

Guidance on health and safety for Principal Investigators supervising undergraduate student research projects September 2015

Summary

The guidance below assists the PI to manage health and safety requirements when UGs work in a research lab and gives guidance on different types of projects and links to relevant documents and information. It has been approved by the Faculty Teaching Committee and Faculty Management Committee.

If a UG student is working in a research lab (for example as part of a degree related project or undergraduate research opportunity programme (UROP)), it is the PIs responsibility to ensure that individuals are properly supervised and receive the necessary instruction, information and training to ensure that they can carry out their work safely.

Competence in health and safety is broadly defined as knowledge, experience and training. Undergraduates (UGs) working in research labs will generally be regarded as having less competence than post graduate students and staff when working in a research area due to limited experience, knowledge and training. Therefore the Principal Investigator (PI) plays a vital role in ensuring UGs do not get harmed, harm others, damage equipment or the environment while working in their research lab.

UG Project types - assessments and induction summary

UG Project in an Imperial College *laboratory or office	UG project <u>hosted</u> in non-Imperial premises in the UK	UG fieldwork project on Silwood Park Campus	UG fieldwork project in the UK.	UG project abroad (hosted or fieldwork)
<p>Day 1 induction to be completed.</p> <p>Computer safety checklist to be completed for office based projects.</p> <p>*Hazardous Area / Local Laboratory Induction record to be completed for lab based students.</p> <p>*Risk assessments for lab work to be in place before the project starts.</p> <p>*Lab based UGs to attend appropriate lab safety session. Details provided by UG administration.</p>	<p>Complete the Offsite assessment for Hosted work: Off Site Hosted Research & Teaching Activities Form (Hosted1) and return to FoNS Safety Team at least three weeks before work starts for review.</p>	<p>Day 1 induction to be completed for all students.</p> <p>Complete the Silwood Offsite Assessment procedure. Send completed assessments and SOPs to Faculty Safety Team for review at least three weeks before work is due to start.</p> <p>Fieldwork on the campus grounds has to be assessed and approved by the Silwood Park Research Management Committee before starting.</p>	<p>Assess fieldwork using the College Fieldwork Risk Assessment Form (FW1) and the Emergency Response Protocol and send to Faculty Safety Team at least three weeks before start date.</p> <p>Where possible attend the Fieldwork First Aid course.</p>	<p>Assess fieldwork using the College Fieldwork Risk Assessment Form (FW1) and complete the Emergency Response Protocol. Send to Faculty Safety Team at least three weeks before departure date.</p> <p>Work in countries where the Foreign and Commonwealth Office advise against all or essential travel is not permitted for UG students and work must be planned so it avoids lone work.</p>

**For detailed information on safety requirements for lab work and UG projects see guidance below.*

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Laboratory work for UG projects

Induction and training

All UGs working in a research environment should complete a Day 1 induction for the area they are located in.

Local lab inductions are given by the supervisor or an experienced member of the research group and kept by the group. This will ensure the UG is aware of general lab procedures and issues (waste routes etc). The lab induction template is available at: [Local laboratory / hazardous area induction record](#)

UGs must be locally trained in techniques and safety control measures associated with the procedures they are carrying out, and where necessary attend the appropriate College safety training course (see below).

The Faculty Safety Team can provide a UG lab safety session for UGs entering research labs for projects, details of when the courses run can be obtained from the Dept. UG administration office.

Accidents and near misses

UGs working in a research environment need to be reassured that the College operates a no blame culture and all incidents, no matter how minor, need to be reported to their lab supervisor. The lab supervisor can then identify if the incident needs to be reported using the online reporting system (SALUS).

UGs doing projects in non-Imperial premises or on fieldwork in the UK or abroad must also report any issues concerning their security, health or safety at the earliest opportunity to their project supervisor.

Lone working & supervision

UG students must be appropriately supervised and monitored when working in a laboratory area. Due to their relative inexperience UG students **must not** be left to lone work in the lab. UG students cannot supervise each other, an experienced competent member of the lab must be available.

Project supervisors or nominated deputies must monitor UGs to ensure they comply with the local lab rules and use control measures (i.e. wearing personal protective equipment).

