each trip (e.g. fieldtrip to sample water, complete survey, excursion to visit sites, trip abroad, conference, expedition) and submit a copy to the DIT Health & Safety Office. If you require any guidance or assistance with completion of this form then please contact the Health and Safety Office [sinead.m.collins@dit.ie](mailto:sinead.m.collins@dit.ie)*

SECTION 1		DIT INFORMATION	
1	Course Code & Name (where relevant)		
2	School / Function		
3	Trip Leader / Coordinator		
4	Contact Details		
SECTION 2		TRIP INFORMATION	
5	Date(s) of Trip		
6	Duration of Trip (days)		
7	Location(s) and Address(es) of Trip		
8	Participants	TYPE	NUMBER
		Undergraduate students	
		Postgraduate students	
		Staff members	
		Members of the Public	
		Other (please specify)	
9	Description of trip activities and itinerary	<p>These students are representing xxxxxx at the XXX event.  The event is XXX days long and will take place at XXX.  Arrival time at the venue is XXX.  Departure time is XXX.</p>	

		Include or attach a description of the itinerary.
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	<b>SECTION 3</b>		<b>ARRANGEMENTS &amp; PROCEDURES</b> <i>Please outline what you have in place for the trip</i>			
<b>10</b>	<b>Travel &amp; Transportation</b> Examples: <ul style="list-style-type: none"> <li>Type</li> <li>Company</li> <li>Who will be meeting/greeting</li> </ul>	<ul style="list-style-type: none"> <li>All travel is by public transport</li> <li>The trip leader/coordinator will have contact numbers for all students and will provide his/her contact number to all students.</li> <li>All students will receive a detailed itinerary, recommended travel arrangements for the trip (including details of meeting places and times) and trip guidelines</li> </ul>				
<b>11</b>	<b>Accommodation</b> Examples: <ul style="list-style-type: none"> <li>Location</li> <li>Facilities</li> </ul>	<ul style="list-style-type: none"> <li>Include details of accommodation, where and what type etc.</li> </ul>				
<b>12</b>	<b>Supervision of Students</b> Examples: <ul style="list-style-type: none"> <li>Security</li> <li>Staff numbers</li> <li>Accountability</li> </ul>	<p>All students will receive the attached trip guidelines which will advise students:</p> <ul style="list-style-type: none"> <li>not to leave the venue alone</li> <li>to be aware of their location and arranged meeting points at all times</li> <li>to provide their contact details to the trip leader/coordinator</li> <li>to ensure they have the contact details for the trip leader/coordinator</li> </ul>				
<b>13</b>	<b>Emergency Plans</b> Examples: <ul style="list-style-type: none"> <li>Fire Safety</li> <li>General personal safety</li> <li>Accidents/Incidents Reporting</li> </ul>	<ul style="list-style-type: none"> <li>The trip leader/coordinator has attended ERT training.</li> <li>Students have been informed of emergency plans and accident and incident reporting requirements.</li> <li>Students have been informed of the requirements to ensure personal safety.</li> <li>There will be first aid support at the venue.</li> </ul>				
	<b>SECTION 4</b>		<b>YES</b>	<b>NO</b>	<b>N/A</b>	
<b>14</b>	Is adequate insurance in place for the trip? Contact Secretary's Office for advice					
<b>15</b>	Has all essential health and safety information been made available to					

	all concerned parties?			
16	Have participants been instructed in the use of any special equipment?			
17	Have all participants completed the trip eLearning training programme?			
18	Have all participants completed the health questionnaire in Appendix A?			
19	Is there a qualified first-aider attending the trip?			
20	Is a suitably stocked travel first-aid kit available?			
21	Is appropriate safety clothing and equipment available (if required?)			

## SECTION 5: RISK ASSESSMENT

The risk assessment table below sets out the hazards that may affect your trip. Please use them as a guide when completing your risk assessment specific to your trip activities. If a section is not applicable please mark it N/A.

Two examples have been highlighted. Headings have been added that can be used where appropriate.

This list is not exhaustive and can be modified to suit your needs.

