Topic	**Undergraduate Project Supervision**
Issues for consideration	• **Provision of appropriate skills training** • **Ensuring appropriate support and guidance**
Faculty	Natural Sciences
Department	All FoNS Departments
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Description of the approach taken	Most UG and PGT students in Life Sciences, Chemistry and Physics carry out substantial research projects in research labs as part of their degree programmes. The FoNS safety team have developed generic guidance for project supervisors to help them ensure that all health and safety requirements for the safe conduct of these projects has been complied with. See attached **Appendix**.
Benefits of this approach	The document provides a single go-to source of information for academic staff supervisors of research projects. . It was written by the FoNS safety team and approved by the FoNS Education and Management committees
Ways in which your approach has been informed by student engagement	Issues around non-uniformity of safety training and preparation for students undertaking research projects has been raised by student reps at both UG and PGT FoNS staff-student committee meetings – the initial guidelines for UG students were extended (in June 2016) to encompass PGT students as the result of these discussions.
Advice for others	The attached guidance is supplied to all UG and PGT supervisors (and students) in FoNS Departments with research projects. Related guidance could well be applicable to other areas of College.

Maximum 400 words

Faculty of Natural Sciences

Guidance on Health and Safety for Principal Investigators Supervising Undergraduate and Masters Student Research Projects *June 2016*

Summary

The guidance below assists the Principal Investigator (PI) to manage health and safety requirements when Undergraduate and Masters Students 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 Education Committee and Faculty Management Committee.

If a student is working in a research lab as part of their degree, it is the PI's 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. Students working in research labs will generally be regarded as having less competence than staff when working in a research area due to limited experience, knowledge and training. Therefore the PI plays a vital role in ensuring students do not get harmed, harm others, damage equipment or the environment while working in their research lab.

Project types - assessments and induction summary

Project in an Imperial College *laboratory or office	**Project hosted in non-Imperial premises in the UK**	**Fieldwork project on Silwood Park Campus**	**Fieldwork project in the UK.**	**Project abroad (hosted or fieldwork)**
Day 1 induction to be completed. Computer safety checklist to be completed for office based projects. *Hazardous Area / Local Laboratory Induction record to be completed for lab based students. *Risk assessments for lab work to be in place before the project starts. *Lab based students to attend appropriate lab safety session. Details provided by Dept. student administration	Read guidance on 'Offsite Work'. 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.	Day 1 induction to be completed for all students. Go to: Silwood Fieldwork Experiments page and complete the application form and the fieldwork risk assessment. Return both documents to the Ecological Analyst at least three weeks before project start date. Once approval given work can proceed.	Read guidance on 'Offsite Work'. Assess fieldwork using the College Fieldwork Risk Assessment Form (FW1) and send to Faculty Safety Team at least three weeks before departure date. Where possible attend the Fieldwork First Aid course.	Read guidance on 'Offsite Work'. Assess fieldwork using the College Fieldwork Risk Assessment Form (FW1) and send to Faculty Safety Team at least three weeks before departure date. Work in countries where the UK Foreign and Commonwealth Office advise against all or essential travel is restricted. Work must be planned so lone work is avoided

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

Faculty of Natural Sciences

Laboratory work for Masters Student projects

Induction and training

All students 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 student is aware of general lab procedures and issues (waste routes etc). The lab induction template is available at: Local laboratory / hazardous area induction record

Students 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 run a Basic Lab Safety course approximately once / 6 weeks. Individuals can register to attend via this link: Faculty of Natural Sciences Basic Lab Safety Training.

Recording health and safety training

All health and safety related training should be recorded using the online system accessible by staff and students: Health and Safety Training Records Site

The system requires the relevant induction form, SOP or risk assessment or evidence of attendance at College Health and Safety Training courses to be scanned and uploaded to the relevant section of the record system by the individual staff or student member. The PI can check the training has been recorded by accessing the system and monitoring the records uploaded by all those who have identified them as their PI.

The three areas Health and Safety Training can be recorded are:

1. Health and Safety Inductions
2. Procedural and Equipment Safety Training
3. College and External Health and Safety Courses

Safe Lab Practice

During training in the local lab area students need to be aware of the requirements of the Faculty and Dept. Safe Lab Practice document.

A link to the document and the requirements can be found on the appropriate Dept. health and safety webpages.

Accidents and near misses

Students 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).

Students 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

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

All postgraduate students must adhere to the arrangements for lone working in their Depts.

Project supervisors or nominated deputies must monitor students 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 lab work must be in place before the project starts. Findings of the risk assessments must be communicated to the students to ensure they understand the hazards they are working with, the appropriate control measures and what to do if something goes wrong.

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 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 students 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
Students 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.

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.

Links to Laser User Registration, Laser Equipment Registration and Dept. appointed Laser Safety Officers are on the relevant Dept. Health and Safety webpages.

- **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
Undergraduate and Masters Students 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 Undergraduate/Masters Student if appropriate), and all final connections and checks completed by the experienced member of the lab before the student uses the equipment.

All postgraduate students must be trained and supervised appropriately.

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 student 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 using FC, MSC or LEV for operator protection the individual training the student 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.

Students need to 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 points 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.