SAFETY STATEMENT FOR
EXPERIMENTAL PHYSICS DEPARTMENT

SEPTEMBER 2011

SIGNED: _______________________
HEAD OF DEPARTMENT

DATE: _______________________

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Departmental Policy

The Head of Department is fully committed to safeguarding the health, safety and welfare of staff attached to the Experimental Physics Department in accordance with the Safety, Health and Welfare at Work Act 2005 and will ensure that all reasonably practicable measures will be taken to avoid risk to staff, students and others who may be affected.

The Experimental Physics Department has considered its responsibilities to its staff, students and to those who frequent the Campus and has identified hazards specific to the Department.

This Safety Statement sets out the procedures and standards it wishes to uphold in providing for the safety, health and welfare of all at their place of work.

It is the responsibility of all staff within the Experimental Physics Department to assist the Head of Experimental Physics in this endeavour.

It is the duty of every staff member and student to take reasonable care of their own safety, health and welfare and that of any other person who may be affected by his or her own actions on Campus.

This Safety Statement should be read in conjunction with the University/College Safety Policy Statement, [http://www.nuim.ie/publications/safety/index.shtml](http://www.nuim.ie/publications/safety/index.shtml) which sets out the University’s corporate arrangements.

Signed: ________________________________

Professor J. Anthony Murphy

Head of Department

Date: ________________________________
Foreword

This Departmental Safety Statement should be read in conjunction with the University Safety Policy Statement, [http://www.nuim.ie/publications/safety/index.shtml](http://www.nuim.ie/publications/safety/index.shtml). The University Safety Policy Statement details the University’s Organisational Arrangements, which include the following:

1. Statement of Policy
2. Resources
3. Health and Safety Management
4. Responsibility for Safety including Procedures for Contractors
5. University Safety Committee
6. Information
7. Employee co-operation and Consultation
8. Safety Training
9. Emergency Policy
10. First Aid
11. Reporting Accidents
12. Personal Protective Equipment
13. Welfare Facilities

This Safety Statement details the organisational arrangement and the hazards specific to, and areas under the control of the Head of Department of Experimental Physics, Professor. J. Anthony Murphy.
SECTION 1

1.1 Responsibility for Health and Safety in NUIM
   - Organisation Chart
   - Management Responsibilities
1.2 Contractors
1.3 First Aid Boxes and Medical Emergencies
1.4 Reporting of Accidents
1.5 Training
1.6 Welfare
1.7 Personal Protective Equipment to be used by Experimental Physics Personnel
1.8 Travel on University Business including the use of cars
1.9 Policy on the Protection of the Dignity of Staff and Students
1.10 Disability Policy
1.11 Policy on Equality
1.12 Staff Wellbeing
1.1 RESPONSIBILITY FOR HEALTH AND SAFETY IN NUIM

The general duties and responsibilities with respect to health and safety are set out in the University Policy document, [http://www.nuim.ie/publications/safety/index.shtml](http://www.nuim.ie/publications/safety/index.shtml) and all staff should apprise themselves of their own responsibilities.

Within the context of the Department of Experimental Physics overall responsibility rests with the Head of Department, Professor J Anthony Murphy. Other responsibilities are set out for supervisory staff who have day-to-day control of staff and work areas, as part of the Management of Safety, Health and Welfare in the Department. These positions are listed below.

Health & Safety is discussed at regular staff meetings namely: The Physics Departmental Committee, The Teaching Sub - Committee, The Technical Support Committee. The Departmental Health and Safety Sub-Committee.

The Health and Safety Committee members in Experimental Physics are:

Prof. J. Anthony Murphy Chairperson, Head of Department.
Dr. Frank Mulligan Academic Staff
Dr. Michael Cawley Academic Staff
Dr. Creidhe O’Sullivan Academic Staff
Ms. Gráinne Roche Administrative Staff
Mr. Ian McAuley Dept. Radiological Protection Supervisor
Mr. Derek Gleeson Chief Technical Officer
Mrs. Marie Galligan Sr. Technical Officer
Mr. David Watson Engineering Workshop Manager
2 Postgraduate Research Students
Fire Wardens and First Aiders for the Experimental Physics Department are listed below and this list is displayed in the Departmental Office.

**Fire Wardens:**

<table>
<thead>
<tr>
<th>Floor</th>
<th>Warden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Floor</td>
<td>Mr. Pat Seery</td>
</tr>
<tr>
<td></td>
<td>Mr. David Watson</td>
</tr>
<tr>
<td>First Floor</td>
<td></td>
</tr>
<tr>
<td>- Advanced Teaching Labs Corridor</td>
<td>Ms. Marie Galligan, Mr. Ian McAuley</td>
</tr>
<tr>
<td>- Office Corridor</td>
<td>Mr. Derek Glieson, Ms. Gráinne Roche</td>
</tr>
<tr>
<td></td>
<td>Mr. Gerard McMahon</td>
</tr>
</tbody>
</table>

**First Aiders:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Gráinne Roche</td>
<td>Ext. 3641</td>
</tr>
<tr>
<td>Mr. David Watson</td>
<td>Ext. 3919</td>
</tr>
<tr>
<td>Mr. Marcin Gradziel</td>
<td>Ext. 4770</td>
</tr>
<tr>
<td>Dr. Peter van der Burgt</td>
<td>Ext. 3782</td>
</tr>
</tbody>
</table>
Organisation Chart – Department of Experimental Physics

HEAD OF DEPARTMENT

ACADEMIC STAFF

ADMINISTRATIVE STAFF

TECHNICAL SUPPORT STAFF

TUTORS/DEMONSTRATORS/POSTGRADUATES

RESEARCH STAFF
RESPONSIBILITIES AND TASKS

Head of Department: Professor J. Anthony Murphy
The Head of the Department is responsible for the day-to-day management of all staff in the Department. (Ref: NUI Safety Policy Statement 2010, pages 7-8).

In conjunction with these responsibilities the Head of Department will ensure that, in the event of an emergency, staff are familiar with safe evacuation procedures. This also includes the provision of adequate numbers of Fire Wardens and First Aiders.

Academic Staff
Academic staff are responsible for delivering the academic course to students as per their specialist areas/fields, which includes all programmes delivered by the department of Experimental Physics.

In conjunction with this, each member of staff has a responsibility to ensure that safe procedures are implemented in the event of an emergency, such as fire or an accident. This includes the safe evacuation from lecture theatres, laboratories and rooms to a safe place outside the building. Academic staff are responsible for maintaining a safe working environment and in particular providing such supervision as is necessary to ensure the health and safety of students/staff and research workers within their area of responsibility.

Administrative Staff
Administrative staff are responsible for the day-to-day administration of the Department and to comply with all fire evacuation procedures for the building.

Technical Staff.
Technical Staff are responsible for supporting the provision of the academic programme as delivered by the Department of Experimental Physics. Technical staff provide technical support to staff and students of the Experimental Physics Department. In conjunction with this, each member of staff has a responsibility to ensure that safe procedures are implemented in the event of an emergency, such as fire or an accident. This includes the safe evacuation from lecture theatres, laboratories and rooms to a safe place outside the building. Technical staff are responsible for maintaining a safe working environment and in particular providing such supervision as is necessary to ensure the health and safety of students/staff and research workers within their area of responsibility.
Tutors/Demonstrators
Tutors/Demonstrators are responsible for tutoring/demonstrating to undergraduate students. They ensure that undergraduate students understand basic Departmental safety rules/regulations in the undergraduate teaching laboratories, and that students adhere to same when working in these laboratories.

Staff Responsibilities
All staff are responsible for their own safety and must comply with all statutory provisions as appropriate and take care to protect his/her own safety, health & welfare and the safety, health & welfare of any other person who may be affected by their actions or omissions at work. (Ref: University Safety Policy 2010, Page 10-11)

N.B. NUI Safety Policy Statement is available for download from Health & Safety Office webpage

Academic Staff: Professor J. Anthony Murphy (Head of Department)
Dr. Michael Cawley
Dr. Francis J. Mulligan
Dr. Créidhe O’Sullivan
Dr. Peter van der Burgt
Dr. Marcin Gradziel
Dr. Neil Trappe
Mr. Gerard McMahon

Administrative Staff: Ms. Gráinne Roche

Technical Staff: Mr. Derek Gleeson (Chief Technical Officer)
Mrs. Marie Galligan
Mr. John Kelly
Mr. Ian McAuley
Mr. Pat Seery
Mr. David Watson
Tutors/Demonstrators & Postgraduates:  
Ms. Mairead Bevan  
Mr Colm Bracken  
Mr. Robert Dixon  
Mr. Stephen Doherty  
Mr. Donnacha Gayer  
Mr. Paul Kelly  
Mr. Darragh McCarthy  
Mr. Dean McCarthy  
Mr. Brian McLaughlin  
Mr. Paul McLaughlin  
Mr. Enda McLoughlin  
Mr. Francis Mahon  
Mr. Stephen Scully  
Mr. Andrew Wilson  
Mr. Daniel Wilson  

Research Staff:  
Mr. P. Tully Peacocke
1.2 CONTRACTORS

Maintenance activities are essential in many areas and in some Departments. The University has a responsibility to ensure that such maintenance of services and buildings is carried out in a professional and safe manner. The following will provide guidance to those carrying out maintenance and for the staff affected in the Department.

The use of outside contractors

Where Contractors are engaged for a project, the contract may require that a Health and Safety Plan or Method Statement be prepared and provided to Campus Services Department. These documents detail the particular hazards involved and specify the arrangements to be put in place to minimise the hazards in the project. Before the commencement of work, they must contact Campus Services Department who will make them aware of the safety requirements.

The following responsibilities are allocated to Contractors operating on the Campus

- All vehicles operating on our premises must observe a speed limit of 25 Km/h.
- Contractors must comply with the University’s Regulations for Safety, Health and Welfare and where appropriate, ensure that their own company's Safety Statement is complied with.
- No smoking is permitted in any Building under the control of the University.
- All "Hot Work", all “Electrical work”, all “Entry into Confined Spaces”, all “Work at Heights” and all “Excavations” are strictly controlled and a work permit must be obtained before commencing work from the Safety Office or Campus Services.
- All work done must be carried out in accordance with current Statutory provisions, the Contractor's own Safety Rules, and must take into account the safety of all persons on the premises.
- Appropriate personal protective clothing and equipment must be utilised.
- Scaffolding and other access equipment used by Contractors must be erected and maintained in accordance with current standards.
- All plant and equipment brought onto site by Contractors must be safe and in good working order, fitted with any necessary safety guards and safety devices. Portable power tools or electrical equipment must operate at 110 volts and all transformers, generators, extension leads, plugs and sockets must be suitable for industrial use and in good condition. Portable equipment, other than transformers and generators exceeding 125 volts AC are not to be used.
in the workplace.

- Any injuries sustained by Contractors/Subcontractors must be reported immediately to the Safety Office and Campus Services Department.
- Contractors / Subcontractors must comply with any safety instruction given by the University Safety Officer.
- Insurance covers are agreed and certified prior to the commencement of the project.
- The Contractors must supply all his own tools and equipment. Under no circumstances are Contractors allowed to use University equipment without the express permission of the Power House Supervisor.
- Where work is undertaken in occupied buildings, the Contractor must ensure that dust, noise and fumes etc are minimised.
1.3 FIRST AID BOXES

Accidents do occur from time to time in all organisations. It is therefore important to have in place a management system which provides the necessary skills and materials to minimise pain and to make the person comfortable until professional assistance arrives. On that basis the following are available in each Department.

The first aid boxes are located in the following locations;
Ground Floor: Rooms 1.16, 1.19, 1.20, 1.24, 1.26
First Floor: Rooms  2.9, 2.20, 2.28, 2.33, 2.34, 2.41

The first aid box has a white background with a green cross on the door and is easily accessible. A safety notice on the staff notice board details the locations of the first aid boxes and qualified First Aid persons

First Aid persons are not authorised to dispense any form of medication. Supplies of such items must not be kept in first aid boxes. Staff who require medication are responsible for their own supplies. The appointed First Aid person shall carry out regular checks on the First Aid boxes to ensure they are properly stocked, in accordance with the following table:

TABLE 1. RECOMMENDED CONTENTS OF FIRST-AID BOXES
As set out in Safety, Health & Welfare at Work (General Application) Regulations 2007, Chapter 2 of Part 7

<table>
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<tr>
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<tbody>
<tr>
<td>Adhesive Plasters</td>
<td>20</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Sterile Eye Pads (Bandage attached)</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Individually Wrapped Triangular Bandages</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Safety Pins</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Item</td>
<td>Quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individually Wrapped Sterile Unmedicated Wound Dressings Medium (No. 8) (10cm x 8cm)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individually Wrapped Sterile Unmedicated Wound Dressings Large (No. 9) (13cm x 9cm)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individually Wrapped Sterile Unmedicated Wound Dressings Extra Large (No. 3) (28cm x 17.5cm)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individually Wrapped Sterile Unmedicated Wound Dressings Extra Large (No. 3) (28cm x 17.5cm)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individually Wrapped Sterile Unmedicated Wound Dressings Extra Large (No. 3) (28cm x 17.5cm)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paramedic Shears</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examination Gloves (Pairs)</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sterile Water where there is no clear running water. Where mains tap water is not readily available for eye irrigation, sterile water or sterile normal saline (0.9%) used be used</td>
<td>1x500mls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pocket Face Mask</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Based Burns Dressing (Large) or Water Burns Gel</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crepe Bandage (7cm)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FIRST AID AND MEDICAL EMERGENCIES**

In the event of an accident medical attention may be required. A member of the University’s First Aid team should be contacted.

Each department is required to maintain a first aid box, which is adequately stocked. A list of the University first aiders must be posted beside the individual first aid box. Security staff can also be contacted to assist, particularly outside Office hours. The mobile Security Units are fitted with first aid boxes. The first aid facilities are supplemented by the medical supplies and equipment located in the Medical Centre. The University’s occupational nurse is on campus during office hours, Monday – Friday: 09.30 - 16.45.
In an emergency contact the nurse through switch/security. Ext. 3333 or 3929.

**Minor Injury:** In the event of a minor injury, the First Aider should provide treatment. The person receiving the treatment should be advised to seek medical attention if their condition worsens.

**Significant Injury:** The first aider should provide initial treatment or support until the occupational nurse arrives. Contact via Security. The doctor on call can be summoned or the injured party can be brought to the Medical Centre or local surgery for immediate treatment. If there is any doubt the emergency services must be contacted.

**Major Injury:** The Emergency services must be contacted immediately. First aid staff and medical staff must be alerted to provide assistance to minimise the injuries pending the arrival of the emergency services.

Note: All injuries/accidents/incidents must be reported to the University Safety Office. The Report Form is available for download on Safety Office webpage.

Where injured persons are brought to the Medical Centre or doctor’s surgery the mobile security vehicle should be used, if on site. Where private cars are utilised a first aider must accompany the injured party.

**University Doctor:**
Dr. Denis Gaffney 629 1169
Doctor on Call - After Surgery Hours - If Dr. Gaffney is not on-call a recorded message gives details of the Doctor on-call and the relevant contact telephone number.

**Local Doctors:**
Dr. Mary Cowhey 628 9044
Dr. Christopher O’Rourke 628 5210
Dr. Denise Nolan 628 5943

It is the University’s policy to ensure that staff, students and persons using the premises receive medical attention if it is required. Where our first aid or medical staff refers a casualty to the doctor, the University will be invoiced.

**Automatic External Defibrillators (AED’s)**
AED’s are located at various locations on Campus. Only qualified first aiders who have completed AED training are allowed to use AED’s in an emergency. An up to date list of locations is available on the Safety Office webpage. Any Department considering purchasing an AED must consult the Safety Office to ensure that all AED’s on campus are compatible and meet the required standards.

Currently AED’s are located in:

**South Campus**
- Gate Lodge
- Conference & Accommodation Reception Area.

**North Campus**
- Security Office, Arts Building
- Student Services Centre Lobby
- Sports Centre Reception
- Apartments Reception area
1.4 REPORTING OF ACCIDENTS

All Departments have a responsibility to investigate and record all accidents that occur in their area. Staff are required to report accidents or serious incidents to their Head of Department without delay and to co-operate with the University in any subsequent investigation. The Head of Department/Supervisor must ensure that the University accident report form (available on the Safety Office webpage) http://healthandsafety.nuim.ie/ is completed and forwarded to the Safety Office. See Appendix 5.

1.5 TRAINING

Responsibility
Responsibility for staff training rests with the Head of Department.

Induction Training/Supervision
All staff employed by the University must receive induction training to ensure that they fully understand the hazards of the processes and the necessary safety precautions and emergency procedures that have been put in place to ensure a safe working environment.

Job Training and Instruction
Training and instruction must be given, as necessary, to staff to ensure that they have the necessary skills and knowledge to do their job safely.

Specialist Safety Training
Training will be given, as appropriate, in first aid, safe manual handling, the use of personal protective equipment, fire fighting and prevention, evacuation procedures and the like. Specialist training will be provided as appropriate where specialist skills or competencies are required.

Training Support
The Safety Office and Staff Development Office provide advice and support in this area.

Training Records
Records of all the training provided must be maintained by the Head of Department and copied to
1.6 WELFARE

Facilities
Welfare facilities provided to staff include canteen facilities, drinking water, lockers, toilets and washing facilities. These facilities are maintained in a suitable and hygienic manner. All staff are required to co-operate to use them in a respectful manner and not to intentionally damage them.

Pre-Employment Medical
Prior to taking up employment with the University all permanent staff must undergo a pre-employment medical.

First Aid
Regular courses are provided for staff with Refresher training provided every 2 years.

Each Department is responsible for the provision and maintenance of first aid kits. The minimum contents of the First Aid boxes have been reviewed in conjunction with the Health and Safety Authority’s guidelines. [See First Aid section]

Eye Sight Tests
All staff who work with visual display equipment are provided with an eye screening test every three years. Staff are referred to an optician where appropriate.

Pregnant Employee Regulations
Female staff are required to advise Human Resources in writing when they become aware that they are pregnant and to provide the University with written confirmation from a Doctor or Midwife, if requested.

When the University receives notification that a staff member is pregnant a risk assessment will be carried out to ensure the safety of the member of staff.

Smoking
Smoking is prohibited in all buildings on Campus in accordance with current No-Smoking legislation.
1.7 PERSONAL PROTECTIVE EQUIPMENT TO BE USED BY EXPERIMENTAL PHYSICS STAFF

Use of Personal Protective Equipment (PPE)

All University staff may from time to time be required to wear Personal Protective Equipment (PPE). This can vary from the needs of those in, for example, Biology, Chemistry, Engineering, Experimental Physics, Catering, Cleaning, Campus Services or any other Department.

In Experimental Physics in certain designated areas such as laboratories or workshops the list of Personal Protection Equipment required and provided includes safety glasses, face shields, noise protection, laboratory coats, overalls, safety shoes, gloves, helmets.

The Department has undertaken risk assessments of all activities and on foot of this has identified their PPE requirements. Training and advice will be given to staff as appropriate on the correct use and the necessity to use such equipment when carrying out tasks in their work area.

Students, Contractors and Visitors must comply with Departmental requirements regarding PPE.

The following general provisions apply in relation to personal protective equipment:

1. PPE is provided free of charge to the staff member.
2. PPE must comply with relevant European Community Standards
3. Only suitable equipment as described in the Hazard Assessment sheets can be used.
4. PPE must only be used for the purposes specified above and as intended by its designers and manufacturers.
5. Personal protective equipment is for the personal use of the staff member to whom it was issued.
6. Staff members must wear safety footwear as identified in the Risk Assessment for their Department.
7. Staff members who are provided with eye protection must take care of it and not wilfully misuse it.
8. Other safety devices may be identified as part of the Risk Assessment and their use must be complied with at all times.

1.8 TRAVEL ON UNIVERSITY BUSINESS INCLUDING THE USE OF CARS

Travel Abroad on University Business
Travel insurance cover is available for University Staff and Post Graduates travelling on University business outside the Republic of Ireland and Northern Ireland. A Travel Notification Form should be downloaded from the Safety Office website, completed and forwarded to Safety Office prior to travel being undertaken. This University is required to maintain records of all travel undertaken. A summary of the Travel Policy outlining the nature of the cover is also available on the Health & Safety website.

Staff on long term sabbatical leave, over six months, can also avail of this insurance, subject to prior notification to the Bursar. Travel insurance for undergraduate students is not covered under this policy and must be arranged separately. The insurance covers University Staff and Post Graduates only and does not cover family members or any other persons.

It is important to note that travel to certain countries is excluded by the Insurance Policy unless prior notification is made and approval received from the insurers. The countries excluded by the University Insurance Policy can change and all trips outside Europe and USA should be advised to the Safety Office, who will advise our insurers and ensure that cover is in place.

Use of Private Motor Vehicles for use on official University Business
Private motor vehicles should be adequately insured while being used on official University business. Staff should check with their insurance broker/company to ensure that they have Occasional Business Use cover. Staff claiming mileage on the University Travel Expenses Claim Form are required to confirm that they have made appropriate arrangements with their insurers.

The University will not accept liability for any loss or damage resulting from the use of a private motor vehicle on official University business.

Use of Mobile Phones
The use of mobile phones in cars has been the cause of a number of accidents on the roads. Caution must be exercised even when using a hands free kit. Where a hands free kit is not available the driver must pull into a safe location and stop before dealing with a call.

1.9 POLICY ON THE PROTECTION OF THE DIGNITY OF STAFF AND STUDENTS

"The National University of Ireland, Maynooth is committed to the protection of dignity of men and women in the University, and to the principle that every staff member and student is entitled to work and study in an environment free from harassment, including harassment based on gender, sexual orientation, disability, race/ethnic origin (which includes membership of the Traveller community), religion, and from bullying."

1.10 DISABILITY POLICY

"The University is committed to implementation of a policy of equal opportunity for people with disabilities and, in particular, is committed to ensuring that:
- people with disabilities have access to the full range of recruitment and career development opportunities available in the University.
- people with disabilities are facilitated to give effective performance in the posts which they hold and are not disadvantaged by reason of having a disability, and
- all reasonable accommodations are made to meet the requirements to which some disabilities give rise so as to maximise access to employment in the University for people with disabilities."

1.11 POLICY ON EQUALITY

"The provision of this Policy on Equality emerge from the context of a desire on behalf of the University to foster equality of opportunity for all members of National University of Ireland, Maynooth. The Policy is adopted for a three year period, after which time it will be the subject of discussion and review. The University will strive to give effect to its provisions subject at all times to the availability of adequate financial and other resources."
The full policy documents referred to on this page are available from the Human Resources Office.
1.12 STAFF WELLBEING

NUI Maynooth values its staff and is committed to maintaining and enhancing a good working environment\textsuperscript{1}. It has in place a range of policies and services to support the well being of staff and help them to achieve their work goals and to balance their work and other roles.

These policies and services include:

Policy and Procedures for the Protection of Staff Against Workplace Bullying, Harassment and Sexual Harassment, available at:  
\url{http://humanresources.nuim.ie/documents/NUIMBullyingandharassmentpolicy.pdf}

Statement of Policy on Equality, available at:  
\url{http://humanresources.nuim.ie/documents/Statementofpolicyonequality.pdf}

Quality Customer Service Charter, available at:  
\url{http://foi.nuim.ie/section16/documents/NUIMServiceCharter.pdf}

Work life balance initiatives leaflet, at: \url{http://qpo.nuim.ie/quality/documents/Final_Leaflet2.pdf} – this document outlines some of the provisions that are in place for NUI Maynooth staff to enable them to achieve balance between their work and other commitments.