	SECTION 5	RISK ASSESSMENT	
	HAZARD	ASSOCIATED RISK(S)	CONTROL MEASURE(S)
	Physical Hazards	Associated Risk(s)	Control Measure(s)
	Travel and Transport		
	Weather Conditions: Inclement Weather		
	Vehicles and machinery		
	Electricity		
	Tools & Machinery		
	Buildings		
	Site location, terrain and conditions Examples: <ul style="list-style-type: none"> <li>• Farmland</li> <li>• Woodland</li> <li>• Coastal</li> <li>• Construction site</li> </ul>		

	<b>Waste Management</b>		
	<b>Chemical Hazards</b>	<b>Associated Risk(s)</b>	<b>Control Measure(s)</b>
	Examples: <ul style="list-style-type: none"> <li>• Pesticides</li> <li>• Dusts</li> <li>• Chemicals</li> </ul>		
	Animals, Wildlife, Insects, Plants		
	<b>Biological Hazards</b>	<b>Associated Risk(s)</b>	<b>Control Measure(s)</b>
	Examples: <ul style="list-style-type: none"> <li>• Poisonous plants</li> <li>• Contact with animals</li> <li>• Soil / water microorganisms</li> </ul>		
	<b>Human Factor Hazards</b>	<b>Associated Risk(s)</b>	<b>Control Measure(s)</b>
	Examples: <ul style="list-style-type: none"> <li>• Lone working</li> <li>• Assault</li> <li>• Theft</li> <li>• Personal injury / medical emergency</li> <li>• Health and hygiene</li> <li>• Local issues e.g. dress code, behaviour, customs etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Personal injury / medical emergency</li> <li>• Assault</li> <li>• Getting lost</li> </ul>	<ul style="list-style-type: none"> <li>• First-aid trainer and supplies available</li> <li>• Students have been informed of the requirements to ensure personal safety</li> <li>• Contact numbers are known for all students</li> <li>• Students have trip leader/coordinators phone number</li> <li>• Meeting points for travel are arranged and communicated</li> <li>• Students have been given trip guidelines and signed off on same</li> </ul>

*\*This risk assessment has been undertaken to the best of the organiser's knowledge and ability.*

## **SECTION 6**

***Approved by the Head of School/Function:***

Name: \_\_\_\_\_

School/Function: \_\_\_\_\_

Date: \_\_\_\_\_

## **Appendix 2(A): Guidelines for DIT Students Going on Trips/Travelling**

**You will be asked to sign off to confirm you have read and understood the below information:**

### **1.0 Existing Medical Conditions and Medication**

If you have any medical needs including medication please:

- Ensure you complete Appendix A and give all relevant details
- Ensure you keep a written record on your person of any medical condition affecting you and the proper names (not just the trade names) of any medication you are taking. In addition please ensure you also include details of anything you are allergic to or that may exacerbate your medical condition. This is for your own safety.
- Ensure you have adequate medication with you for the duration of the trip
- Ensure you provide instructions on what to do in the event of you becoming unwell as a result of your condition. If you require a First-aid Response Plan please contact the DIT Health & Safety Office

### **2.0 Insurance**

All DIT whole-time students are covered by a Personal Accident Insurance Scheme. Cover is world-wide and operates 24 hours per day; 52 weeks of the year, irrespective of whether the accident occurs on campus or elsewhere. As with all insurance policies, there are some exclusions.

Please note medical illness or general travel insurance is not covered, only personal accident cover.

Students pay any expenses incurred upfront and submit a claim form later to [edel.niland@dit.ie](mailto:edel.niland@dit.ie)

### **3.0 Travelling to, from and around the venue (Communication)**

- Travel to, from and around the venue in groups of 2 or more where possible
- Ensure someone is aware of your location at all times and everyone is clear on meeting points etc.
- Ensure you have your mobile phone with you at all times and ensure it is charged and able to make/receive calls/text messages
- Ensure you have given your correct mobile number to your Trip Leader/Co-ordinator
- Ensure you have your Trip Leader/Co-ordinator's contact details and other relevant contact details stored in your mobile phone

### **4.0 Emergency Response**

- Make yourself familiar with means of escape from the venue you are visiting (this means at least 2 ways out)
- Make yourself familiar with facilities and equipment where relevant
- Do not enter any unauthorised areas
- Report any accident, incident, near-miss, dangerous occurrence or defect to your Trip Leader/Co-ordinator
- Do not do anything to put yourself or others at risk

### **5.0 First Aid**

- A fully stocked first-aid kit will be available on the trip brought by your Trip Leader/Co-ordinator