Risk assessments and procedures

Risk assessments for UG lab work must be in place before the project starts. Findings of the risk assessments must be communicated to the UGs to ensure they understand the hazards they are working with, the appropriate control measures and what to do if something goes wrong.

UG students should be encouraged to take part in the assessment process but they should not be expected to write them without assistance from their lab supervisor.

Lab hazards – ionising radiation

If UG students are observing an experienced member of the group working with radioactive material, they do not have to register or attend Principles training. The supervisor of the work will still need to provide them with information regarding the risks to their health from exposure to ionising radiations and the precautions to be taken to minimise exposure.

If UGs need to work with radioactive material they can do so upon completion of the following:

- The "[Principles of Radiation Protection](#)" training course or the '[X-Ray Safety Awareness Training](#)'
- Completed a [Personnel Registration Form](#) and sent it to the College Radiation Protection Officer (j.fear@imperial.ac.uk).
- Had a local radiation induction by the appropriate Radiation Protection Supervisor ([Radiation induction record](#))
- Are supervised by a member of the research group who is also working with the radioactive material

Lab hazards – biological

UGs handling biological material must be supervised and made aware of the risk assessments and, where appropriate, the potential health risks including the signs and symptoms of disease.

Those using genetically modified material must have been made aware of the findings of the GM risk assessment and be clear on emergency procedures and waste routes.

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If any are involved with work involving hazard group or GM Class 2 or 3 or working at containment level 2 or 3 they must be registered with Occupational Health via the [Bio agents Health clearance](#) procedure and complete a training record for working with the specific pathogens or biological agents.

Lab hazards – chemicals

Ensure students are trained, know how to deal with emergency situations and that they always use identified control measures. The importance of good housekeeping and clearing up and cleaning / decontaminating work areas and equipment after they have finished in the lab area must be made clear and monitored by their supervisors.

Lab hazards – non ionising radiation

- **Lasers**

The lowest class of laser should be used to achieve the project aims. Where the project requires the student to use a class 3B or 4 laser or laser system, students need to complete the appropriate training, register online as a laser user and receive local training in use of the particular laser system they are working with.

The findings of the laser risk assessment need to be explained and they must be supervised at all times. The training needs to include understanding the maximum permissible exposure (MPE) and the Nominal Ocular Hazard Distance (NOHD) relating to the laser(s) being used.

The [Introduction to laser safety course](#) is online and must be completed before the students uses the lasers.

- **Ultraviolet (UV) light sources**

Where UV light sources are to be used students must be trained, made aware of the hazards and be instructed in the use of the relevant protective equipment. There have been several incidents of students receiving burns from UV sources to their face and hands due to lack of appreciation of the risks associated with using devices that generate UV.

Lab hazards – gases

UGs are not permitted to set up their own equipment or experimental rigs when the use of research gases is required. The setting up and connections must be carried out by an experienced member of the research group (with the assistance of the UG if appropriate), and all final connections and checks completed by the experienced member of the lab before the UG uses the equipment.

Those supervising students using research gases must have attended the College course: [Compressed Gases and Connecting Gas Regulators](#)

Lab hazards – cryogenics

The hazards from cryogenic liquids must be explained and any UG using these items (asphyxiation, cold burns and damage to the eyes from splashes) must be supervised at all times.

Those supervising students using cryogenics must have attended the College course: [Cryogenic Gases and Decanting Liquid Nitrogen](#)

Control measures – fume cupboards (FC), microbiological safety cabinets (MSC) or other local exhaust ventilation (LEV)

If the project involves the UG using FC, MSC or LEV for operator protection the individual training the UG must ensure the principles of their operation and the limitations of use are described. A common problem with those not used to working in labs is not using these items correctly or for the right reasons.

UGs should also be aware of what to do if the control measure they are using fails (i.e. the airflow alarms suddenly activate).

Advice and technical support

- Lab supervisor and Principal Investigator supervising the project should be the first point of contact for any health and safety issues
- Each Dept. has appointed individuals who can advise on health and safety issues
- The Faculty Safety Team can also assist, review assessments and give advice, particularly if the student lab work involves issues not covered in this guidance document.