Staff schemes, facilitating sabbatical, maternity, career and force majeure leave, job share and shorter year working, house loans, travel passes, and fee remission, more at:  
\url{http://humanresources.nuim.ie/staff_schemes.shtml}

Training and Development – the Staff Development programme at: \url{http://staffdevelopment.nuim.ie/} outlines the supports that are available to staff to develope their capability and skills, and further activities are available through other learning providers such as the Centre for Teaching and Learning, the Research Support Services, Computer Centre, Health and Safety Office etc.

Employee Assistance Programme – The University recognises the need to provide support for employees experiencing work related or personal difficulties. The Employee Assistance programme enables members of staff to seek confidential help from a professional source without charge. More detail is available at:  
\url{http://humanresources.nuim.ie/EmployeeAssistanceProgramme.shtml}

Staff/Student Relationships: This guidance document clarifies issues concerning staff/student relationships. \url{http://humanresources.nuim.ie/documents/StaffStudentrelationships.pdf}

For more information on Staff Wellbeing please contact the HR Office on 01 708 3558.

## Section 2

### EMERGENCY PLANNING

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2.1 DEPARTMENTAL EMERGENCY PLANS

The University has prepared an emergency plan for all Buildings/Departments which set out the management procedures and controls that will come into effect in the event of an emergency in a department.

The emergency plan addresses the installation of appropriate warning and alarm systems which are maintained in line with approved national standards.

The plan sets out the organisation and responsibilities of named persons and how to contact emergency services.

It specifies the method of both internal and external communications in the event of a serious accident or incident.

The plans will be tested at least twice a year and a review of the operations will be carried out to ensure that the plans are effective. A report will be submitted to the University Safety Committee.

All persons associated with the implementation of the emergency plan will be provided with appropriate training.

All equipment will be maintained and tested to ensure it is operational in the event of an emergency.

Records will be maintained of all equipment / maintenance checks / repairs / fire drills and their effectiveness / assembly points and any other requirement needed to ensure an effective policy.

The University Safety Committee will approve the emergency plan on the advice of the Safety Office.
2.2 BUILDING EMERGENCY PLAN EXPERIMENTAL PHYSICS
DEPARTMENT NEW SCIENCE BUILDING NORTH CAMPUS

Role of Head of Department:

The Head of Department is responsible for ensuring that measures are in place to deal with emergency situations in their Department.

This includes
- A list of all Departmental staff including contact details
- Ensure that staff are aware of and understand Evacuation and Emergency Procedures.
- Appointment of adequate number of trained Fire Wardens
- Appointment of adequate number of trained First Aiders
- Provision of First Aid Equipment
- Co-operation with other Departments within the same building regarding Emergency Planning.
- In high risk Departments, e.g. Chemistry, Physics, Technical Staff are available to assist and respond in an emergency.

Building: Science Building

The fire alarm, emergency lighting, fire doors, fire extinguishers and associated equipment are inspected and tested by competent contractors in accordance with current Standards. See Appendix 3 – Plan of Building.

Occupancy:

The building houses the following Departments:
Experimental Physics, Chemistry, Mathematical Physics.

Adjoining Buildings: Consideration will be given at the time of emergency of the impact on other buildings in close proximity to the emergency situation.

Travel Distance: All offices within the building are within the required travel distance as set out in the Building Construction Regulations.
Cooperation between Users: Each Department within the building will liaise and cooperate with each other to ensure that all fire evacuation procedures are complied with.

Emergency Evacuation Plan: Each member of staff has a responsibility to comply with the Emergency Plan for the building.

Fire Wardens: It is recommended that the fire wardens for the building select a lead fire warden to take immediate charge in the event of a fire emergency until Security or the fire emergency services arrive at the building.

In the event of emergency within the building Fire Wardens should ensure that the building is evacuated, if safe to do so. In the event of a major emergency a Head of Department will take charge until the professional emergency services arrive.

First Aid Persons: In the event of an emergency/accident the first aid person will render assistance until professional medical assistance arrives.

Emergency Contacts/Phone numbers

Security: (01) 708 3929 (mobile unit)
Safety Officer: (01) 708 4720
Gardai: 112 or 999, Maynooth: (01) 6291444
Fire Brigade 112 or 999
Medical Centre: (01) 708 3878
2.3 ACTION IN THE EVENT OF FIRE

ANY PERSON DISCOVERING A FIRE SHOULD:

1. Raise the Alarm by activating the break glass unit at the nearest fire point, which are found in the corridors and on the exit routes.

2. Inform the Fire Brigade.

   The Fire Brigade must be notified of any fire - Emergency No. 999 or 112 (mobile). Give your address and clear directions.

   Switchboard or University Security Staff must also be alerted

   Emergency Numbers:   Switchboard (01 708) 3333
                        Security Mobile Unit: (01 708) 3929

3. Deal with the Fire if safe to do so.

   Attack the fire using the nearest suitable extinguisher or fire hose reel where appropriate.

   DO NOT TAKE PERSONAL RISKS OR PUT LIVES IN DANGER.

4. OTHERWISE EVACUATE FROM THE PREMISES.

ON HEARING THE FIRE ALARM

The evacuation of the building must commence immediately.

- Ensure that all equipment is left in a safe condition within the time available, prior to evacuating.
- Leave the building by the nearest safe exit, closing all doors behind you.
- Do not delay to collect personal belongings or for any other reason.
- Assemble at the prescribed assembly point “G” clearly marked (situated across the road from the entrance closest to the Arts Building.

- DO NOT TAKE RISKS.
- DO NOT RETURN TO THE BUILDING FOR ANY REASON UNLESS AUTHORIZED TO DO SO.
- DO NOT USE LIFT(S)

Reference: Emergency Plan, NUIM Safety Policy
2.4 BOMB THREAT STRATEGY & RESPONSE

1. When informed of a bomb threat get all the information possible about the call from the person who received it. Guidelines to Telephonists/Persons receiving bomb threat call on page the next page.

2. Staff on receipt of the call must:
   - Detain the caller on the line for as long as possible, asking the questions outlined on the attached form.
   - Record as much information as possible.

3. When the caller hangs up advise Head of Security/Security immediately. Extn. 3929

4. Head of Security/Security is to advise the following:
   - The Gardaí
   - Safety Officer
   - Head of Department (if a Department is the location)

5. This may also include advising the Emergency Services, Bord Gáis and ESB or any other relevant authority.

6. Gather all information needed for the Gardai i.e. plans of the building, staff lists and keys.

7. Assessing the threat is probably the most difficult aspect of the task.
   There are two options:
   (a) to search and evacuate in the event of a suspicious object being found.
   (b) to evacuate immediately without searching ensuring that staff/students/visitors/contractors are not allowed within 300 metres of the building.

8. This decision will be made with the help of the Gardai, if present, or in the absence of the Gardai with the Head of Security.

9. The Bomb Threat Report will assist in assessing the threat.

10. If a suspect object such as a bag, briefcase or parcel without an owner is found, then that area and all adjacent areas must be evacuated away from the object immediately. An assembly point must be selected at least 300 metres away from the building and its car park by those in charge.

11. The Gardai will have been contacted by Security and on arrival will take charge of the incident.
IF A SUSPICIOUS OBJECT IS FOUND – FOLLOW THE GOLDEN RULE:

• **DO NOT TOUCH**
• CLEAR PEOPLE AWAY FROM THE IMMEDIATE VICINITY - A MINIMUM OF **300 METRES** FROM THE AREA
• SECURE THE AREA AND INFORM SECURITY, WHO SHOULD THEN INITIATE EVACUATION, IF NOT ALREADY DONE.
BOMB THREAT REPORT

It is important on receipt of a bomb threat that the telephonist/person receiving the call does not panic. So as to reduce confusion and assist appropriate authorities, every effort should be made to obtain and record the information as outlined below.

1. Note the exact time of the call. Start ____________ Finish ____________

2. Note the exact words of the threat - particularly the location of the bomb and when it is going to explode.

_____________________________________________________________________
_____________________________________________________________________

3. Ask:
   a. Where is the bomb now? ____________________________________________
   b. What does it look like? ____________________________________________
   c. When is it going to explode? _______________________________________
   d. Who planted it? __________________________________________________
   e. Why was it planted? _____________________________________________

4. Note whether the voice is male or female. __________________________________

5. Note the accent of the caller. __________________________________________
   e.g. Dublin, Country, Northern Ireland, Foreign.

6. Note whether the caller sounds intoxicated. ______________________________

7. Note any background noises - traffic, music, voices, etc. ___________________

8. Note if the voice is familiar - Who? ______________________________________

9. Note the time the caller hung-up. ______________

10. Other comments. ______________________________________________________

Notify the Security and Gardai immediately on receipt of a call.

Reference: (Insert appropriate Building) Drawing attached
           Emergency Plan, NUIM Safety Policy
2.5 ACTION IN THE EVENT OF ROBBERY/BY AN INTRUDER

In the event of an intruder in the building, do not confront the individual, contact Security immediately extn. 3929, if able to do so. Under no circumstances are you to apprehend the intruder. Move to a safe area and observe if possible.

2.6 ACTION IN THE EVENT OF GAS LEAK OR THE SMELL OF GAS IN AN AREA.

1. Do not answer or use mobile phone/radios
2. Do not switch on lights or any other electrical equipment on or off.
3. Do not use naked lights
4. Ring Security/Safety Officer and Bord Gáis immediately from a safe location.
5. Check whether the gas is coming from a pilot or burner:-
   • If from a pilot or burner, turn off the burner.
   • If from elsewhere, turn off the gas supply to the area.
6. Open doors and windows and leave them open until the leak has stopped and any build-up of gas has dispersed.
7. If gas continues to escape after the supply has been isolated leave the building immediately and go upwind away from the gas leak.
8. Report the leak to Chief Technical Officer and or Head of Department.
9. Obey the instructions of Security/Safety Officer/Person in charge.

2.7 UNPLANNED POWER OUTAGE

In the event of an unplanned power outage in a building(s) these must be cleared as soon as practicable and at the discretion of the Safety Officer or Head of Security. The emergency lighting systems are only designed to provide lighting for a limited period to aid safe egress and to provide lighting for the emergency services. In the event of a power outage please advise Security (3929) and they will liaise with the Powerhouse.
2.8 FLOODS

- If obvious stop the leak. Switch off the water supply if possible
- Check that there is no electrical equipment in flood area, switch off the mains supply in the lab if necessary.
- Inform Technical Staff immediately who will liaise with maintenance staff.
- Warn people to safeguard papers and equipment.
- Do not attempt to move wet electrical equipment unless disconnected from the mains.

2.9 AIDING AN INJURED PERSON

1. Keep calm, phone for either a First Aider (using the names and phone numbers posted on the First Aid boxes in the lab) or if more serious call Security Emergency Line on 3333.
2. Be prepared to give the following information:
   - Information on the condition of the victim, if there is a casualty.
   - Details of any hazards.
   - Exact location of the accident (room number and building).
3. If possible have somebody wait at the entrance of building to take the ambulance personnel directly to the casualty.
4. Even if a fire alarm sounds, do not attempt to move the injured person out of the building unless there is imminent danger to that person and the first aider. Stay with the injured person until help arrives, or the injured person can be taken by taxi, if appropriate or private car to the hospital.
5. Please remember to take the appropriate SDS to hospital with victim if a chemical is involved in the accident.

2.10 FIRST AID

Accidents do occur from time to time in all organisations. There are First Aid boxes at a number of points around the building, including teaching labs and the departmental office. In the event of a minor accident, call one of the trained First Aiders listed on the First Aid box. First Aid persons are not authorised to dispense any form of medication. Supplies of any medication must not be kept in First Aid boxes. Staff who require medication are responsible for their own supplies or can attend the Occupational Nurse at the Medical Centre. The appointed First Aid person shall carry out
regular checks on the First Aid boxes to ensure that they are properly stocked with appropriate supplies for the Experimental Physics Department.

First Aid courses are available on a yearly basis and refresher courses are ongoing at regular intervals throughout the year. The Health and Safety Office will inform the Department of upcoming First Aid courses.

2.11 DEFIBRILLATORS

Locations:

South Campus
- Conference and Accommodations office reception
- Gate Lodge

North Campus
- River Apartments office
- Student Services centre Lobby
- Arts building (beside Security office)
- Sports centre reception

Only staff members who have successfully trained as a Cardiac First Responder and hold a current certificate may use an AED.

2.12 CHEMICAL BURNS

Remove contaminated clothing which shows no sign of sticking to the skin and flush all affected parts of the body with copious amounts of clean, cool water for 15 min, ensuring that the chemical is so diluted as to be rendered harmless. Seek medical attention.

2.13 EYE/EYE-FACE WASH

Eye/eye-face wash fountains should not be used if it is known that the eye contamination is metal or some other rigid solid fragment. Medical attention should be sought immediately. Emergency eye/eye-face wash units should be in all areas where chemicals are being used. To ensure adequate operation of the units, all individuals working in the lab areas should be instructed in the proper use of the eye/eye-face wash fountain. If an individual’s eyes become contaminated with chemicals etc, the eye should be held open and the affected area should be rinsed immediately for at least 15 min and a doctor or nurse should be contacted immediately.

Eye wash units must be flushed once a week. Eye wash units in teaching labs must be flushed once
2.14 ACCIDENTS/INCIDENTS

In the event of an accident medical attention may be required. A member of the University’s First Aid team should be contacted.

Note: All injuries/accidents/incidents must be reported to the University Safety Office. The Report Form is available for download on Safety Office webpage.

**Minor Injury:** In the event of a minor injury, the First Aider should provide treatment. The person receiving the treatment should be advised to seek medical attention if their condition worsens.

**Significant Injury:** The first aider should provide initial treatment or support until the occupational nurse arrives. Contact via Security. The doctor on call can be summoned or the injured party can be brought to the Medical Centre or local surgery for immediate treatment. If there is any doubt the emergency services must be contacted.

**Major Injury:** The Emergency services must be contacted immediately. First aid staff and medical staff must be alerted to provide assistance to minimise the injuries pending the arrival of the emergency services.
2.15 USEFUL TELEPHONE NUMBERS:

<table>
<thead>
<tr>
<th>NUIM Doctors</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Gaffney</td>
<td>Mon – Fri 08:30 – 12:00</td>
<td>01 6291169</td>
</tr>
<tr>
<td></td>
<td>Mon, Tue, Wed, Thurs 15:00 – 18:30 (appointments only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fri 15:00 – 17:30 (appointments only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sat 09:00 – 11:30</td>
<td></td>
</tr>
<tr>
<td>Dr. Cowhey</td>
<td>Mon – Sat 09:00 – 11:30</td>
<td>01 6289044</td>
</tr>
<tr>
<td></td>
<td>Mon – Fri 14:00 – 17:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mon – Sat 18:15 – 19:00 (excl. Tues &amp; Sat)</td>
<td></td>
</tr>
<tr>
<td>Dr. Nolan</td>
<td>Mon, Tues, Fri 11:00 – 13:00</td>
<td>01 6285943</td>
</tr>
<tr>
<td></td>
<td>Mon, Tues, Fri 16:00 – 18:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wed, Thurs 12:30 – 14:15</td>
<td></td>
</tr>
<tr>
<td>Dr. O’Rourke</td>
<td>Mon – Fri 09:00 – 12:30, and 15:00 – 17:00</td>
<td>01 6285210</td>
</tr>
<tr>
<td></td>
<td>Mon, Tues, Thurs 17:00 – 19:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sat 09:30 – 12:00 (appointments)</td>
<td></td>
</tr>
<tr>
<td>Doctor on Call</td>
<td></td>
<td>01 6291169</td>
</tr>
</tbody>
</table>

After surgery hours: If Dr Gaffney is not on-call a recorded message gives details of the doctor on-call and the relevant contact telephone number.

In an emergency contact the medical centre through switch/security Ext 3333

<table>
<thead>
<tr>
<th>Campus Nurse</th>
<th>3878</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>James’ Hospital</td>
<td>Burns unit</td>
<td>01 4162326</td>
</tr>
<tr>
<td></td>
<td></td>
<td>01 4162350</td>
</tr>
<tr>
<td>Beaumont Hospital</td>
<td>(Poison Info. Unit)</td>
<td>01 8092566</td>
</tr>
<tr>
<td></td>
<td></td>
<td>01 8379964</td>
</tr>
<tr>
<td>Security</td>
<td>3589</td>
<td>3929</td>
</tr>
<tr>
<td>Garda</td>
<td>(Maynooth)</td>
<td>01 6291444</td>
</tr>
<tr>
<td>Garda</td>
<td>(Naas)</td>
<td>045 897333</td>
</tr>
<tr>
<td>Express Cabs</td>
<td></td>
<td>01 6289866</td>
</tr>
<tr>
<td>Major/Minor Cabs</td>
<td></td>
<td>01 6106160</td>
</tr>
<tr>
<td>Maynooth Cabs</td>
<td></td>
<td>01 6289999</td>
</tr>
</tbody>
</table>
2.16 FIRE WARDENS

Fire extinguishers and fire blankets are located throughout the laboratories. There are a number of trained fire wardens in the Department. Fire warden courses are run on a regular basis.

Fire Wardens:

Ground Floor
- Mr. Pat Seery
- Mr. David Watson

First Floor
- Advanced Teaching Labs Corridor
  - Ms. Marie Galligan, Mr. Ian McAuley
  - Mr. Derek Gleeson, Ms. Gráinne Roche
  - Mr. Gerard McMahon
- Office Corridor
Section 3 Guidance Notes

3.1 Undergraduate Laboratories
3.2 Research Laboratories
3.3 Radiation
3.4 Laser Radiation
3.5 Roof Observatory
3.6 Mechanical Workshop
3.7 Cryogenic Liquids
3.8 Compressed Gas Cylinders
3.9 Vacuum Equipment
3.10 Office Safety
3.11 Display Screen Equipment
3.12 Manual Handling
3.13 Lone Working
3.14 Use of Lecture Theatres, Classrooms and tutorial Rooms in the University
3.15 Guidance for Safe Working Practices covering Fieldwork/trips and Transport
3.16 Electricity
3.17 Chemicals/Hazardous Substances
3.18 Major Events
3.19 Work Equipment
3.20 Accessing Heights
3.21 Access and Egress
3.22 Deliveries (External)
3.23 Children & Young Persons
3.24 E Working
3.25 Noise
3.1 UNDERGRADUATE LABORATORIES

The safety of everyone working in the teaching laboratories is of prime importance and your cooperation in this matter is obligatory. Laboratories are potentially dangerous environments but the dangers can be minimised and safety ensured if all working there behave in a mature and responsible manner. The Department of Experimental Physics has prepared our own local safety statement, documenting hazards, risks, risk control measures and arrangements, and resources for ensuring a safe and healthy working environment. This document is available in the laboratory to all students, staff and visitors.

Please observe the following rules.

- Be aware of the location of Emergency Exits, Fire Extinguishers and First Aid kits and keep access to these items clear. If the fire alarm is activated there will be a continual ringing of bells throughout the building. Please evacuate the laboratory in an orderly manner and comply with all directions of staff. **Assemble at the prescribed assembly points as follows**

- **Assembly Point G - Experimental Physics**
  - For all staff, students, visitors and contractors. Situated across the road from the entrance closest to Arts Building

- **Assembly Point F - Chemistry**
  - For all staff, students, visitors. Situated near entrance facing main Kilcock road.

- Eating, Drinking and Smoking are strictly forbidden in all laboratories.

- Always co-operate with staff on duty in the laboratory.

- All accidents, however trivial must be reported to a member of staff immediately who will inform the Head of Department. The University accident report form must be completed without delay and all persons must co-operate with the University in any subsequent investigation.
• Please report any breakages, faulty equipment or any other hazards you may become aware of immediately to the demonstrator or any member of staff.

• Never use an item of equipment until you know how to operate it. If you are unsure, always ASK a member of staff.

• Turn off and disconnect electrical equipment from the mains or the 12V supply when you are finished working. Always leave the apparatus and your workplace, in a safe and tidy condition before leaving the laboratory.

• Always wash your hands after laboratory work and before eating.

• Unsupervised work in the laboratories is forbidden. Undergraduate students have no access to laboratories except during scheduled practicals or tutorials.

• Do not run or play about in laboratories. Anyone not behaving in a mature and responsible manner will be asked to leave and may be excluded from the laboratory. Any student who shows persistent disregard for matters of safety is warned that this is a disciplinary offence, and the matter will be reported to the Laboratory Supervisor and Year Coordinator.

### 3.2 RESEARCH LABORATORIES

The Health and Safety policy of the Department of Experimental Physics applies to all personnel within the Department. This includes staff, students and visitors. The following guidelines apply specifically to all personnel (including staff, post doctoral and postgraduate students, visiting researchers and undergraduate project students, and student interns) who are authorised to enter and work within the department’s research laboratories.

**Responsibility**

Executive responsibility for health and safety within the Department rests with the Head of Department. Within each research area responsibility for ensuring a safe working environment rests mainly with the Principal Investigator, the research supervisor or the person in charge of the laboratory. However *all research workers have a responsibility not to endanger themselves and*
Authorised access to Research Laboratories

Access to each individual research laboratories is strictly limited at all times to those individuals authorised by the appropriate research supervisor or person in charge. In the case of visiting researchers or new staff the research supervisor is responsible for ensuring that the appropriate safety training is provided before laboratory access is authorised. This training must include emergency procedures such as fire or accidents/spillages. It will also include training in the use of personal protective equipment, risk assessments of laboratory procedures and safe systems for working on the appropriate laboratory equipment. Laboratories which contain specific hazards (e.g. lasers, radioactive materials, chemical hazards etc.) must be clearly marked with identifying notices, which strictly limit access to designated personnel with appropriate training and expertise.

Working in Isolation

Working in isolation (i.e. in the absence of close supervision or nearby colleagues) is always potentially hazardous. The department policy on lone working is that: lone working must not be undertaken where there is a reasonably foreseeable risk that the work might result in an accident which would be sufficiently serious to require a second person to be available to summon help. The Department therefore requires that a risk assessment is undertaken prior to any lone working taking place. Apparatus left running overnight must include fail-safe features. Permission must be obtained from the person in charge of the laboratory before equipment is allowed to run through the night or unattended at weekends. An approved card indicating that the equipment is to be left running should be clearly visible on or beside the apparatus concerned. It should bear the names of the person(s) to be contacted in an emergency, at least one of whom should be on the telephone.

Laboratory Environment and Practice

All researchers have a responsibility to maintain a tidy, well-organised and safe laboratory environment with a safe means of rapid access and egress from all working areas. All experimental systems should be designed to be inherently fail-safe. All researchers should carry out detailed routine assessments of the likely hazards and risks associated with their experimental systems.
Research supervisors have a responsibility for ensuring that such assessments are documented and that systems and procedures meet the appropriate safety standards. Research supervisors must keep written records of risk assessments carried out and provide, where necessary, appropriate written work instructions including emergency procedures and additional written local safety rules.