## **6.0 Accidents & Incidents**

- All accidents and incidents (including near misses and dangerous occurrences) of ANY kind (including travelling as part of your work activity) while you are on a trip must be reported to your Trip Leader/Co-ordinator immediately
- A DIT Incident Report Form must be completed (these are available from your Trip Leader/Co-ordinator/School/online at [www.dit.ie/safework](http://www.dit.ie/safework))

**You are asked to sign off to confirm you have read and understood the above information. Alternatively please email your Trip Leader/Co-ordinator confirming you have read and understood this document.**

<b>Print Name (Student)</b>	<b>Signature of Student</b>	<b>Date</b>

## **Appendix 2(B): Guidelines for DIT Students Going on Overseas Trips/Travel**

### **1.0 Existing Medical Conditions and Medication**

If you have any medical needs including medication please:

- Ensure you complete Appendix A and give all relevant details
- Ensure you keep a written record on your person of any medical condition affecting you and the proper names (not just the trade names) of any medication you are taking. In addition please ensure you also include details of anything you are allergic to or that may exacerbate your medical condition.
- Ensure you have adequate medication for your entire trip. If you need prescribed medication for a health condition, talk to your doctor or practice nurse about your travel plans as they can tell you if you need to make any special arrangements. You may need to check the rules for all the countries you're going to, including countries that you are just passing through. Different countries have different rules and regulations about the types of medicine they allow to be taken into the country, and the maximum quantity you can take in.
- Your chosen airline may ask you to complete an Incapacitated Passengers Handling Advice (INCAD) form and/or a Medical Information Form (MEDIF). These are standard forms used by many airlines to help them organise any assistance or equipment you may need during your journey and to decide whether you are fit to fly. You can fill in the INCAD form yourself, but the MEDIF form must be completed by your doctor. Most travellers do not have to fill in the MEDIF form, or apply for medical clearance to fly, including people who have stable, long-term disabilities and medical conditions. You should contact the airline and discuss your condition with them, even if your doctor says you are fit to fly, as different airlines have different policies about carrying disabled passengers and people with medical conditions. The airline will be able to give you any forms they require you to complete
- Some medicines available over the counter in the Ireland may be controlled in other countries and vice versa. Contact the embassy of the country you're visiting for advice.
- Where relevant seek confirmation from your GP that you are fit to travel, particularly for long-haul flights
- Ensure you provide instructions on what to do in the event of you becoming unwell as a result of your condition

### **2.0 Immunisation/Vaccination and General Health Advice**

- All intending travellers are advised to have a medical check-up with their GP/Health Centre before travelling
- Where necessary, advice on the need for immunisation and other health related issues must be sought in advance of travel commencing: Please contact the Student Health Centre who can offer advice
  - Aungier Street: 01 402 3051
  - Linenhall: 01 402 3614
- You should be aware that certain vaccinations are mandatory for entry into some countries and ensure you keep a record of all mandatory vaccinations when travelling

### 3.0 Insurance

- All DIT whole-time students are covered by a Personal Accident Insurance Scheme. Cover is world-wide and operates 24 hours per day; 52 weeks of the year, irrespective of whether the accident occurs on campus or elsewhere. As with all insurance policies, there are some exclusions
- Please note medical illness or general travel insurance is not covered, only personal accident cover. Students pay any expenses incurred upfront and submit a claim form later to [edel.niland@dit.ie](mailto:edel.niland@dit.ie)
- Declare any relevant pre-existing medical condition or disability that could be potentially worsened by the proposed overseas travel/activity
- Undergo annual medical examinations with your GP/Health Centre if a frequent air passenger
- Ensure that you have had the necessary vaccinations as advised by your GP
- Check the country specific safety advice on the Department of Foreign Affairs (DFA) [www.dfa.ie](http://www.dfa.ie) and complying with its requirements

### 4.0 Travelling to, from and around the venue (Communication)

- Travel to, from and around the venue in groups of 2 or more where possible
- Ensure someone is aware of your location at all times and everyone is clear on meeting points etc.
- Ensure you have your mobile phone with you at all times and ensure it is charged and able to make/receive calls/text messages
- Ensure you have given your correct mobile number to your Trip Leader/Co-ordinator
- Ensure you have your Trip Leader/Co-ordinators contact details and other relevant contact details stored in your mobile phone

### 5.0 Emergency Response

- Make yourself familiar with means of escape from the venue you are visiting (this means at least 2 ways out)
- Make yourself familiar with facilities and equipment where relevant
- Do not enter any unauthorised areas
- Report any accident, incident, near-miss, dangerous occurrence or defect to your Trip Leader/Co-ordinator
- Do not do anything to put yourself or others at risk

### 6.0 First Aid

- A fully stocked first-aid kit will be available on the trip brought by the Trip Leader/Co-ordinator

### 7.0 Accidents& Incidents

- All accidents and incidents (including near misses and dangerous occurrences) of ANY kind (including travelling as part of your work activity)while you are on a trip must be reported to your Trip Leader/Co-ordinator immediately
- A DIT Incident Report Form must be completed (these are available from your Trip Leader/Co-ordinator/School/online at [www.dit.ie/safework](http://www.dit.ie/safework))

**You are asked to sign off to confirm you have read and understood the above information. Alternatively, email your Trip Leader/Co-ordinator confirming you have read and understood this document.**



<b>Print Name (Student)</b>	<b>Signature of Student</b>	<b>Date</b>

**APPENDIX A**  
**HEALTH QUESTIONNAIRE FOR DIT TRIPS**

**NOTE:** The information below is requested to ensure your safety, health and welfare on DIT associated trips and to ensure that appropriate assistance can be provided to reasonably accommodate personal safety on trips. All information provided will be treated as strictly confidential and used only to ensure your safety on a trip. You may be approached in confidence by the DIT staff member organising the trip to clarify any assistance required to undertake the trip safely or to clarify details on this form.

We encourage anyone with a relevant medical condition to communicate details on the day to the trained first-aider/ DIT organiser accompanying you. If you have any concerns we can put you in contact with our occupational health service to speak with a nurse or doctor in confidence.

**PLEASE USE BLOCK CAPITAL LETTERS**

**Name:** \_\_\_\_\_

**Mobile contact number:** \_\_\_\_\_

**Date of Birth:** \_\_\_\_\_

**Male/Female:** \_\_\_\_\_

**Next of Kin Name:** \_\_\_\_\_

**Next of Kin Contact Number:** \_\_\_\_\_

**Please note that we require only information that may assist you in the event of an emergency situation. There is no requirement to complete below unless there is something important and relevant that should be brought to the organiser's attention.**

***Do you have, or have you ever had in the past, any of the following?***

<b>MEDICAL CONDITION</b>	<b>YES</b>	<b>NO</b>	<b>If YES, Please Give Details</b>
Do you have any significant allergies (e.g. pollen/dusts/insects/food/medication/ other) that could trigger a severe reaction?			
Do you have any medical condition or take any medication that might cause you to become unexpectedly drowsy/ unsteady on your feet or cause a sudden loss of consciousness?			
Do you have any history of a significant hearing impairment that might make it difficult to hear a warning alarm (e.g. fire/ evacuation alarm) or to follow instructions?			
Do you have any significant visual impairment (not corrected by glasses)?			
Do you have any mobility difficulties or require use of any mobility aids to safely engage in a field trip?			
Do you need any assistance to safely undertake a trip?			
<b>Participant Signature</b>			

\*If any changes occur regarding the information provided please inform the DIT organiser.

### Appendix 3: Dose Calculations for 1 year for Staff and Students within the School of Physics in the DIT working with sources of Ionising Radiation

#### 1<sup>st</sup> Year Physics Laboratories

##### Staff Dose

The staff would be handling the following sources -  $0.004\text{mSv}$  ( $2 \times \text{Cs-137}$ ) +  $0.032\text{mSv}$  ( $8 \times \text{Co-60}$ ) =  $0.036\text{mSv}$  - for less than 10 minutes for thirty laboratory sessions per year. The estimated maximum achievable dose that they would receive would be  $0.036\text{mSv}$ . This is  $1/27^{\text{th}}$  of the annual dose limit of  $1\text{mSv}$  per annum for members of the public.

##### Students

The students will carry out one 2 hour experiment involving a source of ionising radiation, the maximum achievable dose that they would receive would be from the Cs-137 or Co-60 with a maximum dose of  $0.002\text{mSv}$  and  $0.03\text{mSv}$ , respectively, and this is 300 times less than the annual dose limit of  $1\text{mSv}$  per annum for members of the public.