All researchers have a personal responsibility to make correct and full use of all protective clothing, personal protective equipment and safety aids provided in order to minimise risk. Researchers must not attempt new procedures or tasks without carrying out a risk assessment; consulting their supervisor and receiving appropriate safety training. All researchers within a laboratory must be kept fully aware of day-to-day modifications carried out by any researcher or support staff on experimental systems or operating procedures and clearly visible warning notices of any resulting potential hazard must be provided.

All systems, which operate beyond normal working hours, must have a shut down procedure, which includes a contact number for emergencies. This procedure must be clearly displayed beside the experimental system.

3.3 RADIATION

Radiation is a form of energy, travelling as electromagnetic waves or as streams of particles. Only certain isotopes of a particular element may be stable. The isotopes which are unstable because of the number and/or arrangement of nucleons in their nuclei are known as Radioisotopes and must eventually decay to form nuclei which are more stable. The decay process of a radioisotope involves the loss of energy in the form of radiation which is produced when an atomic nucleus spontaneously disintegrates. This disintegration and emission of radiation is known collectively as Radioactivity.

The three main types of radiation emitted are identified by the first three letters of the Greek alphabet, namely Alpha (α) particles, Beta (β) particles and Gamma (γ) rays. The table below outlines the nature and main properties of these radiations. All these radiations have energy by virtue of their motion and this energy can be transferred to the cells in your body where their effect may or may not be apparent.
The severity of the effects of radiation on the human body depends on the type of radiation, the level of activity, the duration of exposure to the radiation field, and the areas of the body irradiated. High doses of radiation will cause acute sickness whereas a low dose will not cause any immediately observable effects.

### Types of Radiation

<table>
<thead>
<tr>
<th>Radiation</th>
<th>Nature</th>
<th>Relative ionising power</th>
<th>Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>He Nuclei</td>
<td>Most ionising</td>
<td>A few cm of air.</td>
</tr>
<tr>
<td></td>
<td>4 amu</td>
<td></td>
<td>(4k ion pairs/mm)</td>
</tr>
<tr>
<td></td>
<td>Charge +2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta</td>
<td>Electrons</td>
<td>&lt; alpha's</td>
<td>Stopped by a few mm</td>
</tr>
<tr>
<td></td>
<td>1/1840 amu</td>
<td></td>
<td>of lead.</td>
</tr>
<tr>
<td></td>
<td>Charge –1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gamma</td>
<td>Electromagnetic</td>
<td>Least ionising.</td>
<td>Most penetrating.</td>
</tr>
<tr>
<td></td>
<td>radiation.</td>
<td></td>
<td>Will pass</td>
</tr>
<tr>
<td></td>
<td>Uncharged.</td>
<td></td>
<td>through lead,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>steel concrete</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>etc. (Exponential absorption)</td>
</tr>
</tbody>
</table>

There is no such thing as a completely safe level of radiation.

A single electron (\(\beta\) particle), for example, could damage a cell irreversibly and turn it into a malignant, cancer-causing cell.

For this reason the basic principle of radiation protection is known as **ALARA. i.e.**

**As Low As is Reasonably Achievable.**
Radiation Doses can be minimised by taking account of the three variables associated with exposure to radioactive sources;

- Distance from source .......... Maximise
- Length of exposure ............... Minimise
- Shielding ................................Maximise

**X-Rays**

X-Rays, although produced differently, have almost identical properties to Gamma radiation. The major difference of note is that X-Rays can be turned on or off whereas gamma radiation cannot be so controlled.

The same safety principles apply as with the other forms of radiation.

**Operating Procedures within the Department of Experimental Physics**

All sources are kept in the locked safes in the Physics Department and are only used in the undergraduate laboratories during term time. No sources are used in the postgraduate laboratories. All sources in use are sealed sources and are for teaching purposes only.

At the beginning of a laboratory class the required sources must be removed from the safe, the log book signed out by the authorised person in charge of that laboratory and at the end of the laboratory session, the source must be returned to the safe and the log signed in again. All sources should be checked for signs of leakage and wipe tested if necessary.

The *Department Radiological Supervisor* must carry out a routine radiation survey periodically. All sources must be swipe-tested at the end of each academic year and the dose meters sent to the Radiological Protection Institute of Ireland for calibration.

**Departmental Safety Officer:** Mr. Derek Gleeson

**Department Radiological Supervisor,** Mr Ian McAuley
3.4 PROTECTION FROM THE HAZARDS OF LASER RADIATION

**NOTE**
As of 01/09/10 Class 3 & 4 Lasers are in storage only in the department, are **not in use** and have been decommissioned. They are stored in Restricted Access Laboratories.**

The British Standard quotes Maximum Permissible Exposure (MPE) Levels for laser radiation based on the frequency and duration of exposure. These are the levels of laser radiation which would normally not produce adverse affects. Arrangements for the safe use of lasers should ensure that no one is exposed to laser radiation in excess of these levels. This aim can be achieved by means of three types of safety control:

i) Engineering Controls.

ii) Administrative Controls.

iii) The Use of Personal Protective Equipment.

Engineering controls consist of safety features which can be built in or added to equipment to reduce exposure levels. Enclosures, interlocks, beam stops and filters are all examples of such controls. Lasers and associated optics should be firmly fixed in position to avoid accidental disturbance of the beam. High standards of laboratory illumination will ensure that the pupil of the eye remains as small as possible.

There is also a need for administrative controls which include the provision of labels with the required safety information, an authorisation procedure for laser workers, appropriate instruction and training and arrangements for warning notices and signs. Administrative controls would include any agreed systems to cover any particularly hazardous operations such as alignment of beams, maintenance and repair of equipment. If engineering and administrative controls are fully implemented, safe operating conditions may often be achieved with no further precautions. However, in some cases, there may still be a risk of exposure to radiation above MPE levels. If this cannot be avoided it will be necessary to resort to the use of appropriate personal protective equipment. Any protective eyewear provided must be selected for the particular wavelengths and
intensities in use and labelled accordingly. Care must be taken as protective eyewear will tend to make the beam invisible to the wearer. In some instances, gloves or other protective clothing may be needed.

**Protection From Secondary Hazards Associated With Lasers**

There are a number of indirect hazards involved in the use of lasers which must always be borne in mind when considering safety matters. The only deaths caused by working with lasers have in fact been due to electrical shocks.

Indirect hazards associated with lasers include:

- Electrical hazard from directly associated equipment, particularly from high voltage power supplies and from capacitor banks used with pulsed lasers.
- Electrical hazard from indirectly associated power supplies to the ancillary equipment used with lasers.
- Water supplies often used in cooling circuits and particularly when associated with electrical circuitry.
- A mechanical hazard from motors, pumps, drives, etc.
- Intense conventional light sources used to pump lasers.
- Toxic chemicals used in the laser or in associated equipment.
- Toxic by-products resulting from laser interactions.
- Explosion or implosion hazards in electrical supplies, lasers and associated equipment.
- Fire.
- Cryogenic coolants such as liquid nitrogen, oxygen and helium.
- Formation of ozone and oxides of nitrogen.
- X-rays which may be generated by HV rectifiers or lasers themselves.

Hazards such as these should be assessed at the planning stage and expert safety advice obtained whenever necessary.

**General Safety Procedures**

The Safety Officer must ensure that people unfamiliar with lasers and their hazards are never
allowed to operate them or to be in a position where they may be adversely affected by them. To this end steps must be taken to provide appropriate information, training and instruction to all concerned.

All new laser or laser system must conform to the standards above. This means that when any new installation is being planned, all safety features must be properly considered and assessed and that adequate financial provision must be made to meet any safety requirements.

Appropriate warning signs and labels must be provided to ensure that all parties are adequately informed of the risk and of the steps they must take in order to avoid it.

Specific guidance on each class of laser is given later but, in general, it is safer to:

- Use the minimum power laser necessary.
- Prevent intra-beam viewing by engineering design. If this is impossible, them forbid it.
- Operate lasers in areas separate from other work activities so limiting the number of people with access to the area and requiring training and instruction.
- Provide total enclosures to avoid exposure to potentially hazardous radiation.
- Keep all beam paths as short as possible with a minimum of optical reflection and terminate the beam in a suitable energy absorbing non-reflective beam stop.
- Fix the laser and all components securely in position.
- Carry out alignment procedures and other adjustments and alterations, which may give rise to unexpected beam paths or reflections, with the laser switched off. Where practicable, conventional light sources should be used for such operations or the laser output reduced as much as possible by adjustment of the power supply or by use of attenuating or polarising filters. Alternatively, another laser of minimum output should be used.
- Eliminate the chance of stray reflection by choosing coated optical components which will not be crazed or shattered by the laser beam. Remove unnecessary equipment from the laser area and avoid wearing reflective items.
- Avoid lasers being left running unattended.
- Ensure that pulsed lasers cannot fire spontaneously.
- Ensure that any mechanical or electrical safety interlocks provided are of an approved and appropriate fail-safe design and that they are properly installed and used.
- Ensure that key controls are used properly. Keys must be removed when the laser is not in use and kept in a secure place.
• Ensure that any personal protective eyewear provided has been properly approved and
chosen for the task. Any protective eyewear worn must not prevent the user from seeing
any warning lights that have been installed for this guidance.
• Ensure that all toxic or otherwise hazardous chemicals used in the laser or associated
equipment are stored and disposed of safely.

LASER CLASSIFICATION

<table>
<thead>
<tr>
<th>CLASS</th>
<th>DESCRIPTION</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SAFE</td>
<td>Either (1) output is so low it is inherently safe; or (2) the laser is part of a totally enclosed system.</td>
</tr>
<tr>
<td>2</td>
<td>LOW POWER: Visible CW and pulsed lasers</td>
<td>In the case of CW (continuous wave) lasers, eye protection is normally afforded by the natural aversion responses. Hazard may be controlled by relatively simple procedures.</td>
</tr>
<tr>
<td>3A</td>
<td>LOW - MEDIUM POWER</td>
<td>Extension of Class 2. Protection still afforded by natural aversion responses, but direct intrabeam viewing with optical aids may be hazardous. This must be controlled.</td>
</tr>
<tr>
<td>3B*</td>
<td>LOW - MEDIUM POWER</td>
<td>As for Class 3A but there is a slight hazard from viewing the direct beam. Power limited to 5mW. Visible only.</td>
</tr>
<tr>
<td>3B**</td>
<td>MEDIUM POWER</td>
<td>Hazard from direct beam viewing and from specular reflections. More detailed control measures are necessary.</td>
</tr>
<tr>
<td>4</td>
<td>HIGH POWER</td>
<td>Hazard from direct beam viewing, specular reflections and diffuse reflections. Extreme caution required.</td>
</tr>
</tbody>
</table>

Authorised Laser Workers

Work with lasers of Class 3A or above is restricted to those who have been authorised by the Safety Officer. Authorisation will be granted only if the following conditions are satisfied. Workers must have attended the appropriate lecture on laser safety in the basic course in radiation protection.
Those intending to work with Class 3B and Class 4 lasers must have had an eye examination. A Laser User Registration form must be completed and submitted to the Safety Officer after verifying that the worker has been instructed in the use of the equipment and understands the hazards involved and the precautions to be observed. If satisfactory, the LSO will approve the proposed work and recommend any necessary safety procedures.

Rules For Specific Classes Of Lasers

Class 1 - Low Power Lasers

No formal control measures are required for Class 1 lasers whose outputs are so low that the relevant MPE cannot be exceeded under any viewing conditions.

Class 1 - Totally Enclosed Laser Systems

A register must be kept of all such lasers which must bear the correct warning labels. Lasers incorporated in printers, CD-ROM players and similar devices are excluded.

For totally enclosed systems in normal use, protective measures are not necessary. If, however, it is necessary to gain access to the enclosure and then to switch on the laser by overriding interlocks etc. then the system must be reclassified according to the highest class of laser it contains and the appropriate sections of these Rules strictly adhered to.

Rules For Specific Classes Of Lasers

Class 2 Lasers

A register must be kept of all such lasers which must bear the correct warning labels. Protection from accidental viewing of the beam from a laser in this class is afforded by the natural aversion response to bright lights. However, precautions must be adopted to prevent continuous viewing of the direct beam.

The laser beam should be terminated at the end of its useful path by a suitable beam stop and open laser beams at eye level should be avoided.
Class 3A and Class 3B* Lasers

A register must be kept of all such lasers which must bear the correct warning labels. Protection by means of the natural aversion response cannot be relied upon and precautions must be adopted to prevent viewing the direct beam. In particular optical aids must not be used unless fitted with a filter to ensure that maximum permissible exposure levels at the eye are not exceeded.

Control measures are required as follows:

• The beam must be terminated by a suitable beam stop.
• Open beam paths at eye level should be avoided and should be enclosed where practicable.
• Instruction and training in safe procedures should be given to all users.
• Laser warning signs should be displayed at each entrance to areas where such lasers are in use.

RULES FOR SPECIFIC CLASSES OF LASERS

Class 3B** and Class 4 Lasers (Including Existing Class 3B Lasers)

A register must be kept of all such lasers which must be correctly labelled.

These lasers are extremely hazardous and must only be used in a designated laser area i.e. a laboratory or other clearly defined area which can be reserved for the purpose and where the hazards can be effectively controlled.

Designated laser areas must be clearly identified with the appropriate signs and notices. Wherever practicable, a visual signal interlocked to the laser should be mounted at the entrance so that it functions automatically whenever the laser is being operated.

Entry to a designated laser area should be limited to authorised personnel only. No other person should enter the area when the laser is actually in use and this should be clearly detailed at the entrance.

Steps should be taken to ensure that there is no risk to persons entering the laboratory but, where this cannot be guaranteed, a safe door entry system must be installed. This can take the form of
an automatic arrangement which switches off a laser or closes a shutter over the beam when the
door is opened or some similar system. There must, however, be no interference with escape routes
for personnel inside the laboratory.

Wherever possible, only one laser should be used in any designated laser area at any one time. If
this is not possible, consideration should be given to the use of suitable opaque screens between the
lasers.

Each Class 3B** and 4 laser must be fitted with a "captive-key" control switch. The key must not
be removable except when the switch is off and must then be removed and kept in a secure place.

A beam shutter or attenuator must be fitted and maintained and should be capable of operating
automatically to prevent inadvertent exposure of persons to hazardous laser radiation.

A remote interlock connector must be fitted to allow operation of warning lights or safe access
systems to prevent exposure of persons entering the area.

A visible warning device must be fitted to indicate when the laser is energised or ready to fire. The
warning device shall be fail-safe and any visual signals should be visible through normal protective
eyewear.

The safety features of each designated laser area should be purposely designed for the particular
laser application. The more important design features which should be considered are:

- The beam must be terminated at the end of its useful path by a suitable non-reflecting, fire
  resistant beam stop or target.
- Beam paths should be kept well below eye level and enclosed whenever practicable.
  Materials used for screens and enclosures should be opaque to the laser wavelengths
  involved and designed to prevent hazardous reflections. Where necessary, they should be
  painted with matt black paint and constructed of fire resistant material. Enclosures should
  eliminate as far as reasonably practicable the possibility of any part of the body being
  accidentally placed in a hazardous area. An efficient enclosure or careful siting of the laser
  will help to eliminate the possibility of leakage through doors or windows but "blacking out"
  may still be necessary.
- Maintain a high standard of illumination in the area so that the pupil of the eye remains as
  small as possible.
• Paint walls, ceilings and fittings with a light coloured matt paint which will enhance the general illumination and reduce reflections.
• Remove all unnecessary equipment from the area.
• Minimise and, if possible, eliminate reflecting surfaces. Glass fronted cupboards and gloss painted equipment are obvious examples.
• Provide any necessary ventilation for any toxic gases or vapours produced by the laser or from cryogenic or other materials in use.
• Provide any facilities necessary for dispensing and handling toxic chemicals in use and for disposing of any toxic wastes produced.
• Provide adequate and appropriate fire fighting equipment.
• Install approved electrical supplies with identified switch and control gear designed:
  (a) To prevent accidental firing of the beam;
  (b) To provide an indication of the state of readiness of equipment such as associated capacitor banks;
  (c) To enable personnel to stand in a safe place;
  (d) To incorporate all relevant electrical safety features;
  (e) To enable the beam to be shut down by a person standing next to the laser;
  (f) To enable the equipment to be isolated and made safe from outside the designated laser area in the event of fire or other emergency;
  (g) To provide sufficient and adequate power supplies for all ancillary equipment and apparatus and to restrict the use of trailing leads (which must in any case be adequately secured) to an absolute minimum.

In spite of all these safety design features there will be times when access is required to open beams during alignment and maintenance procedures. At such times or whenever there is a risk of eye exposure, the appropriate eye protection must be used, and work must be in accordance with a written system of work.

MEDICAL SUPERVISION

All persons intending to work with Class 3B** or Class 4 Lasers should receive a medical examination to confirm that they have at least 6/6 vision in both eyes with correcting spectacles if required.
It is not normally required to have repeated medical examinations but in the event of accident or exposure of the eyes to laser radiation, this should be reported immediately to the Health and Safety Officer and arrangements made for an examination by a qualified specialist without delay.

The Safety Officer must carry out a detailed investigation of the incident.

**UNDERGRADUATE EXPERIMENTS AND LECTURE DEMONSTRATIONS**

For lasers required in student experiments and demonstrations, the least hazardous source possible should be used. This will normally involve lasers of Class 3B* or lower.

Even with low powered lasers, due regard must be paid to the conditions which prevail in teaching laboratories and lecture theatres, to the relative inexperience of the students, and to the desirability of demonstrating to the students good laser safety practice as part of their educational programme.

The safety aspects of all experimental procedures involving the use of lasers by students should be assessed by the Safety Officer and the lecturer in charge.

Where specular reflections cannot be avoided during demonstrations, screens must be provided to prevent exposure of any student or demonstrator above maximum permissible levels. Clear written instructions should be provided for each student experiment and the participants informed of the risks of exposure to laser beams if the instructions are not followed.

The member of staff responsible should either visit the experiment at reasonable intervals or be present in the laboratory where the laser is in use.

Lasers must not be accessible to students at any time other than when they are being used in approved experimental work.

If it is required to involve undergraduate students in work with Class 3B** or Class 4 lasers, then the full safety standards relevant to these lasers must be applied.

However, when undergraduates are taking part in short projects in small groups, provision can be
made without the need for formal individual authorisation and medical examination provided that:

- Each student is given training in safe working practices with lasers. Preliminary instruction in the hazards specific to the laser to be used is given.
- Each student reads and signs a copy of the local rules for the use of the laser.
- Students are not permitted to carry out any work which involves access to the open beam, except for purposes of the experiment, such as insertion of samples.
- There is regular personal supervision of the students by an authorised user of the laser.

All such undergraduate projects involving use of Class 3B** or Class 4 lasers must be notified to the Safety Officer before commencement.

3.5 ROOF OBSERVATORY (Flat roof area Experimental Physics)

Procedures & Regulations Roof Access

Roof Access
The department of Experimental Physics have 3 observatories/ laboratories, astronomical telescopes housed in a dome and a radio telescope located on the flat roof area.

Anyone wishing to use the observatory should first obtain permission from the Chief Technical Officer or a Research Supervisor who will explain the Safety Rules.

- The key for accessing the roof area and observatory shall be kept by approved staff and only signed out to postgraduate students who are familiar with these procedures [Undergraduate Students may not have direct access to this key].
- Undergraduate students are only permitted access to this area while they are under the direct supervision of a member of staff.
- Because of the inherent dangers, access shall be restrict to “only when absolutely necessary”.
- All Staff & students must be clearly shown the appropriate procedures for roof access, emergency procedures and they must agree to abide by these before permission is given to go onto the roof.
- Always leave the lights switched on in the stairwell up to the roof area at all times as the stairwell is a hazard in low lighting conditions.
- Great care shall be taken to ensure that nothing falls off the roof area onto the public areas below.
- Great care should be taken when moving around the flat roof area or observatory in “low
light level conditions” as there is a risk of tripping over cables or instrumentation. Always make sure you are familiar with and are aware of the location of items that may be a tripping hazard before turning off the lights.

3.6 MECHANICAL WORKSHOP PRACTICE/GUIDELINES

There are a number of serious mechanical hazards in the mechanical workshop situated in Room 1.25, ground floor Experimental Physics. No member of staff, postgraduate student, or visitor is permitted to use any equipment in this area without first getting permission from the Engineering Workshop Manager, Mr. David Watson and the Chief Technical Officer, Mr Derek Gleeson. Only suitably trained and qualified staff members will be given such permission. The Workshop Senior Technical Officer has the right to refuse permission to anyone (s)he deems not sufficiently competent to use such machinery

- Undergraduate students are not permitted to enter the workshops. Postgraduate students may enter the workshops by prior appointment with the Mechanical Engineering Technician.
- Warning notices are displayed prominently on or near machinery or apparatus where there is a hazard involved in their operation. Please take account of such notices.
- Poor housekeeping can cause accidents. Good housekeeping will never interfere with safety and efficiency.
- Accidents don't happen - they are caused.
- Think safety and work safely at all times.
- Always wear safety glasses when in the workshop.
- Never wear loose clothing when operating any machine.
- Remove wrist watches, rings and bracelets when operating machinery.
- Never wear gloves when operating machinery.
- Safety footwear must be worn when working in the machine shop.
- Always endeavour to keep machine and hand tools clean. Always stop a machine before cleaning it.
- Keep the floor clear from oil and grease.
- Sweep up swarf and chips from the floor on a regular basis to avoid slippage conditions.
• Never place tools or materials on the floor.
• Never operate a machine without its safety devices in operation.
• Never have more than one person operating a machine at the same time.
• Do not attempt to lift heavy or awkward objects which are difficult to handle on your own. Always get help. Use the legs, not the back, when lifting.
• Never start a machine until you are sure that the cutting tool and machine parts will clear the workpiece.
• Carry out periodic inspection and maintenance of equipment in order to ensure continuing safe operation.

3.7 GUIDANCE ON HANDLING OF CRYOGENIC LIQUIDS

The only Cryogenic Liquid in use in the Department of Experimental Physics is Liquid Nitrogen. This cryogenic liquid is only used infrequently and in small amounts typically 1 or 2 litres and is sourced from the Chemistry Dept.

Liquid Nitrogen is a colourless, odourless liquid similar in appearance to water. It has a boiling point of -195.8°C.