#### 2<sup>nd</sup> Year Physics Laboratories

##### Staff Dose

The staff would be handling the following sources,  $0.0112\text{mSv}$  (Co-60) +  $0.014\text{mSv}$  (Cs-137) +  $0.156\text{mSv}$  ( $2 \times \text{Sr-90}$ ) =  $0.19\text{mSv}$ , for less than 10 minutes for twenty laboratory sessions per year, the maximum achievable dose that they would received would be  $0.024\text{mSv}$ , and this is  $1/40^{\text{th}}$  of the annual dose limit of  $1\text{mSv}$  per annum for members of the public.

##### Students Dose

The students will carry out one 3 hour experiment involving a source of ionising radiation, the maximum dose that they would receive would be from Cs-137, Sr-90 or Co-60 with a maximum dose of  $0.005\text{mSv}$ ,  $0.09\text{mSv}$  and  $0.002\text{mSv}$ , respectively, and this is less than the annual dose limit of  $1\text{mSv}$  per annum for members of the public.

#### 3<sup>rd</sup> Year Physics Laboratories

##### Staff Dose

The staff would be handling the following sources,  $0.001\text{mSv}$  (Ba-133) +  $0.001\text{mSv}$  (Cd-109) +  $0.001\text{mSv}$  (Co-57) +  $0.003\text{mSv}$  (Co-60) +  $0.002\text{mSv}$  (Cs-137) +  $0.002\text{mSv}$  (Mn-54) +  $0.003\text{mSv}$  (Na-22) +  $0.001\text{mSv}$  (Zn-65) =  $0.014\text{mSv}$ , for less than 10 minutes for thirty laboratory sessions per year, the maximum achievable dose that they would received would be  $0.014\text{mSv}$ , and this is 70 times less than the annual dose limit of  $1\text{mSv}$  per annum for members of the public.

##### Students Dose

The students will carry out one 12 hour experiment involving the following sources of ionising radiation  $0.003\text{mSv}$  (Ba-133) +  $0.001\text{mSv}$  (Cd-109) +  $0.001\text{mSv}$  (Co-57) +  $0.008\text{mSv}$  (Co-60) +  $0.005\text{mSv}$  (Cs-137) +  $0.01\text{mSv}$  (Mn-54) +  $0.01\text{mSv}$  (Na-22) +  $0.001\text{mSv}$  (Zn-65), the maximum dose that they would receive would be from this experiment would be  $0.039\text{mSv}$ , and this is 25 times less than the annual dose limit of  $1\text{mSv}$  per annum for members of the public.

## 4<sup>th</sup> Year Physics Laboratories

### Staff

The staff would be in a room containing an X-ray physics system (Max current = 1mA and Max voltage = 35KeV). This X-ray physics system has the following engineering controls, lead shielding, door interlock – when X-rays are being produced the door is locked, if the door is forced open during the experiment the X-ray tube is shut off, both of which ensure that the x-ray leakage from the system is less than 2 $\mu$ Sv per hour. Therefore, if a staff member stood beside the system for the 12 hours over thirty laboratory sessions that the system was used their maximum achievable dose would be approximately 0.72mSv, and this is still less than the annual dose limit of 1mSv per annum for members of the public.

### Students

The student would be in a room containing an X-ray physics system (Max current = 1mA and Max voltage = 35KeV). This X-ray physics system has the following engineering controls, lead shielding, door interlock – when X-rays are being produced the door is locked, if the door is forced open during the experiment the X-ray tube is shut off, both of which ensure that the x-ray leakage from the system is less than 2 $\mu$ Sv per hour. Therefore, if a staff member stood beside the system for the 12 hours over thirty laboratory sessions that the system was used their maximum achievable dose would be approximately 0.72mSv, and this is still less than the annual dose limit of 1mSv per annum for members of the public.

## **Appendix 4: SOP for Use of High Pressure Gas Cylinders in the School of Physics**

Gas cylinders are hazardous for the following reasons

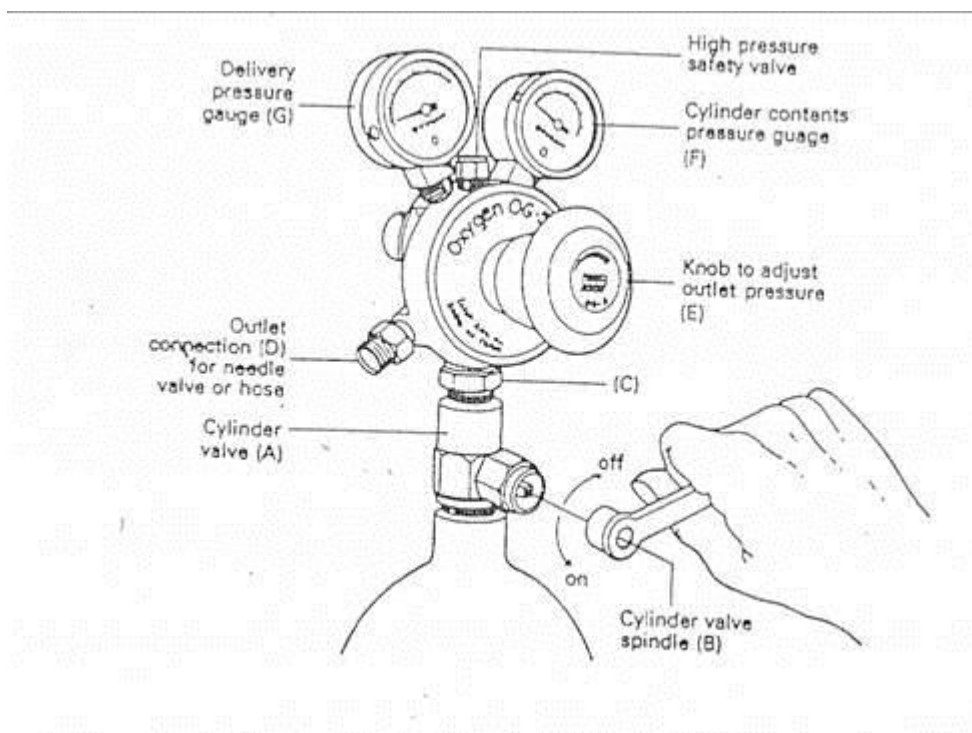
- They are top heavy and can cause serious crush injuries on falling.
- The contents which are at high pressure contain a large amount of stored energy and the sudden release of this energy can be highly dangerous.
- The contents may be toxic, flammable or fire promoting. Sudden or slow gas escape may lead to fire, explosion or unwanted concentrations of gas.
- Gases of different molecular weights behave in different ways, heavy gases will accumulate at floor level and displace oxygen while light gases rise to the ceiling and also displace oxygen.

These hazards may not only affect those working in the laboratories but also puts at risk members of the emergency services called upon to respond to an incident in places where gas cylinders are stored and used.

### **School of Physics guidelines for the safe handling of gas cylinders**

#### Gas Cylinder Operation

1. Only Students properly instructed by their supervisor or laboratory Technical Officer are allowed to use gas cylinders.
2. In use or in storage cylinders must at all times be secured in a vertical position.
3. Excessive force must not be applied to valve spindles or regulator nuts. Accordingly, the use of non-standard valve keys and regulator spanners is not permitted. Cylinder valves must always be opened slowly.
4. Cylinders of gases must be operated with the correct type of regulator fitted, i.e., BS3 for non-combustible gases and BS4 for combustible gases. The cylinder valve must not be used to regulate the gas flow.
5. Non-combustible gas cylinder valve outlets have right hand threads, e.g., N<sub>2</sub>, CO<sub>2</sub> and Ar. Combustible gas cylinder valve outlets have left hand threads, e.g. cylinders containing C<sub>2</sub>H<sub>2</sub> and CH<sub>4</sub>. All cylinder valve spindles have right hand threads.
6. Two stage regulators will be used on most cylinders. One dial gives the cylinder pressure. The other shows the outlet pressure to your system, which can be regulated. See diagram.



7. When opening the cylinder valve ensure that the regulator valve is closed. Once the cylinder valve is opened, turn the valve key a half turn back to prevent ceasing of the valve.
8. With the cylinder valve open, slowly open the regulator valve to give the required pressure to your system.
9. No cylinder is to be left at any time in valve open operation without the valve key in position on the spindle. This is to allow for speedy valve closure in the case of an emergency.
10. To reduce working hazards to a minimum, all cylinders should be operated over as short a time period as possible.
11. All cylinders must be checked at the end of a laboratory session to ensure that the cylinder valve is turned off.