Hazards

• The extremely low temperature of these liquids can cause severe burn-like damage to the skin either through contact with the liquid, surfaces cooled by the liquid or the evolving gases.
• The low temperature of the vapour can cause damage to softer tissues e.g. Eyes and lungs but may not affect the skin through short exposure.
• Skin can freeze and adhere to surfaces, which have been cooled by cryogenic liquids. This may lead to tearing of skin on removal.
• Soft materials such as rubber or plastics become brittle when cooled by such liquids and may shatter unexpectedly.
• Large volumes of Gas are evolved from small quantities of liquid nitrogen or helium.
• This is a serious potential hazard in poorly ventilated areas where such evaporation can easily lower the concentration of Oxygen in the air.
• Asphyxiation can occur and unfortunately lethargy is a sign of lack of oxygen.
• Thermal stress damage can occur in vessels because of the large, rapid changes of temperature.
• Oxygen may condense in containers, which are leaky or open to air, and can explode on heating following reheating or blockage with ice.
• Similarly where a higher than normal concentration of Oxygen has been generated there is the
real danger of explosion or accelerated combustion of normally inert material

Handling of Cryogenic Liquids

- Only authorised members of staff or postgraduate students are authorised to handle liquid nitrogen and should not do so until they have been instructed in the procedures and safe handling/use of liquid nitrogen. This instruction is provided by Dr. Peter Van der Burgt, or Dr. Marcin Gradziel.
- Only use containers, fittings and such which have been designed for use with cryogenic materials. The department has suitable dewars and flasks which are normally kept in room 2.29. Never use food type vacuum flasks as they may implode.
- Always use personal protective equipment when handling such liquids.
- Avoid skin contact with either liquid nitrogen/helium or items cooled by liquid nitrogen as serious burns may occur.
- Always use cryogenic liquids in a well ventilated area especially when filling a warm container.
- Never travel in the lift with a Cryogenic liquid dewar.
3.8 COMPRESSED GAS CYLINDERS

(General Precautions for Handling and Storage)

- Care should be taken when handling gas cylinders. They should be stored horizontally and wedged to prevent rolling, or clamped vertically to a bench. They should not be dropped. They should not be stored near sources of heat such as radiators, ovens or in direct sunlight. Cylinder valves should be kept closed when not in use. Undue force should not be used. Faulty regulators or valves should be reported immediately to the Engineering Workshop Manager. Safety shoes must be worn when handling gas cylinders. Regulators on mobile cylinders do not fall under Pressure Systems Safety Regulations 2000, but the British Compressed Gas Association recommends that regulators should be replaced after 5 years, or the manufacturer’s guidelines should be followed.
- Know cylinder contents and be aware of its properties. Check the cylinder to ensure it contains the correct gas and also check the colour code.
- Do not use any gas cylinders until you have been instructed in their safe use. Contact Mr David Watson in the engineering workshop or your project supervisor.
- Cylinders must not be transported in the lift with persons
- Correctly fitting tools/spanners must only be used to change regulators.
- Only cylinders in actual use should be kept in labs and they should be supported in an approved stand or clamp. Free standing cylinders are dangerous and are not permitted.
- Never drop cylinders or allow them to strike each other violently.
- Avoid dragging, rolling or sliding cylinders. They should only be moved using a suitable hand truck.
- No part of a cylinder should be subjected to a temperature higher than 53°C. Make sure all cylinders are protected from contact with naked flames.
- Do not place cylinders where they may become part of electrical circuit.
- Oil or grease will ignite violently in the presence of oxygen and if the latter is under pressure an explosion may occur. Cylinders and valves must be protected from contamination.
- Open all cylinder valves slowly using the proper key to do so.
- Never use cylinders without a regulator.
- Close valves on empty cylinders and mark them "empty".
Compressed Air

Under the Pressure Systems Safety Regulations 2000 and the Carriage of Dangerous Goods (Classification, Packaging and Labeling) Regulations there are specific legal requirements on systems that operate at, or may reasonably reach, pressures of greater than 0.5 atmospheres overpressure. These systems should normally be fitted with pressure release blow-off valves. Advice should be obtained from the Departmental Safety Officer if such a system is being designed, constructed or purchased. Compressed gases can be lethal: e.g. jets of compressed air can cause severe injury if directed at the body.

- Never direct a compressed air line at any person.
- Always use eye protection when using compressed air and ensure that there is no danger to people in the vicinity.
- Exercise due care and caution when connecting anything to an air line.
3.9 VACUUM EQUIPMENT

- Do not operate any vacuum system unless you have been instructed on best practice and the hazards associated with it, and understand its operation.

- Always pump down and air up a vacuum system slowly to avoid potentially explosive situations.

- Glassware for holding vacuums should be inspected regularly. Scratched or chipped components should be replaced. All such glassware must be screened at all times to protect against risk from explosion or implosion. Glass dewars and vacuum vessels must always be taped or wrapped in cling film. Vacuum desiccators must be protected by a safety cover. Protect from risks due to vibration by using flexible couplings and rubber mountings where possible. The volume of all vacuum or pressurised equipment should be kept to the minimum possible to reduce the magnitude of any implosion or explosion.

- Never pump oxygen with a rotary pump as this can cause an explosion.

- Be aware that oxygen may condense from the air into a vessel cooled by liquid nitrogen.

- Rotary pumps on fixed installations and in other situations where they are used for long periods, should be exhausted into a fume cupboard or to the outside.

- Oil Diffusion pumps when running have an oil bath at about 250°C. A guard to prevent accidental burns should always surround the bath. If the pressure of air in the diffusion pumps gets too high the oil burns to produce carcinogenic fumes. If this happens isolate the pump, turn off the diffusion pump heater, leave the area and advise other people in the vicinity.
3.10 OFFICE SAFETY

1. Furniture & Fittings
Office fitments (floor coverings, electrical fittings, heating, lighting and ventilation systems) and office equipment (desks, chairs, drawers and filing cabinets) must be selected for the task for which they are intended. Careful selection reduces the risk that unsuitable fitments or equipment will be brought into use on the premises.

2. Layout of Workplace
The layout of the office/workshop area is critical for its safe use.

- Position all office equipment so as to avoid risks, falls or collisions when in use.
- Position all power cables where possible, so as to avoid risks of trips or falls. Tape or fasten all phone lines, cables and extensions under the desk or along the baseboards. A cable cover is fitted when it is absolutely necessary that a cable run across a passageway.
- Provide adequate means of access to, and exit from, the workplace including adequate means of escape in case of a fire (which must be clearly marked).

3. Workshop Housekeeping
The removal of hazards to safety and health in the office/workshop depends greatly on the maintenance of appropriate standards of good housekeeping.

4. Smoking
Strict restrictions and regulations are in force covering this activity. These must be complied with.

5. Installation of machines
Machines must be positioned in a well ventilated area away from doorways. The main isolating switch must be accessible at all times. The manufacturer's manual is available at all times.

6. Minor repairs
Minor repairs, such as removing blockages from the photocopier, may be carried out by office staff where clear instructions exist and the action presents no hazard. Whilst machines may be fitted with interlocking systems to prevent electrocution, they still must be switched off and unplugged before gaining access to the interior. Care is needed to avoid hot surfaces. Under no circumstances
should office staff use screwdrivers or any other article to tamper with the inside of machines.

7. **Major faults**

Major faults, including any electrical faults, frayed wires etc., must be reported to the supervisor. No attempt should be made by office staff to repair electrical faults. In such cases, isolate the machine until repaired by a qualified electrician.

8. **Maintenance**

Qualified maintenance personnel carry out basic maintenance of machines. Where replacement of toner involves more than cartridge replacement, rubber gloves must be worn. A First Aider is called in the event of accidental inhalation, swallowing or entry into eyes.

9. **Filing Cabinets**

- Do not use defective cabinets.
- Ensure cabinets are placed on even and secure supports.
- Use only one drawer at a time. Close each drawer prior to extracting another one.
- Do not overfill drawers.
- Do not leave drawers pulled out and unattended.
- Use mechanical means to move or transport empty and full cabinets.
- Store heavier items in the bottom drawer.
- Fill the bottom drawer first.
- Always use the drawer handles to open and close drawers.

10. **Miscellaneous**

- Do not use chairs, desks or other unsuitable means to access heights. Use stepladders or purpose built stairs or platforms.
- Avoid storing files, office supplies and other equipment on overhead open-sided shelves.
- The temporary depositing or storage of used cups and containers on or close to electrical appliances is prohibited because of the risk of electrical shock caused by spillage.
- Report any breakages, floor obstructions, or other hazards to your supervisor immediately on becoming aware of them.
- Ensure that bulk supplies of stationery, adhesives and other combustible material are stored in an orderly way and preferably in a self-contained non-combustible area.
3.10 GUIDANCE ON THE USE OF DISPLAY SCREEN EQUIPMENT IN THE UNIVERSITY

Whilst there are no known cases of serious accidents or injuries involving the use of this equipment, it is known that in some instances their prolonged use can cause stress, pain or discomfort. In view of this, the use of display screen equipment is extensively covered by legislation. These Regulations are designed to provide safe and comfortable working conditions and they are summarised in the attached drawing which is provided by the Health and Safety Authority as part of their Guidelines on the Safe Operation of Visual Display Units. These guidelines are available from the Safety Office if required. A link to a VDU Self Assessment Programme is available on Quality Promotion Office webpage, Staff Development section.

The University is committed to complying with the legal requirements in this area to the full. If any person operating visual display units is suffering from any discomfort as a result of using this equipment, they should refer the matter immediately to their supervisor.

![Diagram of a workstation with numbered items]

FIGURE 1:

1. ADEQUATE LIGHTING.
2. ADEQUATE CONTRAST, NO GLARE OR DISTRACTING REFLECTIONS.
3. DISTRACTING NOISE MINIMISED.
4. LEGROOM AND CLEARANCES TO ALLOW POSTURAL CHANGES.
5. WINDOW COVERING.
6. SOFTWARE: APPROPRIATE TO TASK, ADAPTED TO USER, PROVIDES FEEDBACK ON SYSTEM STATUS, NO UNDISCLOSED MONITORING.
7. SCREEN: STABLE IMAGE, ADJUSTABLE, READABLE, GLARE/REFLECTION FREE.
8. KEYBOARD: USABLE, ADJUSTABLE, DETACHABLE, AND LEGIBLE.
9. WORK SURFACE: ALLOW FLEXIBLE ARRANGEMENTS, SPACIOUS, GLARE FREE.
10. WORK CHAIR: ADJUSTABLE.
11. FOOTREST.

![Figure 2: Seating and posture for typical office tasks]

**FIGURE 2**

**SEATING AND POSTURE FOR TYPICAL OFFICE TASKS**

1. SEAT BACK ADJUSTABILITY.
2. GOOD LUMBER SUPPORT.
3. SEAT HEIGHT ADJUSTABILITY.
4. NO EXCESS PRESSURE ON UNDERSIDE OF THIGHS AND BACKS OF KNEES.
5. FOOT SUPPORT IF NEEDED.
6. SPACE FOR POSTURAL CHANGE, NO OBSTACLES UNDER DESK.
7. FOREARMS APPROXIMATELY HORIZONTAL.
8. MINIMAL EXTENSION, FLEXION OR DEVIATION OF WRISTS.
9. SCREEN HEIGHT AND ANGLE SHOULD ALLOW COMFORTABLE HEAD POSITION.
10. SPACE IN FRONT OF KEYBOARD TO SUPPORT HANDS/WRISTS DURING PAUSES IN KEYING.

3.12 GUIDANCE ON MANUAL HANDLING

It is the policy of the University that no person is expected to lift a load that would be likely to cause him/her injury. Furthermore the University minimises the risk of injury to employees by meeting legal requirements in this area.

Mechanical lifting equipment (pallet trucks, hand trucks and trolleys) are available. These must be utilised in preference to manual handling where it is practicable to do so. The wearing of safety footwear is compulsory for employees involved in activities where they are exposed to risks from heavy objects, chemical or hot substances. Safety gloves are also used as a protection against metal staples, wire and the like.

Staff who are required to carry out activities which require manual handling must be familiar with the correct lifting techniques. Training will be provided to all staff as soon as practicable, but the following information will inform you of what is required when lifting objects. The information outlined below and attached diagrams will enable the person to lift correctly.

- Lift in easy stages.
- Bend the legs to the floor
- Keep the back straight
- Hold weights close to body.
- Don't jerk, shove or twist body.
- Grip load with palms of the hands - not fingertips.
- Lift the load –keeping the back straight and carry it to its resting place
- Don't let the load obstruct your view.
ADDITIONAL PRECAUTIONS

1. Only manually lift loads which you know you can lift easily, comfortably and safely. If in doubt ask a colleague for assistance.

2. Examine the load before lifting for exposed and dangerous staples, wire, and other objects which could cut or puncture the skin.

3. Factors which could make manual lifting dangerous are as follows:-

4. Characteristics of the load
   The manual handling of a load may present a risk, particularly of back injury if it is:
   
   (a) Too heavy or too large.
   (b) Unwieldy or difficult to grasp.
   (c) Unstable or has contents likely to shift.
   (d) Positioned in a manner requiring it to be held or manipulated at a distance from the trunk, or with a bending or twisting of the trunk, or likely, because of its contours or consistency (or both) to result in injury to employees, particularly in the event of a collision.

5. Physical effort required
   A physical effort may present a risk particularly of back injury if it is:
   (a) too strenuous,
   (b) only achieved by a twisting movement of the trunk,
   (c) likely to result in a sudden movement of the load,
   (d) made with the body in an unstable posture.

6. Characteristics of the Working Environment
   The characteristics of the work environment may increase a risk, particularly of back injury if:
   (a) There is not enough room, in particular vertically, to carry out the activity.
   (b) The floor is uneven, thus presenting tripping hazards, or is slippery in relation to the employee's footwear.
   (c) The place of work or the working environment prevents the handling of loads at a safe height or with a good posture by the employee.
   (d) There are variations in the level of the floor or the working surface requiring the load to be manipulated on different levels.
(e) The floor, or footrest, is unstable.
(f) The temperature, humidity or ventilation is unsuitable.

7. Requirements of the Activity
The activity may present a risk, particularly of back injury, if it entails one or more of the following requirements:
(a) Over-frequent or over-prolonged physical effort involving in particular the spine.
(b) An insufficient bodily rest or recovery period.
(c) Excessive lifting, lowering or carrying distances.
(d) A rate of work imposed by a process which cannot be altered by the employee.

8. Personal Factors
The employee may be at risk if he/she:
(a) Is physically unsuited to carry out the task in question.
(b) Is wearing unsuitable clothing, footwear or other personal effects.
(c) Does not have adequate or appropriate knowledge or training.

If you have reason to believe that any of these factors are relevant in any circumstance, refer the matter to your Head of Department/Manager/Foreman before attempting to complete a lift.

1. Stop and think. Plan the lift. Where is the load going to be placed? Use appropriate handling aids if possible. Do you need help with the load? Remove obstructions such as discarded wrapping materials. For a long lift – such as floor to shoulder height – consider resting the load midway on a table or bench in order to change grip.
2. **Place the feet.** Feet apart, giving a balanced and stable base for lifting (tight skirts and unsuitable footwear made this difficult). Leaning as far forward as is comfortable.

3. **Adopt a good posture.** Bend the knees so that the hands when grasping the load are as nearly level with the waist as possible. But do not kneel or overflex the knees. Keep the back straight (tucking in the chin helps). Lean forward a little over the load if necessary to get a good grip. Keep shoulders level and facing in the same direction as the hips.

4. **Get a firm grip.** Try to keep the arms within the boundary formed by the legs. The optimum position and nature of the grip depends on the circumstances and individual preference, but it must be secure. A hook grip is less fatiguing than keeping the fingers straight. If it is necessary to vary the grip as the lift proceeds, do this as smoothly as possible.

5. **Don’t jerk.** Carry out the lifting movement smoothly, keeping control of the load.
6. **Move the feet.** Don’t twist the trunk when turning to the side.

7. **Keep close to the load.** Keep the load close to the trunk for as long as possible. Keep the heaviest side of the load next to the trunk. If a close approach to the load is not possible try sliding it towards you before attempting to lift it.

8. **Put down, then adjust.** If precise positioning of the load is necessary, put it down first, the slide it into the desired position.
3.13 GUIDANCE ON LONE WORKING

Given the nature of the activities on Campus, University buildings may be open from early morning until 10 pm at night. The normal academic programme runs from 8am to 6pm Monday to Friday but night classes are also held in designated buildings. Staff in academic Departments may work in the evenings and non academic departments may have occasion to work late. Because Buildings are locked on a rota by Security staff and for your own personal safety, Security should be advised if you are working late or have reason to be in a building after hours. Before leaving staff should advise Security so that the building can be secured and alarmed.

With the exception of the JP Library, Arts Building, and Public Access Computer Rooms, Undergraduate Students should not have access to buildings unless prior arrangements are made with the Head of Security.

Experimental Physics staff, when working alone after normal hours, should advise Security that they are on the premises, the location and the estimated time of departure from the Campus.

The University is implementing a security programme throughout the campus which includes CCTV and access control.

WORKING OUTSIDE NORMAL HOURS

Normal working hours are defined as 0800 to 1800 Monday to Friday. Outside these times the following requirements must be observed.

- *Out of hours* is defined as between 1800 and 0800 during weekdays and all hours on Saturdays, Sundays and University holidays.
No undergraduate students are permitted to work out of hours in the departmental laboratories. Nobody should work alone and must, as a minimum, be within shouting distance of a colleague. Except for work in a library or a designated computer multi-terminal room, undergraduates are not allowed to work out-of-hours unless under the direct supervision of a member of staff. If, in exceptional circumstances, the Head of Department sanctions other out-of-hours working for a particular group of undergraduates, he/she must ensure that a risk assessment of the activities has been made and submitted to the Departmental Safety Officer, and that appropriate supervisory and safety measures are in place. Final year undergraduate students may be permitted with the permission of their Year Supervisor access to the Department computing facility after hours to work on coursework.

Postgraduates are permitted to work out of hours with permission of their Project Supervisor.

When working out of hours always make sure that someone knows of your presence and whereabout.

If possible try not to work alone for long periods. If this is unavoidable make sure that you have access to a phone in case of emergency and you are aware of all emergency procedures. Ideally no practical or experimental work that involves a risk of personal accident or injury should be performed out-of-hours, when working alone. Work out-of-hours should normally be restricted to library work, computing, writing reports and making non-risk observations. However it is understood that on occasions it is necessary to do experimental work out-of-hours. In those cases it is recommended that people work in pairs or as an individual in hailing distance of a colleague. It is essential that the Risk Assessment Forms and Safe Working Practice should be fully up-to-date in these cases.

Anyone working alone in the department is responsible for maintaining security of the buildings. Always make sure that doors and windows are secure while working alone and make a special check when leaving the building.

The main exit doors of the building are locked by security staff after 6p.m. Mon - Fri. Staff/Postgraduates who wish to enter/exit the building after these hours must use their swipe cards for the front entrance. Under no circumstances should you allow any unauthorised persons gain access to the building using your swipcard.
3.14 GUIDANCE ON THE USE OF LECTURE THEATRES, CLASS ROOMS AND TUTORIAL ROOMS IN THE UNIVERSITY

Lecturers and other users are expected to observe the following guidance:

- Ensure the room is not over crowded.
- Ensure all students are aware of the action to take in the event of a fire alarm.
- In an emergency direct all students to evacuate the room to the designated fire assembly point.
- Report any defects in the room to the appropriate department i.e. broken furniture, faulty equipment, failed light tubes, electrical faults, failure of data equipment etc. to the Campus Services Department as soon as possible.
- Clean the whiteboards and chalkboards after use, bearing in mind that whiteboards become progressively more difficult to clean with the passage of time.
- Food and drink must not be consumed in lecture theatres or seminar rooms, with the exception of water.
- Students/visitors must not deface furniture or fabric of a room. Graffiti is vandalism and is subject to disciplinary action by the University.
- Do not re-arrange the furniture or remove items from the room or any another room.
- If the room is not suitable for lecturing contact the Registrars Office.
- In the event of failure of AV equipment contact can be made with AV Support Services through Campus Services Department.
- Before leaving a room, switch off all equipment, lock equipment cupboards, switch off all lighting.
- DO NOT occupy a seemingly empty room. Although empty, it may be booked by another department.
- **Trailing cables** - cables must be managed in a manner to minimise trips, slips and falls in the theatre/room.

Observing this guidance will assist your colleagues and maintains the quality of the learning environment for students of the University.
3.15 GUIDANCE FOR SAFE WORKING PRACTICE
COVERING FIELDWORK/FIELDTRIPS AND TRANSPORT

The responsibility for ensuring that there are effective arrangements for the health and safety of staff and students undertaking field work/trip rests with the Head of Department. The Head of Department has a responsibility to ensure that those appointed to organise fieldwork/trips are authorised, trained and competent to carry out the task.

**High Importance: Prior Approval for Fieldwork/Trips**

The organiser/leader of all fieldwork/trips is responsible for carrying out a risk assessment which identifies the necessary safe arrangements for the fieldwork/trip. This risk assessment requires the prior approval of the Head of Department and notification to the Safety Office before the fieldwork/trip is undertaken.

The risk assessment must consider the following:

- The health and safety of the staff and students participating and any others who may be affected by the fieldwork activities, e.g. students, members of the public.
- A ratio of supervision of staff/students must be identified. This will take into consideration the number of participants, their experience and training.
- At the planning stage of the fieldwork/trip the organiser must be clearly defined as having full responsibility for all of the activities to be undertaken by the group.
- General safety rules should be laid out for all those taking part in fieldwork/trip, preferably through written procedures, supplemented by verbal briefings or advice.
- The protocols should include contingency plans for foreseeable emergencies.
- The organiser/leader of the fieldwork/trip is responsible for ensuring that all safety precautions are observed for the duration of the fieldwork/trip.
- The Departmental Office should be given details of any fieldwork trips, including a list of all those involved, itinerary, expected return time.
- **Special precautions must be put in place where staff/students will be working alone.**

Each individual field worker also has a responsibility for conducting fieldwork activities in a safe manner both for his/herself and for others. He/she must comply with the procedures and any safety information provided. He/she must report any matters (e.g. health conditions) which may
affect their ability and hence their safety in carrying out the fieldwork/trip. Where there are particular health issues these will be treated on a confidential basis.

EQUIPMENT AND TRAINING
Instruction and training must be provided to field workers to enable them to carry out the activities safely. Field workers should be advised on appropriate clothing and equipment needed for the field. They should be given training in the safe use of any equipment provided. Any high risk activities, e.g. mountaineering, caving, diving, potholing are strictly prohibited.

WORKING ALONE ON FIELDWORK
Whenever possible, fieldwork should be organised for groups and working alone on field work is to be discouraged as far as possible. However, it is recognised that in some situations it is not reasonably practicable to avoid working alone and particular care should be taken to establish safe procedures with respect to the working environment, with the staff member/student involved directly in the risk assessment.

General
Where people will be working unaccompanied/out of sight/earshot, this must be justified and any additional precautions specified. Clear guidelines for the type of activity, which the lone worker may carry out, should be given. The risk assessment must take into account the environment. The organiser/leader is ultimately responsible for the lone worker and should know the lone worker's location and itinerary. The use of mobile telephones is advised. The frequency and nature of monitoring/reporting on lone workers depends on the nature of the work. This should be defined prior to commencement of the fieldwork.

HEALTH ISSUES
The organiser/leader of fieldwork should be aware of any staff/students individual health problems which may affect his/her safety in carrying out the fieldwork e.g. medical condition.

Procedures must be put in place to ensure the individual's safety. Exclusion on health and safety grounds from part or all of the activities may ultimately be the only course of action. Other health matters to consider are the fitness of participants, immunisations, first aid provision, emergency contacts.
FIRST AID PROVISION AND ACCIDENT REPORTING

First Aid training is recommended for groups working in isolated areas and an adequate number of qualified First Aiders should be available in the field. Where fieldwork is being carried out in remote locations, a first aid kit should be brought on the trip. In addition, a member of staff should carry a mobile phone.

All accidents during fieldwork activities must be reported as soon as possible after occurrence to the Safety Office.

TRANSPORT

The provision and use by NUIM of transport services for field trips.

Staff organising field trips, which due to the numbers involved require the availability of a special bus/buses or the use of private cars, must identify the requirements for the outgoing and return journeys.

The issues that must be addressed are as follows:

Is a special bus or number of buses required to take the participants on the field trip the only way of getting to the location?

or

Can private cars be used to transport the group to the location?

or

Can public transport be used by the group?

Where it is decided by the organisers that a special bus or buses are required, the organiser must ensure that appropriate insurance cover is available, that the bus has a Certificate of Roadworthiness and is fitted with safety belts.

In the case of using a private car or cars, similar arrangements must be in place.

In the case of provision by NUIM of a special bus/buses, a designated person must be in charge of the bus on its outward and return journey.
The designated person must account for the numbers/names of those going on the outward journey and similarly on the return trip.

Only the designated person in charge of the bus has the authority to grant permission for a person to leave the bus and avail of alternative arrangements to get home or back to where the bus departed from.

It is advisable that special bus/car transport arrangements are brought to the attention of the Safety Office well in advance of the trip being undertaken by the group.

SEE APPENDIX 4 – RISK ASSESSMENT FOR FIELD TRIPS

3.16 GUIDANCE ON THE SAFE USE OF ELECTRICITY

The electrical installations are inspected and maintained by the Campus Services Department/Power House. Under no circumstances are any repairs, modifications or work allowed on the electrical systems without prior authorisation of the Powerhouse or Campus Services Department. All work must be undertaken by competent personnel in accordance with current regulations.

Ensure the following guidelines are adhered to:

1. Access to electrical panels is prevented - covers are kept closed and locked.

2. The main switches are readily accessible and clearly identified.

3. Electrical installations are checked periodically and repairs carried out by competent electricians. Residual current circuit breakers are checked at regular intervals. Ensure electrical equipment is suitable for its working environment.

4. All portable electrical tools/equipment in Departments must be inspected on an annual basis by competent persons.
5. Suspect or faulty apparatus must be taken out of use, secured and labelled "DO NOT USE" until repaired by a competent person.

Where possible tools and power socket-outlets are switched off before plugging in or unplugging

6. Appliances are unplugged before cleaning or making adjustments.

7. Immediately report any smoke/fire/sparks/noise in electrical equipment to your Head of Department or supervisor.

8. Never overload an electrical circuit - provide enough socket outlets. Where adapter boards are used ensure the circuit is not overloaded. Overloading socket outlets by using adapters can cause fires.

**3.17 GUIDANCE ON THE SAFE USE OF CHEMICALS/HAZARDOUS SUBSTANCES (where applicable)**

Controlling chemical hazards primarily depends on the nature of the actual hazard. The following are general guidelines for those using chemicals, where appropriate.

1. Use the **safest** chemical possible for the job to be done. Compare potential hazards of the various chemical options available.

2. **Read** the label and the safety data sheet before opening the packaging. Note any hazard symbols and if necessary seek clarification.

3. Take the **special measure** prescribed before starting to use the chemical and know the emergency measures in case of accidents. Handle all chemicals with care especially those classified as hazardous.

4. Avoid the **inhalation** of vapours and dusts by using ventilation or extraction equipment or by working outdoors. This is especially important for toxic, harmful or irritant chemicals. The vapours of flammable chemicals must also be contained.
5. Prevent contact with eyes, where there is any risk of eye contact wear protective goggles. This is especially important for corrosive or irritant chemicals.

6. Prevent contact with the skin and use suitable protective gloves. This is especially important for corrosive, toxic, harmful or irritant chemicals. Solvents may penetrate protective gloves following prolonged contact.

7. Do not eat, drink or smoke when working with chemicals and do not let chemicals come into contact with food. This is especially important for explosive, oxidising, flammable, toxic or harmful chemicals.

8. Avoid contact with chemicals and clean yourself and your working clothing. Good hygiene is always recommended especially with toxic or harmful chemicals.

9. Do not dump chemicals on the soil or into a sewer. All chemicals must be disposed of according to the manufacturer's recommendations.

10. Store all chemicals in closed, labelled containers in cool ventilated conditions or as prescribed by the manufacturer. Segregate all incompatible chemicals to avoid hazardous consequences in case of accidental spillage.

11. **NOTE:** The use of chemicals is subject to a written Risk Assessment as required by current legislation.
3.18 GUIDANCE ON MAJOR EVENTS

A number of major events are held in the University each year and include Conferring, the Carol Service, the Choral Concert, Science Week and Open Days. Prior to each event a planning meeting is held between the Department concerned, the Safety Office, the Security Office, the Campus Services Department and the Planning & Development Office. Matters addressed include:

- The number of persons in attendance,
- The layout of the venue and special equipment,
- Set up and cleaning,
- Traffic control, parking and signage,
- Security and liaison with the Gardai and Emergency Services,
- Provisions for persons with disabilities,
- Fire, first aid and emergency procedures,
- Catering arrangements,
- Liaison with Departments who may be affected by the event,
- Liaison with media.

The Maynooth Campus Conference and Accommodation Office manage other events and they liaise closely with the University in this regard.

Should a major event be planned by a Department it is important to ensure that the University and the Maynooth Campus Conference and Accommodation Office is made aware of the proposed event. A Department should also advise the University where dignitaries are visiting the University. This is primarily to ensure that protocol and security matters are addressed.
3.19 GUIDANCE ON WORK EQUIPMENT (where applicable)

Work equipment includes any machinery, appliance, apparatus, tool or installations for use at work. It ranges from kettles to complex machinery.

All plant, equipment and appliances purchased must comply with NUIM Purchasing Policy, current E.U. standards and regulations. CE marking posted on a piece of equipment indicates that the manufacturer certifies that the equipment is in compliance, at its date of manufacture, but due care should always be exercised and the equipment must be assessed. The manufacturer must provide a written risk assessment, which is normally contained in the manufacturer’s manual/documentation, in order to comply with current legislative requirements. This written risk assessment must be maintained on file and be incorporated into the Safety Statement documentation for a Department where appropriate.

Where plant, equipment and appliances are imported for use within a Department from outside the E.U. it is incumbent on the person who imports the equipment to ensure that it complies with C.E. marking.

Certain items of equipment are subject to Statutory Inspection in accordance with current legislation. This includes:

- Lifting equipment, (including lifts, chains, pulley blocks etc.)
- pressure vessels (including autoclaves and air compressors)
- boilers and steam vessels

Where equipment of this nature is installed or purchased ensure that the Safety Office is informed and they will ensure the Statutory Inspections are carried out, as appropriate.

Where any item of plant or equipment is purchased the following must be complied with at all times:

- All equipment must be installed and commissioned by competent persons,
- Staff must be trained in its use and records of this training maintained on file,
- It must be inspected and maintained in accordance with the manufacturers guidelines,
3.20 GUIDANCE ON ACCESSING HEIGHTS

Accessing materials at heights in any area, if not carried out correctly, has the potential risk of an accident causing serious injury or death.

- Using unsuitable equipment to access materials/items from areas above head height.
- Overstretching when using ladders.
- Using hop ups/kick stools which are unsuitable.
- Standing on chairs or other unsuitable items.
- Staff under the influence of intoxicants.

All Departments will ensure that activities involving access to high shelves – top of tall cupboards are carried out by using appropriate equipment for the task.

Where such equipment is provided, it must be used as the only safe means of access to such heights.

In more general terms and where appropriate, heavy items must not be stored above head height, and if possible, no items should be stored more than 2 metres off the floor.

At all times staff must ensure that the equipment they use to reach the required height is stable and safe to use.
3.21 GUIDANCE ON ACCESS AND EGRESS

Access and Egress covers vehicles, cyclists and pedestrians accessing the grounds of the University. Failure to adhere to the designated speed limits, parking guidelines and cycling restrictions could result in serious accidents. For example,

- Speeding on campus could result in death or serious injury.
- Blocking the access routes could hamper the response of the Emergency Services.
- Inadequate lighting or slippery surfaces can result in slips, trips and falls.
- Poor road surfaces can result in damage to vehicles or slips, trips and falls.

All Campus users should observe the following on both campuses.

**North Campus**
- The North Campus has designated vehicle, pedestrian and cycle routes on the Campus.

**South Campus**
- The Main Entrance to the front of the College is a listed feature and due care must be taken by motorists, pedestrians and cyclists when entering the Main Gateway.
- Pedestrians should utilise the pedestrian entrance adjacent to the Gate Lodge on the South Campus.
- Speed Limit on Campus is 25km per hour.
- Ramps are in place to regulate the speed of all vehicles.
- Car Parking is provided on both campuses. Car parks should be used to their full extent. Overflow parking is allowed on one side of the access road from the Riverstown Carpark to Logic House and on the Ring Road on the North Campus from the All Weather Pitch to the Carpark by the Playing Fields.
- External lighting is provided and maintained on both campuses.
- The roadways and Car parks are inspected and maintained at regular intervals.
• Designated walkways and pathways are provided on both campuses.

• Cycle lanes are provided on the North Campus and cycling is permitted in designated areas of the South Campus. No cycling is permitted in St. Joseph’s Square and on the pedestrian route from St. Josephs Square to the JPII Library. Cycling is prohibited on the Footbridge. Safety Notices are in place in these areas to advise of this restriction.

• In the event of adverse weather conditions personnel are assigned to treat the roadways and pathways. In the event of stormy conditions sections of the grounds may be closed at the rear of the College.

3.22 GUIDANCE ON DELIVERIES (EXTERNAL)

Particular care must be exercised by all delivery vehicles operating on Campus. This is of particular importance when vehicles are reversing. During term deliveries should not be undertaken between 5 minutes to the hour to 5 minutes past the hour due to the ending/commencing of lectures.

3.23 GUIDANCE ON CHILDREN AND YOUNG PERSONS

Under the Protection of Young Persons Employment Act 1996 a child is defined as being under 16 years of age and a young person is between 16 to 18 years of age. Given the nature of University activities it is the policy of the University not to employ children under the age of 16.

The employment of a young person is subject to legislation and a risk assessment which covers the following must be undertaken:
• Physical and psychological aspects,
• Exposure to harmful agents,
• Exposure to radiation,
• Involves the risk of accidents due to lack of maturity, experience or training,
• Prevents a risk from exposure to extremes of heat or cold or to noise or vibration,
• Supervision.
3.24 GUIDANCE on E-WORKING

It is the policy of the University to facilitate E Working for certain grades of staff. E Working must be sanctioned by the Human Resources Department and a risk assessment of the work station must be carried out by a competent person to ensure compliance with current health and safety legislation.

3.25 GUIDANCE ON NOISE

NUIM recognises that it has a responsibility to comply with current noise legislation and protect employees from noise related risks while at work. If there are reasonable grounds for concern, a noise risk assessment will be undertaken to identify the potential noise levels.

Any concern over noise levels should be raised through the Head of Department who can liaise directly with the Safety Office on the issue.
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Introduction to Risk Assessment

In this section Hazard Identification and Risks Assessment is examined against the requirements of the legislation. In particular buildings, equipment, systems of work are examined against the following background:

- The design, provision and maintenance of a place of work in a condition that in so far is reasonably practicable, is safe and without risks to health.

- The design, provision and maintenance of safe means of access and egress from a place of work under our control.

- The design, provision and maintenance of plant, equipment and machinery that is safe and without risks to health.

- The provision of systems of work that are planned, organised, performed, maintained and revised as appropriate so as to be, so far as is reasonably practicable, safe and without risk to health.

- The provision of information, instruction, training and supervision as is necessary to ensure the safety, health and welfare at work of our staff

- The provision and maintenance of suitable protective clothing or equipment that is necessary to ensure the safety, health and welfare of staff in circumstances where it is not reasonable for other measures to controls or totally eliminate the Hazards in the place of work.

- The preparation and revision as necessary of adequate plans to be followed in emergencies.

- To ensure as far as practicable the safety and the prevention of risks to health at work in connection with the use of any article or substance.

- The provision and maintenance of facilities and arrangements for the Welfare of staff at work.
Definitions

Definition of a Subject, Hazard(s), Risk assessment and Control(s)

A subject is any substance, operation, machine or a process in a place of work.

A hazard is the resulting action of using the subject, i.e. the chemical substance, operation, machine or a process with its potential to cause harm.

A risk assessment is an analysis to evaluate the likelihood of injury caused during the use of a substance, machine or process at the place of work.

Control(s) - The work practices, work procedures, systems of work to maintain the subject in a safe and original working condition.

In ranking hazards the following system can be used.

High: Probability of death, serious and or irreversible injury. Significant damage to property and or loss of process.

Medium: Probability of significant injury, damage to property and or loss of process.

Low: Probability of minor injury, minor damage to property, loss of process.

Management Responsibilities

It is incumbent on Heads of Departments who are responsible for managing their areas of work, at all levels, not merely to observe the arrangements, but to assess their applicability within their area of authority and where necessary to refine and extend them to deal with particular situations.
Commitment

The University is committed to continuously auditing hazards in the workplace, assessing the risks these present and implementing appropriate arrangements to deal with them.

Staff involvement in hazard identification and risk assessment.

All Staff are encouraged to identify hazards in their departments and to report them to their Heads of Department.

All Staff must report near misses, dangerous occurrences to their immediate supervisor/manager, safety officer and ensure that such incidents are recorded.

The following section lists the hazards identified in the Department of Experimental Physics, assesses the risks associated with them and states the arrangements made to ensure the safety, health and welfare of all persons who may be affected by the activities.
4.1 RADIATION

Hazard: Radiation

This covers all nuclear radiation and other high energy electromagnetic radiation such as X rays & gamma rays.

Risk Assessment: Low

Depends on the radiation source, type, strength and length of exposure.

Who may be Harmed & How?
Staff, students, visitors – potential for unknown long-term effects

Controls:

- All uses of radiation must be approved by the Department Safety committee, Department Radiological Supervisor, and the University Radiological Protection Officer.
- All sources are kept in the locked safes in the Physics Department and are only used in the undergraduate laboratories during term time. No sources are used in the postgraduate laboratories. All sources in use are sealed sources and are for teaching purposes only.
- A range of security systems are in place including CCTV coverage and intruder alarms.
- Radioactive sources shall normally be kept in the radiation store or in an appropriate safe location when not in use.
- Sources for use in the Undergraduate Laboratories must be signed out and in by an authorised person for that laboratory. A record book is kept in the radiation store. The Department Radiological Supervisor maintains a register of those deemed competent to remove sources from the store. Staff are provided with training in radiation safety.
- The Radiological Protection Institute of Ireland regularly inspect the department and all licensable items to check compliance and best practice.
- Every two years the Radiological Protection Institute of Ireland issues the department with a licence. This licence lists all radioactive sources in use within the department.
- A copy of this licence must be displayed in a prominent place in all areas wherever these sources are used.
• The University Radiological Protection Officer, must be informed of any new radioactive materials obtained and also of any radioactive materials which are to be disposed.

**Responsible Persons:**

**Head of Department, Department Health and Safety Committee, Department Radiological Supervisor, University Radiological Protection Officer** To advise and approve the use of radioactive sources

**RESOURCES** The Head of Department will provide the necessary resources and training for the safe use and handling of radiation sources.

**RESPONSIBILITY** The Head of Department and staff will ensure that the use and handling of radiation sources is carried out in an approved and safe manner.
4.2 LASER SAFETY

Risk Assessment: Low

Who may be Harmed?
Staff, students and visitors

Controls:
It is the policy of the department that all work involving lasers is carried out in such a way as to prevent undue risk either to those carrying out the work or to those who may otherwise be affected by the work. The school has adopted the Code of Practice ‘Safety in Universities’:
Notes of Guidance, Part2: 1 Lasers. (Revised 1992): The Committee of Vice-Chancellors and Principals of the Universities of the United Kingdom. This document defines the minimum safety standard for the normal use of lasers by the university.

• Only class 1 or class 2 lasers may be used by undergraduate students in general laboratories.
• As of 1/09/2010 class 3 and 4 lasers are in storage only in the department and are not in use and have been decommissioned. They are stored in restricted access laboratories,
• All class 3a, 3b and class 4 lasers are only to be used in designated laser areas. The designated laser area will be equipped with the relevant controls and interlocks for the class of laser being used.
• The Department will maintain a register of all designated laser users of class 3a lasers and above.
• The department will provide appropriate training for all designated laser users. Please contact Dr Peter van der Burgt.
• All users should be aware of the associated hazards of working with lasers including fire, high voltages and chemical hazards associated with laser dyes etc.
• Where the risks to the eye from lasers cannot be totally eliminated using administrative or engineering control, the appropriate laser goggles must be worn. If it is necessary to work in close proximity to an exposed high intensity laser, suitable protection will be worn for the hands and forearms. This is most important if the laser is operating in the ultra-violet. However, personal protection MUST ALWAYS BE REGARDED AS THE LAST LINE OF DEFENCE AGAINST LASER RADIATION.
RESOURCES  The Head of Department will provide the necessary resources and training for the safe use of lasers.

RESPONSIBILITY  The Head of Department and staff will ensure that the use of lasers is carried out in an approved and safe manner.
4.3 USE OF ELECTRONIC/ ELECTRICAL INSTRUMENTATION EQUIPMENT

Hazards:

- Electric shock is the effect produced on the body and particularly on the nervous system by an electrical current passing through it. The effect depends on the current strength which itself depends on the voltage and body resistance i.e. path length and surface resistance of skin (which is much reduced when wet). Death can be the result of the normal voltage of 240 V causing currents of greater than 30 mA to flow through the body for more than 40 ms. Minor shocks may also cause injury following involuntary muscle contraction.
- Potential Electrical Shock
- Burns
- Loose conductors
- Poor plug condition
- Broken cables
- Leads too long

RISK: Low to Medium

CONTROL MEASURES:
PORTABLE APPLIANCE TEST (P.A.T.)

All portable electrical appliances must be tested in line with the Portable Appliances Regulations. This includes equipment in laboratories, and offices. This programme has started with the acquisition of the necessary equipment and training of staff. All equipment in the 4th Yr laboratories has been tested and certified and all new equipment is tested and certified before use in the department. All other laboratories and offices will be checked and certified in planned phases.

RESOURCES: The Head of Experimental Physics Department will provide the necessary resources to carry out PAT testing. The Electronics Engineer Mr Pat Seery has been trained in PAT testing and has the equipment necessary for this task.
• Plugs that are cracked or broken must not be used. The plugs must be wired properly, the conductors securely fixed and the cable firmly held by the strain relief grip.

• The rating of the fuse must be appropriate to the appliance. Most electronic equipment (computers, measuring instruments etc.) requires only a 3 A fuse which will load to 720 W. Reserve 13 A fuses (loading to 3000 W) for heavier equipment. See Mr Pat Seery, (Electronics Technical Officer) for advice in case of doubt.

CABLING

• The cable must be in good condition and free from breaks in the insulation. Cable must be sufficiently robust to withstand the wear and tear of laboratory or office use and fully waterproof where water may come within the vicinity of the apparatus.

• Particular care must be taken where an electrical cable might be entrained/cut by moving parts even if the parts move only infrequently and to ensure that any cable is protected or safely secured out of danger.

• Cables must not be run across the floor in such a way as to cause a tripping hazard or to be susceptible to damage from passing traffic. If it is necessary to run cables across walkways, they must be covered with cable protectors

Any user with basic electrical knowledge together with commonsense could be regarded as competent to carry out the following simple checks:-

(i) Check that the equipment is suitable for its location and is being used for its intended purpose as prescribed by the manufacturer.

(ii) Check the mains lead for excessive wear and replace if necessary.

(iii) Check that the lead is soundly connected at the apparatus end. In most cases it is impractical to remove the casing of a piece of equipment to verify that the internal connections are sound and that the cable is correctly clamped. All that is required is an external inspection to make sure that the cable is not obviously badly connected or poorly anchored.

(iv) Check that the mains plug is correctly wired and firmly clamped to the cable.

(v) Make sure the plug is fitted with an appropriate fuse.

(vi) Plugs in doubtful condition should be replaced. A newer and better type is now available from Electronics Workshop and should eventually replace all older types.

(vii) Do not use multi-way sockets connected to a single power outlet. Utilize a distribution board instead.
MAINS SWITCH
The location of any mains switch must be clear and known so that power can be turned off rapidly in an emergency.

• No apparatus with exposed mains terminals should ever be used.
  
• Ordinary electrical equipment must not be used in the vicinity of flammable or explosive gases. Ordinary electrical equipment is a possible source of ignition.

• Ordinary electrical equipment must not be used where it may get wet. Water may cause a dangerous short circuit.

• Equipment that has been wet must never be switched on until the equipment has been tested.

REPAIRS:

Electrical equipment must not be "repaired" except by a competent person.

• Equipment must be disconnected from the main power before undertaking any maintenance.

• If there is any doubt, equipment should be taken to the Workshop. Details of any electrical fault should be given to Mr Pat Seery, Electronics Workshop.

RESOURCES The Head of Department will provide the necessary resources for the safe use and operation of electronic and electrical instrumentation.

RESPONSIBILITY The Head of Department and staff are responsible for the safe use and operation of electronic and electrical instrumentation.
4.4 HANDLING OF CRYOGENIC LIQUIDS

The only Cryogenic Liquid in use in the Department of Experimental Physics is Liquid Nitrogen. This cryogenic liquid is only used infrequently and in small amounts, typically 1 or 2 litres, and is sourced from the Chemistry Dept. Liquid Nitrogen is a colourless, odourless liquid similar in appearance to water. It has a boiling point of -195.8°C.

HAZARDS:

• The extremely low temperature of these liquids can cause severe burn-like damage to the skin either through contact with the liquid, surfaces cooled by the liquid or the evolving gases. The hazard level is comparable to that of handling boiling water.

RISK ASSESSMENT: Medium

CONTROL MEASURES:

• Only authorised members of staff or postgraduate students are authorised to handle liquid nitrogen and should not do so until they have been instructed in the procedures and safe handling/use of liquid nitrogen. This instruction is provided by Dr P. Van der Burgt or Dr M. Gradziel.

• Only use containers, fittings and such which have been designed for use with cryogenic materials. The department has suitable dewars and flasks which are normally kept in room 2.29. Never use food type vacuum flasks as they may implode.

• Always use personal protective equipment when handling such liquids.

• Avoid skin contact with either liquid nitrogen or items cooled by liquid nitrogen as serious burns may occur.

• Always use cryogenic liquids in a well ventilated area especially when filling a warm container.

• Never travel in the lift with a Cryogenic liquid dewar.

RESOURCES

The Head of Department will provide the necessary resources for the safe use and handling of cryogenic liquids.
RESPONSIBILITY The Head of Department and staff will ensure that cryogenic liquids are handled and used in a safe manner.
4.5 DISPOSAL OF WASTE SOLVENTS

HAZARDS:

- It is incumbent upon each research worker to minimize waste generation throughout the entire period of his/her work.
- Waste disposal costs are increasing drastically.
- Adopt the ‘low-waste’ approach at every available opportunity.
- Never assume that all wastes can be disposed of easily.