### Gas Cylinder Management

12. Cylinder valve or regulator fittings must never be lubricated or greased.
13. The number of cylinders held in a laboratory must at all times be kept to a minimum. An outside store is located in the yard for the storage of empty and full cylinders.
14. Within laboratories cylinders must be kept away from sources of heat and corrosion and should be located if at all possible against an outside wall.
15. If a cylinder supplying gas under pressure is introduced into apparatus containing fragile parts, the apparatus should be checked for restrictions. A suitable safety lute or pressure relief device must be employed and adequate protection must be provided in the form of safety shields. A pressure gauge should be used where necessary.
16. Equipment newly connected to a cylinder gas supply must always be tested for leaks. Leaks at the regulator connections and other joints may be detected simply and safely by applying a dilute aqueous solution of washing up liquid. The supervisor before use must check the whole assembly.

17. Under no circumstances is it permitted to operate an acetylene cylinder without a fitted flash back arrestor. Acetylene is a flammable gas.
18. Cylinders of acetylene must not be used or stored otherwise than in the upright position.
19. Acetylene must not be used with piping or joint fittings that contain copper, silver or other transition metals.

### Gas Cylinder Disposal

20. Cylinders must never be completely emptied. A slight residual pressure should be retained. The valve on a discharged gas cylinder must be closed.
21. An empty cylinder must be labelled that it is Empty and with the Schools BOC Account number and returned to the gas cage for collection.
22. Large cylinders must be transported secured on purpose built trolleys and never rolled or dragged across floors. A purpose built trolley can be obtained for transportation purposes from the School of Chemical & Pharmaceutical Sciences. During transport cylinders must have their valves closed and regulators removed

### **Risk assessment calculation for a Pureshield Argon Cylinder in KE1 041**

To see “what if “all the gas from one cylinder was released to atmosphere

Argon: BOC Cylinder size x:

- 140 x 940mm
- 10 L water volume
- 19kg Gross Wt
- 230b, 2.30m<sup>3</sup> @ 1 bar
- 230bar = 3335psi (1 bar = 14.50 psi)
- V<sub>R</sub> = 10m x 7.8m x 3.1m = 242m<sup>3</sup> (Lab KE1 041)

$$\text{Volume of gas in Cylinder} = \frac{\text{Water Vol (litres)} \times \text{Cylinder fill Pressure (Bar)}}{1000}$$

$$= \frac{10 \times 230}{1000} = 2.3 \text{ m}^3$$

$$\text{Volume of Oxygen (V}_o\text{)} = 0.21 (\text{V}_R - \text{Volume of Gas in Cylinder})$$

$$\text{Volume of Oxygen (V}_o\text{)} = 0.21 (242 - 2.3) = 50.337\text{m}^3$$

$$\text{Oxygen Concentration (Cox)} = \frac{100 \times V_o}{V_R}$$

$$C_{ox} = \frac{100 \times 50.337}{242} = 20.80\%$$

This oxygen level of 20.80% is above the minimum oxygen level of 19.5% which would require additional Health & Safety Monitoring.

## Risk assessment calculation for a Nitrogen Cylinder in KE1 041

to see “what if “all the gas from one cylinder was released to atmosphere

Nitrogen: BOC Cylinder size x:

- 140 x 940mm
- 10 L water volume
- 19kg Gross Wt
- 230b, 2.30m<sup>3</sup> @ 1 bar
- 230bar = 3335psi (1 bar = 14.50 psi)
- $V_R = 10m \times 7.8m \times 3.1m = 242m^3$  (Lab KE1 041)

$$\text{Volume of gas in Cylinder} = \frac{\text{Water Vol (litres)} \times \text{Cylinder fill Pressure (Bar)}}{1000}$$

$$= \frac{10 \times 230}{1000} = 2.3 \text{ m}^3$$

$$\text{Volume of Oxygen (V}_o\text{)} = 0.21 (V_R - \text{Volume of Gas in Cylinder})$$

$$\text{Volume of Oxygen (V}_o\text{)} = 0.21 (242 - 2.3) = 50.337m^3$$

$$\text{Oxygen Concentration (Cox)} = \frac{100 \times V_o}{V_R}$$

$$C_{ox} = \frac{100 \times 50.337}{242} = 20.80\%$$

This oxygen level of 20.80% is above the minimum oxygen level of 19.5% which would require additional Health & Safety Monitoring.