RISK ASSESSMENT: Medium

CONTROL MEASURES:

Solvents

- **Containers**: The accepted container for transfer of waste solvent to the solvent shed (By agreement with the Chemistry Department) is a Winchester. The containers must be filled only to the 80% level with approved solvents, loosely sealed with their original caps, not leaking vapour or liquid or excessively contaminated on the outside.
- **Carrying solvents**: Winchester bottles of solvents may be carried in the corridors or lifts only in carriers (maximum load per person, two carriers) or on sturdy trolleys fitted with secondary containment.
- **Labelling**: The container must be accurately labelled as Waste. Waste bottles should be labelled with appropriate hazard symbols.
- **Storage**: The container for solvents should ideally be kept in a fume-hood or in the underneath fume-hood cabinets.
- **Collection**: It is the responsibility of each lab to ensure waste bottles are brought to stores on a regular basis.
- **Disposal of Containers with Waste**: Prior to creating any waste, as part of the Risk Assessment, consult with supervisors to determine the appropriate method of waste disposal.
- **Disposal of Empty Containers**: Small contaminated glass containers can be washed and disposed of in the glass bin. Winchesters should be emptied and rinsed with water 5 times, the label can be removed and the container can be reused. These must be blown dry and empty of solvent and drying agents. Plastic containers should be emptied and rinsed 5 times in water and the label removed. The container can then be safely disposed in the bin.

RESOURCES

The Head of Department will provide the necessary resources for the
safe use and disposal of solvents.

**RESPONSIBILITY** The Head of Department and staff are responsible for the safe use of solvents in the laboratory.
4.6 USE OF LABORATORY HEATING EQUIPMENT

The equipment considered in this Risk Assessment includes heating plates, hot air guns

Hazards:
Personal injury and burns from hot surfaces, liquids, vapours or flames.
Sources of ignition both from hot surfaces, liquids/flames and from electrical components.

Risk Assessment: Medium

Controls:
Many heating appliances contain electrical elements (see the separate Risk Assessment "Use of Standard Electrical Equipment"). If any heating device becomes so worn or damaged that the heating element is exposed, the device should immediately be taken out of service, a label placed on the equipment to describe the issue and taken to workshop for repair/disposal.

All heating devices must be kept well away from flammable material.

Hot Plates
The state of the heating element should be checked. If the covering is broken or worn the equipment must not be used. If water or other liquid has been spilled onto the element, the equipment must be electrically checked before use. In all cases, when using such apparatus, proper protective equipment must be worn i.e. lab. coat, safety glasses and gloves.

Hot Air Guns
- Laboratory hot air guns contain an electrically heated element that typically glows red-hot. Also, the on-off switches and motors are rarely spark free. For these reasons, hot air guns present as serious an ignition hazard as a naked flame and must never be used near open containers of flammable liquid or in environments where appreciable concentrations of flammable vapour may be present e.g. over glassware rinsed in solvent.
- The air emerging from a heat gun is very hot indeed and is invisible and so the front end
should be treated with all the respect due to a blowtorch.

**RESOURCES** The Head of Department will provide the necessary resources for the safe use and operation of hotplates and hot air guns.

**RESPONSIBILITY** The Head of Department and staff are responsible for the safe use and operation of hotplates and hot air guns.
4.7 ELECTRICAL AND OTHER FORMS OF SOLDERING

HAZARDS

• High temperature
  The tip of the iron is at a temperature around 300°C and can cause burns to skin
  Components being soldered will be at an elevated temperature for a short while after contact
  with the iron which can also cause minor burns and a sudden physical reaction to them which
  can cause other problems.
  Components should not be wet as contact with molten solder can cause spatter.

• Fumes
  The soldering process gives off fumes from flux in the solder and minute quantities of
  vaporised solder. These can be harmful in high concentrations or over prolonged periods of
  exposure.

• Solid solder
  Solder is an alloy of soft metals which usually contains an integral resin flux. These will get
  onto and into the skin when the wire is being handled and can be harmful.

• Eye & musculo skeletal strain
  Soldering for long periods can cause eye strain due to the close nature of the work and strain
  on the muscles and limbs from remaining in one position for a long time.

• Electrical faults
  Soldering irons need PAT testing as with any other portable equipment but are susceptible to
  more strain than most portable equipment. In particular the cable joining the iron to the
  control station is susceptible to twisting and pulling strain and can be damaged by the hot
  iron.

• Housekeeping
  An untidy area, especially with paper and plastics on it, increases the risk of causing an
  accident with the hot iron.

RISK ASSESSMENT: Low

Controls

• **High Temperatures**: Soldering irons must be used with a suitable station which has a
  suitable holster to rest the iron in when not immediately needed. The holster must protect
  users from the hot iron.
When using an iron there is a temptation to continue looking at the work when picking it from the holster and replacing it. This can lead to dropping it and picking it up by the wrong end which means users should make a conscious effort to look what they are doing with the iron at all times.

Avoid looking over the work too closely as this increases the risk of the hot iron touching the face and of inhaling fumes. Instead ensure the work area is well illuminated and using a magnifier if necessary. The magnifier will not only keep allow the operator to be further from the work but also put a barrier between them and the hot iron.

- **Fumes**: For casual occasional soldering fumes will not present a significant hazard and no special precautions are necessary to avoid them.

Where soldering is a frequent activity by one person or by several in a relatively confined area fumes should be removed either by an effective extractor for the whole area or by local extraction and filtering at the station. A lab coat may be worn to prevent contamination of clothes from fumes but if the concentration of fumes is high enough for this to be of concern there will also be a significant risk from inhalation and an extractor should be employed.

- **Solid solder**: Normal hygiene procedures should be observed while soldering and immediately afterwards. No food or drink should be allowed at the soldering station and hands should be well washed before eating or performing other tasks. The use of disposable gloves may be considered and these should be available.

- **Body strain**: Take regular breaks from the work station to rest the body and eyes. Ensure that the body posture is changed and you are not performing similarly close work during the rest breaks.

- **Housekeeping**: Keep the work area uncluttered with only necessary items close to the iron. Paper, such as that with the wiring diagram on it, and plastics, such as enclosures for circuit boards, should be kept away from the immediate vicinity if possible.

Do not leave the iron switched on when taking a rest break or after the work is finished.

**RESOURCES**

The Head of Department will provide the necessary resources for the safe use and operation of soldering using a heated soldering iron/station.

**RESPONSIBILITY**

The Head of Department and staff are responsible for the safe use and operation of soldering irons/stations.
4.8 MILLIMETRE-WAVE AND TERAHERTZ SCANNING SYSTEM

Risk assessment and risk management policy
Risk minimization policies and procedures

HAZARDS
- Incorporates linearly moving parts (up to 100 mm/s with high force) with hard edges
- Electric shock hazards as instrument uses mains voltages.
- Possibility of clothing being caught in the drive mechanism.
- Multiple long cables, possible tripping hazard
- Low power non-ionizing radiation in 75 – 100 Ghz band (W

RISK ASSESSMENT: Low

CONTROLS
- The system is housed in dedicated and restricted laboratory space with swipe card access for authorized personnel only.
- Untrained personnel are not allowed access to lab without supervision of trained personnel.
- Only authorized and trained personnel are allowed to operate the system, and only after extensive training including instruction on all hazards and safety systems.
- Information marking is used extensively to mark hazards and indicate safety features.
- Interlock system.
- Interlock system is installed around the scanner. Breaking the interlock loop immediately de-energises all motor drives (emergency stop).
- A dedicated emergency stop button is installed at the equipment rack. It is part of the interlock loop.
- The system has to be manually restarted after an emergency stop from the control terminal. The scanning system software cannot re-energize the drives.
- All incidents leading to the activation of the emergency stop system must be recorded in the research notebook and reported to the Lab Supervisor or Departmental Safety Officer.
- All faults in the system must be reported to the Lab Supervisor or Departmental Safety Officer.
• All suggestions regarding safety of this equipment should be reported to the Lab Supervisor or Departmental Safety Officer.

Marcin Lukasz Gradziel, ext. 4770
Derek Gleeson, ext. 3644

RESOURCES The Head of Department will provide the necessary resources for the safe use and operation of the Millimetre-wave and terahertz scanning measurement system GHOST

RESPONSIBILITY The Head of Department and staff will ensure that the Millimetre-wave and terahertz scanning measurement system GHOST is operated and maintained at all times when it is in operation.
4.9 USE OF COMPRESSED GAS CYLINDERS

HAZARD: THE TRANSPORT, STORAGE AND USE OF COMPRESSED GAS CYLINDERS

HAZARDS:
- Pressurised gas cylinders are very heavy and unstable objects and, as such, can present considerable danger to those handling them.
- They contain gas at high pressure which may be toxic, asphyxiating, or flammable.
- Serious physical damage can be caused by exposure to the full force of escaping gas.
- A broken valve can turn a cylinder into a lethal projectile.
- Gas pressure regulators, if damaged, may allow the escape of gas.

RISK ASSESSMENT: Medium to High

CONTROL MEASURES:
Anyone using compressed gas cylinders must be trained to do so, please contact The Engineering Workshop Manager Mr. David Watson to arrange training.

PHYSICAL: Cylinder trolleys must be used for transport. Secure racks must be used for storage of cylinders.

SITING: Cylinders are to be kept in suitable racks or stations outside laboratory buildings but where this is not possible they may be kept in suitable, secure racks within laboratories or, in exceptional circumstances, secured in cylinder trolleys. CYLINDERS MUST NEVER BE LEFT FREE STANDING. The number of gas cylinders at any site must be kept to a minimum. Flammable/fuel gases such as Hydrogen or Methane must never be stored in the same rack/site as Oxygen.

RESOURCES The Head of Department will provide the necessary resources and training for the safe use and handling of gas cylinders.

RESPONSIBILITY The Head of Department and staff will ensure that the use and handling of gas cylinders is carried out in an approved and safe manner.
4.10 PUMPS AND VACUUM SYSTEMS

There are various kinds of vacuum pumps. The most commonly used high-vacuum pumps are turbo molecular pumps and oil diffusion pumps. Both these pumps are always backed up using rotary vane pumps. A vacuum system may contain various types of pumps, and typically also contains a selection of vacuum gauges and controllers to monitor the pressure at essential locations inside the vacuum system. Equipment such as an electron gun and a mass spectrometer may be mounted in the vacuum system, and this equipment may require voltages supplied through electrical feedthroughs in the vacuum system.

HAZARDS

- All vacuum pumps and vacuum gauges are electrically powered, and proper safety precautions need to be taken. Big diffusion pumps may require electric currents of several Amperes. Electrical equipment inside the vacuum system may also be electrically powered.
- Diffusion pumps contain a heater at the bottom, and there is a risk of burns.
- The exhaust of rotary vane pumps may be contaminated chemically (oil fumes), and there is the danger of explosion if the exhausts of rotary vane pumps, which are pumping large volumes of air or other gas, are blocked or obstructed.
- Vacuum gauges and the controllers used to monitor the pressure readings should be appropriately grounded.

RISK ASSESSMENT: Medium

CONTROL MEASURES:

- If pumps are running 24 hours per day, possibly for prolonged periods of time, the vacuum gauges on the vacuum system and the controllers and power sources for the various pumps should all be connected to an interlock system. The interlock system ensures that in the case of a failure of one of the pumps, the accidental development of a leak, the failure of the cooling system for the pumps, or a malfunctioning of one of the vacuum gauges, the power is disconnected from all pumps and all gauges (and also from other electrical equipment that may be inside the vacuum system) by the tripping of a series of relays. The interlock system also ensures that in the case of a power failure, the vacuum pumps do not automatically turn on after the mains power is restored.
• The laboratory containing the vacuum equipment should only be accessible to persons who are familiar with the vacuum equipment and with the associated safety hazards.

• The oil level in oil diffusion pumps and in fore pumps should be checked regularly and renewed as needed according to manufacturers specifications. Some types of turbo pumps also require occasional refilling with special purpose oil. The discarded oil should be disposed of appropriately.

• The usual precautions must be taken when using electrical equipment.

• The exhausts of rotary pumps must be free from obstruction and must be vented appropriately.

• The heaters of diffusion pumps must be sufficiently well away from walking areas, to prevent accidental burns, and from other equipment, to avoid fire hazards.

RESOURCES: The Head of Department will provide the necessary resources and training for the safe use and handling of vacuum equipment.

RESPONSIBILITY: The Head of Department and staff will ensure that the use and handling of vacuum equipment is carried out in an approved and safe manner.

PUMP MAINTENANCE – Changing Oil

HAZARDS: The pump oil may possibly be contaminated with solvents, or corrosive or obnoxious substances.

RISK ASSESSMENT: Low

CONTROL MEASURES:
• The person who is changing the oil should be informed by the operator of the vacuum system, as to what potentially hazardous substances have been used in the vacuum system.

• The pump oil should be drained from the pump in a fume-hood.

• Appropriate gloves and a lab coat must be worn.

• If there is any suspicion of contamination, the oil must be treated as hazardous waste.

• Waste oil should normally be taken to the technician in charge of pump maintenance for proper
PRESSURE GAUGES

HAZARDS
Electrical vacuum pressure gauges are used.

• Electrical equipment.
• Specific hazards with a hot-cathode ionization gauge are the increased temperature of the metal surrounding the gauge, and a poor ground connection between the ionization gauge and its electronic controller.
• Some types of ionization gauges are housed in a glass envelope connected to a metal flange which is connected to the vacuum chamber. The glass envelope presents the hazard of breaking if improperly used, with flying glass if the gauge is not under vacuum, and implosion with damage to other vacuum equipment if the gauge is under vacuum.

RISK ASSESSMENT: Low

CONTROL MEASURES
• The usual precautions must be taken when using electrical equipment.
• There should be a good ground connection between an ionization gauge and its electronic controller.
• The glass envelopes of ionization gauges should regularly be checked for cracks, and precautions should be taken to avoid accidental knocks against this glass envelope.

RESOURCES
The Head of Department will provide the necessary resources and training for the safe use of vacuum systems.

RESPONSIBILITY
The Head of Department and staff will ensure that the use of vacuum systems is carried out in an approved and safe manner.
4.11 PRESSURE SCANNING SYSTEM FOR LIQUIDS
(FLUID DYNAMICS LABORATORY)

HAZARDS

• Contact or entanglement with moving parts in gearing system.
• Unauthorised use of instrument by untrained staff.
• High pressure hose rupture.
• Electrical hazards.
• Any other combination of the above can occur at any time if not properly safe guarded.

RISK ASSESSMENT Low to Medium

CONTROLS

• The scanning system is used only in a restricted access laboratory.
• Only trained and competent staff are authorised to operate this equipment.
• All tasks will be carried out in line with the safe operation of the machine.
• Information and training will be provided to appropriate staff on the use of the scanner prior to any work commencing.
• Before use the pressure system and hoses must be visually inspected to ensure all connections are secure.
• Pressure release slowly using bottle jack release.

RESOURCES The Head of Department will provide the necessary resources for the safe use and operation of the pressure scanner.

RESPONSIBILITY The Head of Department and staff will ensure that the scanner is operated and maintained at all times when it is in operation.
4.12 Mechanical Workshop

RISK ASSESSMENT: Medium

Who may be Harmed & How?
All staff or students who enter, or staff who use machinery in this area

CONTROLS:

• There are a number of serious mechanical hazards in the mechanical workshop situated in Room 1.25, ground floor. This is a restricted entry area.

• No member of staff, postgraduate student, or visitor is permitted to use any equipment in this area with out first getting permission from the Engineering Workshop manager, Mr. David Watson and the Chief Technical Officer, Mr Derek Gleeson. Undergraduate students are not permitted access to the workshop.

• The Workshop Senior Technical Officer has the right to refuse permission to any one (s)he deems not sufficiently competent to use such machinery.

• Oxy-acetylene and TIG welding create further hazards such as hot surfaces, fire and ultraviolet light. These procedures can only take place in the designated area within the workshop and only by operators deemed competent by the workshop.

• Senior Technical Officer. Operators must use the appropriate protective equipment. Eye Protection must be worn at all times when entering the workshop. Eye protection is provided inside the door upon entering the room.

Equipment Contents
Engineering Equipment Engineering Workshop (Physics Dept.)
Organisational Chart
General Safety Rules
Hurco CNC Milling Machine – Model Hawk 5D
Bridgeport Milling Machine Series 1-2 HP
Colchester Master Centre lathe
Harrison M 250 Centre Lathe
Smart and Brown Centre Lathe
Bridgeport Texton Surface Grinder
Arboga Maskiner Pedestal Drill

Record Power bench grinder SM 155
Swiftcat Horizontal Bandsaw Model No. RF 7121
Startrite Vertical Bandsaw Model No. 30RWS
Powershop Dewait Woodsaw
Performance Bench Sander Model No. PP400BDS
Bench Grinder / Abrasive Wheels

Welding Systems
  TIG
  Electric Metal Arc
  Oxy/ Acet Gas Welding (Bottle Location)

Welding Extraction System
Portable 110V Electric Tools
Portable Battery Tools
Materials Handling
Crown Pallet Truck
Mobile Hoist
Slings/ Ropes
Access/ Egress Workshop
Materials Store
Non Strobe Fluorescence Lighting
(Located over machines)

Note:   Welding is only carried out a couple of times / year, at most for 1 hour.
Extraction system has been measured and provides x air exchanger/hour

Electricity: All machines/ equipment have been permanently connected to main switches
in line with ETCI rules on electrical installation of equipment.

Compressed Air / Air Receiver
Organisation Chart for Engineering Workshop

General Safety Rules for Workshop

Working on or near engineering equipment in the workshop:

- Wear protective clothing and equipment.
- Read instruction manuals before operating equipment.
- Take special note of safety instructions and warning signs.
- Switch off equipment if you feel unwell.
- Use a low pressure air nozzle in situations where compressed air is used to clean machine swarf from the equipment.
- Never use compressed air to clean clothing or blow down body parts.

Responsibility: The Head of Department and staff are responsible for ensuring that work activities are carried out in a safe manner at all times in the laboratory. The maintenance of engineering equipment and records are maintained to ensure the safety of the equipment at all times. Appropriate training will be provided to those nominated to operate engineering equipment in the workshop or will have obtained such qualifications /experience from a qualified body.
SUBJECT  
Hurco CNC Hawk 50D Milling Machine

HAZARDS  
Materials falling from table
Trapping between following areas:-
  • the back of the saddle when an over arm is used,
  • the bottom of the Arbor support, and the table between the bottom of the knee and the base/coolant tray.

RISKS  
Medium

CONTROLS  
Only trained and competent staff are authorised to operate this equipment.
All tasks will be carried out in line with the safe operation of the machine.
All electrical services on the machine will be maintained in line with the manufacture instructions and in accordance with ETCI rules in the installation of equipment.
An emergency stop device is provided so that the equipment and all associated equipment will be stopped as quickly as possible in the event of an emergency while it is in use.
Work holding devices will remain clamped in the event of power loss.
All fixtures and other externally mounted devices will be provided with means for safe loading and unloading.
All moving areas are to be protected with appropriate guards and suitable interlocks fitted.

RESOURCES  
NUIM will provide the necessary resources to ensure the safe operation and use of equipment in the workshop.

RESPONSIBILITY  
The Head of Department and staff are responsible for the safe use and operation of engineering equipment in the laboratory/workshop.
SUBJECT: Bridgeport Milling Machine Series 1 2 HP

HAZARDS: Materials falling from table
- Trapping between following areas:-
  - The back of the saddle when an over arm is used.
  - The bottom of the Arbor support and the table
  - Between the bottom of the knee and the base/coolant tray.

RISKS: Medium

CONTROLS: Only trained and competent staff are authorised to operate this equipment.
- All tasks will be carried out in line with the safe operation of the machine.
- All electrical services on the machine will be maintained in line with the manufacture instructions and in accordance with ETCI rules in the installation of equipment.
- An emergency stop device is provided so that the equipment and all associated equipment will be stopped as quickly as possible in the event of an emergency while it is in use.
- Work holding devices will remain clamped in the event of power loss.
- All fixtures and other externally mounted devices will be provided with means for safe loading and unloading.
- All moving areas are to be protected with appropriate guards and suitable interlocks fitted.

RESOURCES: NUIM will provide the necessary resources to ensure the safe operation and use of equipment in the laboratory.

RESPONSIBILITY: The Head of Department and staff are responsible for the safe use and operation of engineering equipment in the laboratory/workshop.
SUBJECT  Colchester Master Centre Lathe

HAZARDS  Contact or entanglement with moving parts.
          Contact or entanglement with material in motion.
          Being struck by material ejected from the holding chuck.
          No guard on chuck.
          Failure to provide strobostropic lighting.
          Unauthorised use of lathe by untrained staff.
          Poor housekeeping in and around the lathe.
          Any other combination of the above can occur at any time if not properly safe guarded.

RISKS  Medium

CONTROLS  The lathe is safely guarded to prevent staff from coming into contact with the rotating chuck.
          Ensure that the guard is securely fixed to the headstock or alternatively, a separate guard may be fitted,
          The work zone will be protected around the lathe, this includes guarding the work zone at the rear of the lathe.
          The guard provided will have the strength to resist the passage of ejecting parts, broken tools or other debris from the lathe.
          The design of the base of the lathe will ensure that all coolants, swarf or other materials are collected in the base of the lathe.
          The lead screw and feed shaft where it is practicable will be protected with a form of helical metal cover guard.
          Information and training will be provided to staff appropriate on the use of the lathe.

RESOURCES  The Head of Department will provide the necessary resources for the safe use and operation of the lathe.

RESPONSIBILITY  The Head of Department and staff will ensure that the lathe is operated and
maintained at all times when it is in operation.

SUBJECT        Harrison M50 Center Lathe

HAZARDS        Contact or entanglement with moving parts.
                Contact or entanglement with material in motion.
                Being struck by material ejected from the holding chuck.
                No guard on chuck
                Failure to provide strobostropic lighting.
                Unauthorised use of lathe by untrained staff.
                Poor house-keeping around the lathe.
                Any other combination of the above can occur at any time if not properly
                safe guarded.

RISKS           Medium

CONTROLS        NUIM will ensure that:
                The lathe is safely guarded to prevent staff from coming into contact with
                the rotating chuck.
                Ensure that the guard is securely fixed to the headstock or alternatively, a
                separate guard may be fitted,
                The work zone will be protected around the Lathe, this includes guarding
                the work zone at the rear of the lathe.
                The guard provided will have the strength to resist the passage of ejecting
                parts, broken tools or other debris from the lathe.
                The design of the base of the lathe will ensure that all coolants, swarf or
                other materials are collected in the base of the lathe.
                The lead screw and feed shaft where it is practicable will be protected with a
                form of helical metal cover guard.
                Information and training will be provided to staff appropriate on the use of
                the lathe.

RESOURCES       The Head of Department will provide the necessary resources for the safe
                use and operation of the lathe.
RESPONSIBILITY  The Head of Department and staff will ensure that the lathe is operated and maintained at all times when it is in operation.

SUBJECT  Smart and Brown Center Lathe

HAZARDS  Contact or entanglement with moving parts.
Contact or entanglement with material in motion.
Being struck by material ejected from the holding chuck.
No guard on chuck
Failure to provide strobostropic lighting.
Unauthorised use of lathe by untrained staff.
Poor house keeping around the lathe.
Any other combination of the above can occur at any time if not properly safe guarded.

RISKS  Medium

CONTROLS  The lathe is safely guarded to prevent staff from coming into contact with the rotating chuck.
Ensure that the guard is securely fixed to the headstock or alternatively, a separate guard may be fitted,
The work zone will be protected around the lathe, this includes guarding the work zone at the rear of the lathe.
The guard provided will have the strength to resist the passage of ejecting parts, broken tools or other debris from the lathe.
The design of the base of the lathe will ensure that all coolants, swarf or other materials are collected in the base of the lathe.
The lead screw and feed shaft where it is practicable will be protected with a form of helical metal cover guard.
Information and training will be provided to staff appropriate on the use of the lathe.

RESOURCES  The Head of Department will provide the necessary resources for the safe use and operation of the lathe.
RESPONSIBILITY The Head of Department and staff will ensure that the lathe is operated and maintained at all times when it is in operation.

SUBJECT Textron Surface Grinder Bridgeport

HAZARDS Materials falling while grinding, material jammed in the grinding wheel, entrapment of fingers and hands
Material flying into the eyes and causing minor to serious damage including loss of eye(s)
Hearing damage, due to the noise levels being in excess of the legal requirements.

RISKS Medium

CONTROLS All grinding equipments will be set up in such a manner to prevent material becoming entrapped between the wheel and the resting plate (properly adjusted).
All grinding equipments will be guarded specifically to prevent particles flying into any part of the operator’s face or body.
No guard will be designed and fitted which will make it more hazardous for the operator to use, or to force the operator to remove it.
Where the levels of noise are in excess of those set down in the noise regulations, ear protection suitable for the purpose will be provided and staff informed of the reasons why PPE should be worn at all times.
Where necessary, staff will be given training and information on the use of grinding equipments.
Staff will be provided with ear protectors
Staff will be provided with foot protection.
Staff will be provided with suitable protective clothing.

RESOURCES The Head of Department will provide the necessary resources for the safe use and operation of the surface grinder.
RESPONSIBILITY

The Head of Department and staff will ensure that the surface grinder is operated and maintained at all times when it is in operation.
SUBJECT  Bench/Pedestal Drill – Arboga Maskiner

HAZARD  Materials falling from table
Rotating parts i.e. drill chucks, items not properly clamped or held with suitable grips flying out
Swarf; cuts to hands
Dermatitis - coolants, hand cloths, pockets, dirty rags
Untidy table/bench/floor area
Bad housekeeping

RISK  Medium/High

CONTROLS  All guards are fitted on belts/drives on machine
A guards is fitted on chucks/drill bits when in use
Suitable vice/clamps/vice grips for small items are provided when drilling
Drills are properly sharpened for use
Eye protection is worn and available
Hair is tied back
No ties are worn, or if worn to be inside the persons overalls/protective clothing
Barrier creams are provided for hands if required.
Suitable gloves are provided.
All areas are kept clean and tidy at all times in the laboratory/workshop.
Suitable supports for long lengths of materials are provided.
Use of less hazardous coolants are provided were necessary.
Trays are provided to prevent coolant draining on to the bench of the laboratory/ workshop
Equipment is kept clean and tidy at all times
Proper maintenance is provided by competent person
Correct drill speeds are used when drilling different materials

RESOURCES  The Head of Department will provide the necessary resources for the safe use and operation of the Bench/Pedestal Drill.
RESPONSIBILITY  The Head of Department and staff will ensure that the Bench/Pedestal Drill is operated and maintained at all times when it is in operation.
SUBJECT  Bench Grinder/Record Power SM 155 / Abrasive Wheels

HAZARD  Failing to wear Eye/face protection
Injury from burst wheels
Hands/fingers being cut if guards are not properly set or in place
Failing to secure safe materials
Failing to adjust materials rest correctly
Grinding inappropriate materials on wheel

RISK  Medium/High

CONTROLS  All grinding wheels are used in line with the abrasive wheel regulations.
The work piece rest is adjusted to ensure proper distance from the wheel.
Eye protection is worn by all staff when grinding materials.
Non-ferrous metal must not be ground on the grinding wheels.
All wheels must be properly mounted and balanced before use.
The abrasive wheel regulations must be observed by all staff.
Training is provided for all staff on the use of abrasive wheels to ensure an adequate knowledge of the process and the need for safe use of the equipment.
A noise assessment is carried out to determine the level of noise in the workshop/laboratory.

RESOURCES  The Head of Department will provide the necessary resources for the safe use and operation of the Bench Grinder.

RESPONSIBILITY  The Head of Department and staff will ensure that the Bench Grinder is operated and maintained at all times when it is in operation.
SUBJECT  Horizontal Bandsaw – Swift Cat RF 7121

HAZARD  The equipment is pivoted at one end producing a downward hinge or scissors motion, if the control governing the rate of decent is not maintained then it is liable for the blade to descend to quickly and cause injury to hands or damage the blade.

Equipment stops not operating satisfactory.

Interlocks on guards not operating, risk of major injury if opened while running.

Materials falling as a result of not been properly clamped in the holding vice.

Unauthorised staff using equipment.

RISK  Medium

CONTROLS  All interlocks to operate satisfactorily prior to the operation of the saw by staff.

Training is provided to staff to ensure that he/she fully understands the safe operation of the saw prior to commencing work.

All guards are of robust construction.

All guards cover the band wheels and the top running portion of the blade and adjustable guards are fitted between the band wheels covers and the guide arms on the saw.

Care is taken to ensure that the blade is fitted correctly at all times

Sufficient space is provided around the saw at all times and such space is kept clear at all times during the operation of the saw.

RESOURCES  The Head of Department will provide the necessary resources for the safe use and operation of the Horizontal Bandsaw.

RESPONSIBILITY  The Head of Department and staff will ensure that the Horizontal Bandsaw is operated and maintained at all times when it is in operation.
SUBJECT Startright Vertical Bandsaw – 30RWS

HAZARD Unauthorised staff using the bandsaw,
Incorrect speed used to cut materials,
Blade snapping,
Failure to adjust blade guard when cutting materials,
Failure to maintain the bandsaw in line with the manufacturer’s instructions,
Failure to maintain a safe area around the machine,
Failure to wear PPE,

RISK Medium/ High

CONTROLS Only trained and authorised staff are allowed to operate the bandsaw.
The guard blade to be adjusted in line with the thickness of the material being cut.
The area immediately around the saw to be kept clear at all times.
Cutting speeds to be adjusted to suit the material being cut.
The machine to be maintained in line with the manufacturer’s instructions.
Eye protection and other PPE to be used when cutting materials.
Where practicable a push stick maybe used to finish a cut on a piece of material.

RESOURCES The Head of Department will provide the necessary resources for the safe use and operation of the Vertical Bandsaw.

RESPONSIBILITY The Head of Department and staff will ensure that the Vertical Bandsaw is operated and maintained at all times when it is in operation.
4.13 SERVICES

University Safety Office
The role of University Safety Office is to monitor the implementation of the University Safety Statement, ensure continuous improvement of health & safety in the University, advise Heads of Departments and individuals directly on matters relating to safety, health & welfare. The Safety Office also monitors building works to ensure the safety of all persons on campus.

Campus Planning & Development Office
The Campus Planning & Development Office is responsible for the following activities
- Campus Master Planning and Project Delivery
- Design, Planning, Budget Control & Management of new building construction and refurbishment projects.
- Management of external design teams & construction projects
- Implementation of major Refurbishment projects
- Traffic Management
- Provision of physical infrastructure on campus
- Building Records

Campus Services Department
The Campus Service Department is responsible for a wide range of activities on Campus including implementation of the University’s maintenance programme and general services which includes:
- Grounds Maintenance
- Postrooms
- Heating Services - Gas/Oil Fired Boilers/Air Handling Systems
- Mains Gas Services
- Electrical Services e.g. lighting, electrical panels etc.
- Fire Alarms and Equipment.
- Lifts
- Cleaning Services, Waste Disposal, Window Cleaning
- Provision of furniture and fittings
- Swimming pool
- Layout of meeting rooms, examination halls and lecture theatres and the provision and maintenance of AV systems
- Maintenance Helpdesk – staff should report any maintenance issues to the Maintenance Helpdesk at 3930 or email: maintenance@nuim.ie

**Computer Centre**

The Director of the Computer Centre is responsible for the development and implementation of the University’s programme for computer services, which includes:

- Co-ordinating the purchasing of desk top computer equipment and associated peripherals in conjunction with the procurement office.
- Installations of network cabling.
- Installation and maintenance of active network components.

**Security**

The Head of Security is responsible for the development and implementation of the University’s security programme, which includes:

- Provision and installation of intruder alarms, close circuit television and security systems,
- Provision of security services.
4.14 GENERAL GUIDANCE FOR HEADS OF DEPARTMENTS ON THE MANAGEMENT OF CONSTRUCTION PROJECTS CARRIED OUT ON NUIM/COLLEGE CAMPUS

Recent detailed Regulations for construction projects have focussed on the way construction projects are planned, designed and managed for the duration of the project.

The management of safety with regard to construction projects is based on sound and proven principals. These principals are laid down in current safety legislation and they must be complied with at all times prior to any future extensions, alterations or renovations, the following criteria must be complied with:-

- A summary of the proposed work shall be prepared by the Project Engineer, Architect or the designated person.
- A Safety Assessment of the areas affected by the proposed work by a competent person.
- The Hazards highlighted or identified by the Assessment shall be addressed in accordance with the General Principals of Prevention as set out below.
- The avoidance of risk where practicable.
- The evaluation of unavoidable risks.
- The combating of risks at source.
- The adaptation of the work to the individual.
- The adaptation of the place of work to technical progress.
- The replacement of dangerous articles, substances or systems of work with safe ones.
- The development of an adequate prevention policy which takes account of technology, organisation of work, working conditions, social factors and the influence of factors relating to the working environment.
- The giving of priority to collective protective measures over individual protective measures.
- The giving of appropriate training and instruction to employees.
- To liaise with the appropriate persons before carrying out the work.
- To identify any special requirements before carrying out the task.
- To identify any special training, such as having SafePass Certificate.
- Access to any particular Risk Assessment.
To identify any specific high risk prior to any activity being undertaken.

4.15 FIRE SAFETY

HAZARDS
There is always a risk of fire occurring. Common fire hazards include improperly stored combustible or flammable materials, use of naked flames, faulty electrical equipment and smoking.

- Serious bodily injury or fatality
- Damaged property and equipment
- Disruption of work

RISK ASSESSMENT: High

CONTROLS:
1. The University in conjunction with the Safety Office and the Experimental Physics Department has developed a Fire Management Programme.
2. Documentary procedures have been developed which cater for fire and other emergencies. These must be adhered to at all times.
3. Emergency and exit lighting is provided and maintained throughout the premises in accordance with current standards.
4. Fire safety notices indicating the action to be taken in the event of a fire are located throughout the premises.
5. Fire fighting equipment is provided and maintained in accordance with current standards.
6. Regular checks of the electrical installations are undertaken by competent electricians/engineers.
7. A “Hot Work Permit” System is in place and must be strictly adhered to.
8. The emergency exit routes are protected by fire doors, which are inspected and maintained at regular intervals.
9. Fire drills are undertaken at regular intervals.
10. Fire safety training is provided to all staff.
11. A Fire Register is provided and maintained.
12. Smoking is strictly prohibited in the premises.
RESOURCES:
Campus Services Department provides the necessary resources to inspect and maintain fire equipment and services.

RESPONSIBILITY:
Campus Services Department - Maintenance
Head of Department – Management
Staff and Students should ensure equipment is not interfered with.
4.16 HAZARDOUS SUBSTANCES

HAZARDS
The hazards associated with exposure, use and handling of Chemical Substances may include:

- Absorption through the skin, ingestion into the body, inhalation through the nose and mouth.

RISK ASSESSMENT: Medium

CONTROL MEASURES
The Head of Department will ensure that relevant staff are aware of the hazards of associated with specific materials and are trained in how to use and handle these materials properly. It is the policy of the University to:

- Obtain Material Safety Data Sheets for all substances in use
- Identify all potential hazards
- Review the existing controls and methods of use
- Assess the degree of risk and decide on whether or not protective measures are needed and the nature of those measures.
- A written Risk Assessment must be prepared and maintained on file in accordance with current legislative requirements.
- Store all chemicals in closed, labelled containers in cool ventilated conditions or as prescribed by the manufacturer.
- Segregate all incompatible chemicals to avoid hazardous consequences in case of accidental spillage
- Wear the personal protective clothing and equipment specified by the manufacturer when handling or using the chemical.

RESOURCES:
The Head of Department will provide the necessary resources for the safe use of chemicals.

RESPONSIBILITY:
Head of Department must ensure control measures are in place and utilised.
4.17 HOUSEKEEPING

HAZARDS
Poor housekeeping can pose a wide variety of risks to health and safety including slips, trips and falls as well as fire.

RISK ASSESSMENT: Medium

CONTROLS:
1. Ensure all workplaces, passageways, and stairways are adequately lit and free from shadows. Defects in flooring, stair treads, handrails and lighting must be reported immediately to your Supervisor or Head of Department.
2. All areas must be kept clean and tidy at all times.
3. All light fittings, windows and roof lights are cleaned regularly. Defective light bulbs must be replaced immediately.
4. All access ways and passageways must be free from obstruction at all times.
5. Floors are cleaned and dried frequently and kept in good condition - firm and level. When floors are being washed warning signs must be erected.
6. All workplaces are kept clean and tidy. All spillage’s of oils, grease, or other material, which can cause slips or falls must be cleaned up at once.
7. Electric cables must be carefully located in order to avoid causing hazards.
8. Small tools and implements are not permitted to lie around where they may present a slipping or tripping hazard.
9. Storage and stacking of goods must be done in specifically designated places and located in such a manner as to minimise the hazards of goods falling. Frequently used heavy items (>1kg) must not be stored above head height (unless access is provided) or below waist height.
10. Articles should not be placed in overhead locations, such as on top of presses and ledges over doors where they can fall and strike persons below.
11. Adequate trash or waste receptacles are provided at all times.
12. All refuse bins are emptied at regular intervals to prevent the build up of rubbish.
13. Any signs of vermin, (droppings, actual sightings etc) should be reported at once to Campus Services Department for appropriate action to be taken.
14. Building Maintenance:

15. Stairs: Report any defects which include faulty treads, damaged or missing handrails, slippery steps, inadequate lighting etc.

16. Doors: Report any defects which affect the integrity of fire doors, i.e. doors that do not close fully, damaged self-closing devices, etc.

17. Public toilets are high risk areas and extra vigilance must be taken to ensure an inspection system is in place and that records are maintained. Broken tiles and other defects must be reported immediately for fast remedial action.

18. Cleaning staff are appointed who implement a cleaning schedule.

RESOURCES:
Campus Services Department will provide the necessary resources to ensure good housekeeping standards

RESPONSIBILITY: Day to day responsibility rests with Head of Department/All Staff
4.18 MANUAL HANDLING

HAZARDS
• Incorrect method of lifting
• Attempting to lift something which is too heavy
• Lifting sharp/awkward shapes

The main injuries associated with incorrect manual handling and lifting are:
Back strain, slipped disc, lacerations, crushing of hands or fingers, bruised or broken toes or feet, various sprains, strains including repetitive strain injuries. (RSI).

RISK ASSESSMENT: Medium

CONTROLS:
• All staff involved in manual handling must receive specific training in safe manual handling techniques by a competent manual handling instructor.
• Manual handling activities must be assessed by a competent manual handling instructor.
• Where possible, measures shall be taken to reduce the amount of manual handling to a minimum.
• Mechanical and material handling equipment including hand trucks and trolleys are provided and should be utilised.
• Never attempt to lift a load likely to cause you an injury. Always obtain assistance or refer the matter to your Head of Department.
• Portable step platforms are supplied and must be used to access loads at high levels.
• Adequate lighting is supplied to ensure that visibility is sufficient at all times.
• Comply with the separate Guidance Document covering manual handling.

RESOURCES:
The Head of Department will ensure all staff are trained in manual handling techniques

RESPONSIBILITY:
Head of Department/staff.
4.19 **OFFICE SAFETY AND PHOTOCOPIERS**

**HAZARDS**

While office work may not be considered as a high risk activity, unsafe work systems and layout may result in injury or illness.

- Slips/trips and falls
- Fire
- R.S.I. (Repetitive Strain Injury)

**RISK ASSESSMENT:** Low

**CONTROLS:**

- An adequate level of lighting is provided. The lighting system is inspected and maintained at regular intervals.
- Ensure adequate space is provided for each staff member.
- Ensure all furniture, fittings and equipment are positioned to minimise potential hazards.
- Ensure sufficient ventilation is provided particularly in the vicinity of photocopying.
- Electric or telephone cables must not trail unprotected across the floor. Cable covers are supplied and must be used.
- Chairs, desks or drawers should never be used to access higher areas. Step ladders shall be used.
- All items stored above head level shall be stored properly to prevent falling.
- The mains power supply shall be disconnected before attempting to move electrical equipment.
- All damaged floor coverings, furniture, equipment or machinery must be replaced or repaired.
- Comply with the separate Guidance Document covering Office Safety.

**PHOTOCOPIERS**

**HAZARDS**

The principle hazards associated with photocopiers are:

- Burns from hot surfaces when releasing paper jams
- Exposure to toner
- Build up of ozone in enclosed unventilated places.
RISK ASSESSMENT: Low

CONTROL MEASURES
All photocopiers are serviced regularly.
Only trained members of staff are authorised to release paper jams, fit toner cartridges etc.
Caution notices indicating the above rule are posted in the vicinity of the photocopiers.
Photocopiers are operated in well-ventilated areas.

RESOURCES
Staff are responsible for keeping their work area clean and tidy.
All photocopiers will be maintained by competent persons.

RESPONSIBILITY  Head of Department/Staff
4.20 DISPLAY SCREEN EQUIPMENT (VDUs)

HAZARDS
The main problems associated with VDU's are as follows:
(a) Visual Discomfort
(b) Posture
(d) Stress

RISK ASSESSMENT  Low

CONTROL MEASURES
The main duties of the University are to;
(a) Carry out a workstation assessment
(b) To ensure staff and managers plan work activities in such a way that daily work on display screens is periodically interrupted by breaks or changes of activity which reduce stress and discomfort. (Breaks are defined as allowing the person to cease working at the VDU for 4-5 minutes to rest the eyes and shoulders, other activities can be carried out)
(c) Ensure an appropriate eyesight tests are provided to staff who use display screen equipment (VDUs)
   • Before commencing display screen work
   • At regular intervals there after (Recommended at least once every two years)
   • If an employee experiences visual difficulties which may be due to display screen work
(d) If the results of a test under (c) show that it is necessary, then an ophthalmologic examination should be carried out on the staff member concerned.
(e) Where the results under (d) show that it is necessary and if normal corrective lenses cannot be used, then provide the staff member concerned with special corrective lenses appropriate to his/her work.

The workstation must comply with the following criteria;
• The machine should be kept in a good state of repair and cleanliness.
• The image to the operator must be both clear and stable.
• The equipment and space provided should give the operator sufficient room to locate their work materials conveniently and to adopt a comfortable posture.
• The seating should be adjustable for both height and angle of back support.

Staff/Computer Interface
• All software shall be suitable for the task.
• It shall be easy to use and where appropriate, adaptable to the employees level of the knowledge or experience.
• The principles of software ergonomics shall be applied in particular to human data processing.

RESOURCES:
The Head of Department provides the necessary resources to maintain Display Screen Equipment.

RESPONSIBILITY: Head of Department/Staff
4.21 PAPER SHREDDERS & GUILLOTINES

PAPER SHREDDER

HAZARDS

• Contact with moving parts.
• Entanglement.

RISK ASSESSMENT: Medium

PERSONS AFFECTED BY HAZARD: Staff

CONTROL MEASURES

1. The use of the equipment is restricted to staff.
2. The shredder is guarded in accordance with current standards.
3. Ensure loose clothing is secured i.e. ties, loose sleeves, etc.
4. The start and stop controls are clearly marked.

RESPONSIBILITY: Head of Department/Staff

GUILLOTINES

HAZARDS

• Contact with cutting blade.

RISK ASSESSMENT: Medium

PERSONS AFFECTED BY HAZARD: Staff

CONTROL MEASURES

1. The use of the equipment is restricted to staff.
2. The Guillotines are guarded in accordance with current standards.
3. Ensure the interlocked guards are utilised, where appropriate.
4. Ensure the material being cut is secured.
5. Keep your fingers and hands clear of the cutting blade/area.

RESOURCES:
The Head of Department provides the necessary resources to maintain equipment.

RESPONSIBILITY: Head of Department/Staff
4.22 STEPLADDERS AND MOBILE STEPS IN AN OFFICE ENVIRONMENT

HAZARDS
A fall from a step ladder can result in very serious injuries. Problems arise when;

- Step ladders are not sufficiently high enough
- Unsafe use of ladder (over-reaching)
- Missing or worn non-slip feet
- Missing or loose screws or rivets
- Wear which causes excessive side to side movement
- Distortion which prevents all four feet contacting the floor when the step ladder is in use
- Defective chain stays.

RISK ASSESSMENT: Medium

PERSONS AFFECTED BY HAZARD: Staff

CONTROL MEASURES:
- Always use a stepladder which is high enough for you to reach comfortably the books/files/areas you want without stretching or over reaching.
- **Faulty stepladders must not be used.** If you notice that a stepladder is faulty, do not use it, take it out of use and report it to your supervisor.
- Make sure the stepladders are opened up fully and the struts or top platform are locked in position.
- Do not climb up stepladders whilst they are leaning against fixtures.
- Make sure the stepladder is not standing on loose paper or cardboard.
- Avoid using stepladders near a closed door.
- Do not carry more materials up or down a stepladder than you can control in one hand, so you can hold the handrail with your free hand.
- Always ensure the wheels are retracted and the break applied when using a mobile platform.
RESOURCES:
The Head of Department provides the necessary resources to maintain equipment.

RESPONSIBILITY: Head of Department/Staff
4.23 **LONE WORKING**

**HAZARDS**

- NUIM staff may be required to work alone outside normal hours. Long periods may elapse before other staff members or Security may visit the area.

**RISK ASSESSMENT:** Medium

**CONTROL MEASURES.**

1. All staff must advise Security of their presence on/in the University on arrival outside normal working hours.
2. Staff must not engage in any hazardous activities when they are working alone and must seek assistance.
3. Staff are advised to report immediately to Security any suspicious activities or person in their areas.
4. Security staff are on the premises 24 hours a day throughout the year.
5. Hazardous work is not permitted outside normal working hours.

**RESPONSIBILITY:** Head of Department/Staff
4.24 **ACCESS AND EGRESS to all places of work**

**HAZARDS**
Access and Egress to all areas covers the use of vehicles, cyclists and pedestrians accessing the grounds of the University. Failure to adhere to the designated speed limits, parking guidelines and cycling restrictions could result in serious accidents. For example,
- Speeding on campus can result in death or serious injury.
- Blocking access routes can hamper the response of the Emergency Services.
- Inadequate lighting or slippery surfaces can result in slips, trips and falls.
- Poor road surfaces can result in damage to vehicles or slips, trips and falls.
- Failing to take responsibility for any of the above can result in personal injuries or injuries to others.