## Risk assessment calculation for a Carbon Dioxide Cylinder in KE1 041

to see “what if “all the gas from one cylinder was released to atmosphere

Carbon Dioxide: BOC Cylinder size VB:

- 140 x 940mm
- 9.4 L water volume
- 22kg Gross Wt
- 50b, 3.36m<sup>3</sup> @ 1 bar
- 50bar = 725psi (1 bar = 14.50 psi)
- $V_R = 10m \times 7.8m \times 3.1m = 242m^3$  (Lab KE1 041)

$$\text{Volume of gas in Cylinder} = \frac{\text{Water Vol (litres)} \times \text{Cylinder fill Pressure (Bar)}}{1000}$$

$$= \frac{9.4 \times 50}{1000} = 0.47 \text{ m}^3$$

Volume of Oxygen ( $V_o$ ) = 0.21 ( $V_R$  – Volume of Gas in Cylinder)

Volume of Oxygen ( $V_o$ ) = 0.21 (242 – 0.47) = 50.721m<sup>3</sup>

Oxygen Concentration ( $C_{ox}$ ) =  $\frac{100 \times V_o}{V_R}$

$C_{ox} = \frac{100 \times 50.721}{242} = 20.96\%$

This oxygen level of 20.96% is above the minimum oxygen level of 19.5% which would require additional Health & Safety Monitoring.

Note: Carbon Dioxide is mildly toxic and the HSE has defined an occupational exposure limit of 0.5% averaged over 8 hours with a maximum exposure of 1.5% for short periods of 15 minutes. The volume of carbon dioxide from this cylinder could produce a 0.19% concentration in the case of a complete discharging of the cylinder (i.e., volume of gas in cylinder/room volume x 100%). This is within the maximum exposure limit but venting of the room should be encouraged before re admittance of staff and Students.

## Usage of Liquid Nitrogen in the School of Physics

### Transport of Liquid Nitrogen to the Laboratory:

The 5 litre Dewar is transported between floors by the stairs. The Technical Officer conveys the Dewar by one hand and should be aware at all times of trip hazards and should not be carrying any other items.

- Decanting of liquid Nitrogen is carried out by Technical Officers from the School of Chemical & Pharmaceutical Sciences only.
- The 5 litre Dewar marked for Nitrogen use must not be filled over 90% and most commonly is filled to less than 50%.
- The Dewar should be checked before use that it is in good condition with no damage to neck fittings or handle.

### In the event of a cold burn

- Remove any restrictive clothing which is not frozen to the damaged tissue
- Thaw frosted parts with lukewarm water
- Do not apply any direct heat.
- Do not rub affected area.
- Get immediate medical advice/attention.

### In the event of a spill in the Laboratory:

- The area should be evacuated and ventilated.
- Staff & Students must not return to the area until the Liquid Nitrogen has evaporated.
- The area should then be assessed for damage to workbenches and equipment.



### Liquid Nitrogen Worse case scenario – spill after filling (BCGA CP 30)

$$V_o = 0.21 \left[ V_R - \left[ \frac{1.1 \times V_D \times f_g}{1000} \right] \right]$$

Where  $V_R$  = Room volume = 12m x 7.8m x 3.1m = 290m<sup>3</sup> (Lab KE1 040)

0.21 Factor for normal concentration of oxygen in air

1.1 Factor allowed for filling and spillage losses

$V_D$  = Dewar capacity = 5 litres

$f_g$  = gas factor for Nitrogen = 683

$$V_o = 0.21 \left[ 290 - \left[ \frac{1.1 \times 5 \times 683}{1000} \right] \right] = 60.1 \text{ m}^3$$

Room Oxygen Concentration:  $C_{ox}$

$$C_{ox} = \frac{100 \times V_o}{R_o}$$
$$= \frac{100 \times 60.1}{290} = 20.7 \%$$

This oxygen level of 20.7% is above the minimum oxygen level of 19.5% which would require additional Health & Safety Monitoring.