**RISK: Medium**

**CONTROLS**

**North Campus**
- The North Campus has designated vehicle, pedestrian and cycle routes to all buildings on Campus.

**South Campus**
- The South Campus has designated vehicle, pedestrian and cycle routes to all buildings on campus.
- The Main Entrance to the front of the College is a listed feature and due care must be taken by motorists, pedestrians and cyclists not to cause damage to the property.
- Pedestrians must utilise the pedestrian entrance adjacent at the Gate Lodge.
- The Speed Limit on Campus is 25km per hour and must be observed by vehicles entering and driving through the campus.
- Ramps have been put in place to reduce speeding of vehicles.
- Car Parking Provisions are provided on both campuses. Car parks must be used to their full extent. Overflow parking is allowed on one side of the access road from the Riverstown car park to Logic House and on the Ring Road on the North Campus from the All Weather Pitch to the car park by the Playing Fields.
- External lighting is provided and maintained on both campuses.
• The roadways and car parks are inspected and maintained at regular intervals.
• There are some designated walkways and pathways provided on both campuses for all pedestrians.
• Cycle lanes are provided on the North Campus and cycling is permitted in designated areas of the South Campus only. No cycling is permitted in St. Joseph’s Square and on the pedestrian route from St. Josephs Square to the JPII Library. Cycling is prohibited on the Footbridge. Safety Notices are in place in these areas to advise those using the bridge of this restriction.
• In the event of adverse weather conditions, personnel are assigned to treat the roadways and pathways. In the event of stormy conditions sections of the grounds may be closed at the rear of the College to all persons
• Access and egress to any place of work, corridor, passageway, stairs, landing, steps to a building, ramps, must not be obstructed by any materials or objects or vehicles blocking pedestrian routes. Materials must not be stored on stair landings, reception or foyer areas.

RESOURCES:
The University provides resources to maintain Campus infrastructure.

RESPONSIBILITY:
Campus Services Department are responsible for the maintenance of the grounds.
Heads of Department are responsible for ensuring good housekeeping standards in their work areas.
Staff/Students and Visitors are required to comply with University procedures.
4.25 VIOLENCE

HAZARDS
Given the size of the Campus and its population there is a potential risk of being a victim of crime. This can result in loss or damage to property and assault of the person. The hazards have been assessed and the following control measures are in place.

RISK: Low

CONTROLS
The University and College have put the following procedures in place to minimise risk of assault, loss of property and malicious damage to property.

- Security staff are provided on Campus 24 hours a day
- Security staff can be contacted by radio
- The utilisation of CCTV and ACCESS control
- Campus Watch involving the Gardai, Staff and Students
- The upgrading of lighting system on both campuses
- The provision of emergency phones in key locations (North Campus only)
- Anti theft measures for computers are in place
- Security Alarms are monitored by a central station
- Counselling and support for victims of assault or crime are available
- The provision of a Campus Watch booklet which outlines a wide range of precautions to be taken to prevent loss or assault

RESOURCES:
The University/College will provide resources in this area.

RESPONSIBILITY:
Head of Security
4.26 LIFTS

HAZARDS
The hazards associated with the use of lifts and the lift equipment in the operations room.

The hazards with lifts include:

• Passage sides
• Slips, trips or falls
• Wet/Slippy floors
• Trapping of fingers or other parts of the body by the moving doors
• Breakdowns while people are in the lift.

Operations Room:

• Manual handling
• Electricity
• Access to equipment
• Motors – moving parts
• Failing to isolate the equipment safely
• Lift being out of synchronisation with floor levels

RISK: Low

CONTROLS

• All lifts are given a thorough examination every 12 months and a certificate issued by the person carrying out the statutory inspection, is maintained on file.
• All lifts are inspected and maintained on a regular basis.
• A maintenance contract is in place for all lifts on campus.
• Where people are trapped in a lift, the emergency release procedure must only be undertaken by authorised persons who are trained in the lift procedures or by the lift service company engineer.
• Designated staff receive training in the emergency hand winding procedures. While guidance notes are located in the lift plant rooms, on control panels or in the lift shaft, if in any doubt reassure the occupants in the lift that assistance is on the way.
• Exercise particular care when opening the landing doors to the lift shaft - the lift could be above the landing.

• Signs are in place at all lift doors warning that the lift must not be used in case of a fire/emergency.

• If a lift develops a fault, it must be isolated electrically, taken out of use and a sign located at each landing level indicating that the lift is not to be used, until it is repaired.

• Ensure no person attempts to use the lift when it is being serviced.

• During maintenance, if a lift landing door is open exposing a lift shaft, a secure barrier must be put in position at all times and supervised by a responsible person.

• Lift door release keys are held by Security and Power House staff. Additional keys may be located in the lift motor rooms or by the lift control panels.

• Ensure defects in any lift are reported to the Campus Services Department.

**Maintenance and Inspection by Lift Contractors/Surveyors**

Where Contractors are required to work in lift wells, they must comply with the Safety procedures set down in their own Safety Statement. This is to ensure that they are protected in the event of movement of the lift or the lift collapsing on them.

It is also recommended that solid supporting chocks are put in place as a secondary precaution to prevent the lift from moving downwards, thereby crushing them while working.

**RESOURCES:**

NUI and College will provide the necessary resources to the Campus Services Department to enable the office to carry out its responsibilities.

**RESPONSIBILITY:**  Campus Services Department
4.27 TEA STATIONS

A range of equipment is provided for use of tea/coffee stations. This includes kettles, water boilers, toasters and microwave ovens.

HAZARDS

• Burns and scalds,
• Risk of Fire,
• Poor hygiene resulting in food poisoning,
• Risk of electrical shock.

RISK Low

CONTROLS

All staff who use the tea/coffee stations must ensure that the area is kept clean and must tidy up and clean equipment after use.

Electric Kettles

▪ Exercise caution when using a kettle as the kettle can be hot and cause burns,
▪ Never over fill the kettle,
▪ Exercise care when pouring hot water,
▪ Do not over fill a cup or beaker,
▪ Ensure the kettle is located at a safe distance away from water and sink units and the edge of the counter.
▪ Ensure the kettle is inspected and maintained at regular intervals.

Water Boilers

▪ All water boiler units are fitted with low water level cut off devices.
▪ The water boiler units are expansion boilers, providing boiling water at low pressure.
▪ The units are positioned where they can be easily operated.
▪ Before turning on a unit, ensure there is an adequate water level in the unit.
▪ Never interfere with the water supply or heat control settings.
▪ Always place a receiving vessel right up under the dispensing tap. Keep a drip tray under the
dispensing tap at all times.
- Clean up spillages immediately.
- Turn off and electrically isolate the boiler prior to cleaning.

**Toasters**
- Never put hands into the toaster
- Never poke at the elements inside.
- Do not move it while in operation.
- Never use a metal object i.e. a knife to remove an item.
- Never attempt to clean until power supply has been disconnected from the socket.
- Use damp cloth with detergent and wipe out thoroughly when disconnected.

**RESOURCES:**
NUI and College will provide the necessary resources to the Head of Department to enable the office to carry out its responsibilities.

**RESPONSIBILITY:** Head of Department/Staff.
4.28 PORTABLE APPLIANCE TEST (P.A.T.)

HAZARDS
- Potential Electrical Shock
- Burns
- Loose conductors
- Poor plug condition
- Broken cables
- Leads too long

RISK: Low to Medium

CONTROLS:
All portable electrical appliances must be tested in line with the Portable Appliances Regulations. This includes equipment in laboratories, student accommodation and offices.

RESOURCES: Campus Services Department will provide the necessary resources to carry out PAT testing.

RESPONSIBILITY: Campus Services Department, Powerhouse Supervisor.
4.29 NUIM CAMPUS DRIVERS AND INTERNAL DELIVERIES

All staff required to drive vehicles on behalf of NUIM/St. Patricks College must have a current driving licence. This may be inspected by their respective Head of Department.

Eye sight tests will be provided to drivers on a regular basis.

All driving on Campus will be carried out in compliance with the speed limits set down by the University.

All vehicles will be maintained and serviced on a regular basis.

RESOURCES:
The respective Head of Department will provide the necessary resources for the maintenance and upkeep of their vehicles.

RESPONSIBILITY: Head of Department.
APPENDICES

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Appendix 2  - Risk Assessment Flowchart 167
Appendix 3  - Plan of Building 169
Appendix 4  - Risk Assessment for Field Trips 171
Appendix 5  - Accident Report Form 173
Appendix 6  - Safety Declaration Form 177

Emergency Directory 179

Useful Telephone Numbers 180

Emergency Contacts / Telephone Numbers 181
APPENDIX 1 – CHEMICAL RISK ASSESSMENT
# CHEMICAL AGENT RISK ASSESSMENT SHEET

**Title of Activity:**
___________________________________________________________________________________________________________

**Academic / Project Supervisor:** ________________________________________________________

**Location:** _______________  
(Room No.)  

**Module Code:** ___________________  
(if relevant)

**Assessment Undertaken By:** _______________________________  

**Assessment Date:** ________________________  

**Assessment Review Date:** ________________  

(USE LABELS, SAFETY DATA SHEETS (SDS) & CHEM. AGENT COP TO COMPLETE THIS TABLE.)

<table>
<thead>
<tr>
<th>LIST CHEMICAL NAMES</th>
<th>HEALTH HAZARD CLASSIFICATION</th>
<th>PHYSICAL/ CHEMICAL/ ENVIRONMENTAL CLASSIFICATION</th>
<th>ROUTES OF EXPOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very Toxic (F+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toxic (T)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harmful (H)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irritant (I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Corrosive (C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sensitising (S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carcinogenic (C1)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Carcinogenic (C2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mutagenic (M1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mutagenic (M2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toxic Reproduction (R1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toxic Reproduction (R2)</td>
<td></td>
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<tr>
<td></td>
<td>Flammable (F)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Highly Flammable (F+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oxidising (O)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposive (E)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Danger to environment (N)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation (Inh)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skin (Sk)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eyes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ingestion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amount Used (L or Kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dustiness or Volatility (high, medium or low)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration of Contact (Hr/Day)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of people exposed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OELV / BLV / TLV or Equivalent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note Other Significant Safety Concerns:**

---

168
<table>
<thead>
<tr>
<th>PERSONS CARRYING OUT &amp; DESCRIPTION OF THE ACTIVITY</th>
<th>CURRENT PREVENTATIVE &amp; PROTECTIVE MEASURES</th>
<th>ADDITIONAL PREVENTATIVE MEASURES REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERSONS CARRYING OUT ACTIVITY (LECTURER, TECHNICIAN, POSTGRADUATE OR UNDERGRADUATE STUDENT, MAINTENANCE, GROUNDS, ETC.):</td>
<td>STANDARDS &amp; PROCEDURES (NAME OF RELEVANT DEPARTMENTAL SAFETY CONTROL PROCEDURES AS OUTLINED IN DEPARTMENTAL SAFETY BOOKLET AND/OR OTHER REFERENCE THAT CONTROLS THE USE OF CHEMICALS IN THIS EXPERIMENT OR PROJECT):</td>
<td>(If needed to ensure that risks are kept at acceptable levels, list additional preventative measures to be used):</td>
</tr>
<tr>
<td>BRIEF DESCRIPTION OF THE ACTIVITY AND SIGNIFICANT CHEMICAL HAZARDS AND RISKS INVOLVED:</td>
<td>SAFETY DATA SHEETS (ARE SDS’S AVAILABLE FOR EACH CHEMICAL?): YES □ NO □</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONTAINMENT FACILITIES (i.e. engineering controls, fume cupboards, etc.):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PERSONAL PROTECTIVE EQUIPMENT (i.e. Protective Clothing, Gloves, Eye Protection, etc.):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TRAINING Have the supervisors being instructed in the Departmental Safety Procedures? YES □ NO □</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LIST OTHER PREVENTATIVES AND PROTECTIVE MEASURES:</td>
<td></td>
</tr>
</tbody>
</table>

**RISK DECISION**

**ACCEPTABLE:** □

**UNACCEPTABLE:** □

IF, AS A RESULT OF THIS RISK ASSESSMENT, THE RISK DECISION IS FOUND TO BE ACCEPTABLE, THEN PROGRESS TO THE NEXT PAGE.

IF THE RISK DECISION IS FOUND TO BE UNACCEPTABLE THEN THE CHEMICAL AGENT / AGENTS MAY NOT BE USED IN THE WORKPLACE. IT MAY THEN BE NECESSARY TO CARRY OUT A MORE DETAILED RISK ASSESSMENT.
<table>
<thead>
<tr>
<th>FIRST AID</th>
<th>SPILLS &amp; OTHER EMERGENCY PROCEDURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARE YOU AWARE OF THE LOCATION OF SHOWERS, FIRST AID ARRANGEMENTS, ANTIDOTES, STUDENT MEDICAL CENTRE CONTACT DETAILS?</td>
<td>ARE YOU AWARE OF THE LOCATION OF CLEAN-UP MATERIALS, EMERGENCY CONTACTS &amp; PHONE NUMBERS, AND THE DEPARTMENTAL EMERGENCY PLAN (SEE SAFETY BOOKLET)?</td>
</tr>
<tr>
<td>YES □ NO □</td>
<td>YES □ NO □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WASTE</th>
<th>STORAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Specify if any special precautions should be taken when handling wastes and state the method of disposal):</td>
<td>(STATE THE CORRECT STORAGE CONDITIONS FOR THE VARIOUS CHEMICAL CATEGORIES BEING ASSESSED):</td>
</tr>
</tbody>
</table>

I have completed this risk assessment and I am fully aware of the hazards involved in the above activity and of the essential safety precautions to be taken. I acknowledge with my signature here that I will comply with the safety precautions that this work requires.

Signature of Assessor ___________________________ Date ____________
Researcher/Staff

I have personally ascertained that the Assessor is aware of the hazards involved in the above activity and the precautions to be taken. I am satisfied that any hazards that were identified are adequately controlled and these controls will be regularly checked. This activity is deemed to be safe and has my approval.

Signature of Supervisor: ___________________________ Date ____________
Technician / Academic Staff / Head of Department

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APPENDIX 2 – RISK ASSESSMENT FLOW CHART
RISK ASSESSMENT FLOW CHART

Communication and training for all involved

Identification of health and safety hazards

Assessment of risks

Hazard control

Divide work place into appropriate areas

Consider activity / task / machine / process

Identify each hazard

General
Hazardous Substances
Noise
Manual Handling
Display Screens
PPE

Document precaution/controls in place

Assess the risks

Is risk acceptable?

YES

Make a written record of the assessment

Integrate documentation into Safety Statement

Implement Safety Statement

Monitor Safety Statement

NO

Maintain Record

Determine action needed

Determine priority for action

Take action

Complete the Job/Task

Implement Safety Statement
APPENDIX 3 – PLAN OF BUILDING
INSERT PLAN OF BUILDING
APPENDIX 4 – RISK ASSESSMENT FOR FIELD TRIPS
### Section 1: Organiser Information

<table>
<thead>
<tr>
<th>Name of Organiser/Leader:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Details:</td>
<td></td>
</tr>
<tr>
<td>Name of Co-organiser/Co-leader:</td>
<td></td>
</tr>
<tr>
<td>Contact Details:</td>
<td></td>
</tr>
<tr>
<td>Department:</td>
<td>Head of Department:</td>
</tr>
<tr>
<td>E-mail Address for Correspondence:</td>
<td>Phone Number:</td>
</tr>
</tbody>
</table>

### Section 2: Trip Details

<table>
<thead>
<tr>
<th>Title of Trip:</th>
<th>Date of Trip:</th>
<th>Duration of Trip:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of Trip:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Profile of Participants:</td>
<td>16-18</td>
<td>18+</td>
</tr>
<tr>
<td>Approx. Number of Participants:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Competencies of Participants:</td>
<td>Junior</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Number Participants per Level:</td>
<td>Junior</td>
<td>Intermediate</td>
</tr>
<tr>
<td>Type of Transport Required:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accommodation Requirements:</td>
<td>Address:</td>
<td>Phone No.</td>
</tr>
</tbody>
</table>

### Section 3: Insurance Activity

<table>
<thead>
<tr>
<th>Travel Insurance Required:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport Insurance Required, e.g. Coach, use of Car on University Business etc.:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Verification of Insurance:</td>
<td>Attach confirmation of insurance cover</td>
<td></td>
</tr>
</tbody>
</table>

### Section 5: Hazards/Risks and Management Controls

<table>
<thead>
<tr>
<th>Hazards identified with the trip:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Risks:</td>
<td>High ☐</td>
</tr>
<tr>
<td>Management Controls including specialised training/any special equipment required for the trip:</td>
<td></td>
</tr>
</tbody>
</table>

### Section 6: First Aid Requirements

| Number of Qualified First Aiders: |  |

### Section 7: Authorisation

<table>
<thead>
<tr>
<th>Trip Organiser/Co-trip Organiser:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Name:</td>
<td>Signature:</td>
</tr>
<tr>
<td>Print Name:</td>
<td>Signature:</td>
</tr>
<tr>
<td>Head of Department:</td>
<td></td>
</tr>
<tr>
<td>Print Name:</td>
<td>Signature:</td>
</tr>
</tbody>
</table>

**Review Date of Risk Assessment**

(If applicable) _/__/___/____

Please attach list of participants with contact details in case of emergency

Further advice and guidance available in Departmental Safety Statement, Section 3.6
APPENDIX 5 – ACCIDENT REPORT FORM
All incidents resulting in personal injury, a dangerous occurrence, damage to property or a near miss which could have resulted in injury must be reported within 24 hours, by completing this form and returning it to the University Safety Office.

Report Completed by: _____________________ Date: ____________

<table>
<thead>
<tr>
<th>Date of incident</th>
<th>Time</th>
<th>Campus</th>
<th>Exact Location</th>
</tr>
</thead>
</table>

Name of Injured Party. ____________________________

Address ________________________________________

________________

________________

________________

Occupation ____________________________

Staff/Student/Other ____________________________

Details ______________________________________

Facility ______________________________________

Describe the nature and extent of injuries suffered.

First Aid Treatment Y/N? ☐

Describe the circumstances and nature of the accident/incident.

Doctors Name & Address ______________________________________

Referred to Doctor Y/N? ☐

What was the person doing at the time of the incident Work/ Other Activity, Describe: ____________________________

Taken to Hospital Y/N? ☐

By ____________________________

Hospital ____________________________
Specify

What protective clothing was worn at the time of the incident?

Witness to incident? Y/N

Name

Was any machinery or vehicle involved? Give Details:

Phone

Address:

Comments or additional information

Reported By:

Phone No.

Department/Address

OFFICE USE ONLY

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action</th>
<th>Reported Ins./ HSA</th>
<th>Acknowledged</th>
<th>Date Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>F/A</td>
<td>T/L</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 6 – SAFETY DECLARATION FORM
Safety Declaration

I declare that I have read the safety information contained within this document. I am aware of the hazards associated with my work in the department and I agree to abide by the guidelines set out herein. I will seek advice from my supervisor, project supervisor, or laboratory supervisor, where appropriate, if I am in doubt about any safety matter relating to my work.

Name (Block capitals) .................................................................

Category: (please tick only one box)

- Staff          
- Postdoctoral Researcher  
- Postgraduate Student  
- Undergraduate Student  
- Visitor

Signature .................................................................

Date .................................................................

This form must be completed by all staff, undergraduate and postgraduate students, postdoctoral researchers and visiting workers before work commences.
# EMERGENCY DIRECTORY

<table>
<thead>
<tr>
<th>EXTN.</th>
<th>NAME</th>
<th>ROOM NO.</th>
<th>SAFETY POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>4669</td>
<td>Bevan, Mairead</td>
<td>2.27</td>
<td>Fire Warden / First Aid Box</td>
</tr>
<tr>
<td>4680</td>
<td>Bracken, Colm</td>
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### USEFUL TELEPHONE NUMBERS:

#### NUIM Doctors

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<th>Doctor</th>
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<td>Dr. Gaffney</td>
<td>Mon – Fri</td>
<td>08:30 – 12:00</td>
<td>01 6291169</td>
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<td>Mon, Tue, Wed, Thurs</td>
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<td>Fri</td>
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<td>Sat</td>
<td>09:00 – 11:30</td>
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<td>Dr. Cowhey</td>
<td>Mon – Sat</td>
<td>09:00 – 11:30</td>
<td>01 6289044</td>
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<td>Mon – Fri</td>
<td>14:00 – 17:00</td>
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<td>Mon – Sat</td>
<td>18:15 – 19:00 (excl. Tues &amp; Sats)</td>
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<tr>
<td>Dr. Nolan</td>
<td>Mon, Tues, Fri</td>
<td>11:00 – 13:00</td>
<td>01 6285943</td>
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<td>Mon, Tues, Fri</td>
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<td>Wed, Thurs</td>
<td>12:30 – 14:15</td>
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<tr>
<td>Dr. O’Rourke</td>
<td>Mon – Fri</td>
<td>09:00 – 12:30, and 15:00 – 17:00</td>
<td>01 6285210</td>
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<td>Sat</td>
<td>09:30 – 12:00 (appointments)</td>
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<td>Doctor on Call</td>
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After surgery hours: If Dr. Gaffney is not on-call a recorded message gives details of the doctor on-call and the relevant contact telephone number.

**In an emergency contact the medical centre through switch/security Ext 3333**

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<tr>
<th>Department</th>
<th>Contact Information</th>
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<tr>
<td>Campus Nurse</td>
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<td>James’ Hospital</td>
<td>Burns unit</td>
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<td>01 4162350</td>
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<tr>
<td>Beaumont Hospital</td>
<td>(Poison Info. Unit)</td>
<td>01 8092566</td>
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<td>01 8379964</td>
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<td>Garda</td>
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<td>(Naas)</td>
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# Emergency Contacts/Phone numbers

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<tr>
<th>Security:</th>
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<th>(01) 708 3929</th>
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<tr>
<td>University Safety Officer:</td>
<td>Mr. Brendan Ashe</td>
<td>(01) 708 4720</td>
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<td>Gardaí:</td>
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<td></td>
<td>Maynooth Garda Station</td>
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<td>Fire Brigade:</td>
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<tr>
<td>Medical Centre:</td>
<td>Mon – Fri: 09.30 - 16.45</td>
<td>(01) 708 3878</td>
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<tr>
<td>University Doctor:</td>
<td>Dr. Denis Gaffney</td>
<td>(01) 629 1169</td>
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<tr>
<td>Local Doctors:</td>
<td>Dr. Maurice Cowhey</td>
<td>(01) 628 9044</td>
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<td></td>
<td>Dr. Christopher O’Rourke</td>
<td>(01) 628 5210</td>
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<tr>
<td></td>
<td>Dr. Denise Nolan</td>
<td>(01) 628 5943</td>
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<td></td>
<td>Doctor on Call (After Surgery Hours) - If Dr. Gaffney is not on-call, a recorded message gives details of the Doctor on-call and the relevant contact telephone number.</td>
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<tr>
<td>Head of Department:</td>
<td>Prof. J. Anthony Murphy</td>
<td>(01) 708 3771</td>
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<tr>
<td>Department Office:</td>
<td>Ms. Gráinne Roche</td>
<td>(01) 708 3641</td>
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<td>Chief Technical Officer:</td>
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<td>Dr. Marcin Gradziel</td>
<td>(01) 7084770</td>
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<td>Dr. Peter van der Burgt</td>
<td>(01) 7083782</td>
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<td>Fire Wardens:</td>
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<td>First Floor:</td>
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<td>Mr. Gerard Mc Mahon</td>
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