



# University of Lincoln

University of Lincoln  
Brayford Campus  
Lincoln  
LN6 7TS  
UK

**School of Computer Science**

**Fab Lab INB1104**

**Student Induction Manual**



# **Fab Lab (INB1104) Student Induction Manual**

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## **Fab Lab (INB1104) Student Induction Manual**

### **1: Introduction:**

The purpose of this student induction manual is to ensure that you, the fab lab user, are aware of the procedures in place for carrying out activities in the School of Computer Science Fab Lab located in INB1104. These activities may include demonstrations, group workshops, or individual project work. There is an emphasis on Health and Safety, including a description of required personal protective equipment (PPE), how to evacuate in case of an emergency and information on what to do should an accident occur. The roles of lecturing staff, technical staff, and the student are outlined.

A list of available equipment and tools is provided, along with the function or purpose of each item. The hazards and risks associated with working in the Fab Lab are explained. If you have any queries relating to any item in this manual, please contact your lecturer.

## **Fab Lab (INB1104) Student Induction Manual**

### **2: FAB LAB Practices**

The top priority for the Fab Lab is for users to gain the knowledge, skills and experience necessary to engage in planning, making and evaluating their own project work through the various facilities available.

Anybody wishing to work in the Fab Lab must complete a mandatory induction session. There are technical staff on hand to provide support to individual students or staff; he or she is competent in workshop related activities.

#### **GENERAL FAB LAB RULES**

##### **Dress Code**

- No JEWELLERY (may present a tangling hazard)
- No food or drink in the workshop
- No flammable liquids in the workshop (including lighters)
- No flammable material in the workshop
- No storage of personal items in the workshop
- No headphones/MP3 players/mobile phones to be used in the Fab Lab

### **3: Role of the Lecturer:**

The role of the lecturer is as follows:

- to provide students with academic guidance on the making of their work
- to deliver and record – together with the lab manager - appropriate induction sessions to all students using the lab
- to deliver workshops (possible supervision by demonstrators) and classes as appropriate
- to ensure that students have the necessary skills to make their own work in a safe manner
- to provide feedback on individual project work in the case of individual project work, the lecturers and lab manager will agree in advance with the student what can and cannot be attempted by the student on his or her own, and which pieces of equipment the student is permitted to use.

It is the responsibility of the lecturer to ensure that:

- Their students are instructed in safe working and housekeeping practices
- Their students are prohibited from working alone or on dangerous processes
- Any students working in an unsafe manner are removed from the workshop.

#### 4: Role of the Technical Staff

The role of Fab Lab staff is as follows:

- Organising, preparing and setting up for workshops, student induction, demonstrations, project and research work
- To be present at each laboratory or workshop session to provide technical assistance or to provide demonstrations
- Provide technical assistance to lecturers and students on the appropriate operation and use of equipment and materials.
- Establishing and maintaining stock control of equipment and consumable materials.
- Arranging for safe disposal of used materials
- Participate in the carrying out of safety audits in the Fab Lab in co-operation with other staff (i.e. the H&S Department) – including twice yearly Health and Safety inspections and yearly audits.
- Ensure that laboratories, materials and equipment are maintained, tidy and in good order. Technical staff may also advise students on pre-project planning, and on processes and equipment.

Technical staff are not responsible for accidents that may occur, tools and machinery can be dangerous when used without the proper care and attention, you are fundamentally responsible for your own safety and for the safety of others around you.

The University has a responsibility to ensure you are aware of possible hazards, have relevant training in the mitigation of risk, your Induction, and that you act responsibly in the FAB Lab.

Technical staff will train you in the use of specific pieces of equipment as required. Your lecturer will have sent you this Student Induction Manual via email before the start of your induction.

You will not be allowed to use the fab lab facilities if your signed induction manual is not present under your BlackBoard student account. It must contain your signature and the signature of your lecturer and the technical staff member who trained you.

## **5: Responsibility of the Student Generally:**

Fab Lab Students have the responsibility to keep their workspaces clear of debris and hazardous materials and to follow guidance as set out in their induction, the Schools general H&S guidance must also be kept in mind and followed where appropriate (for example in the case of evacuation).

The Fab Lab access door is to be kept clear at all times. Waste is to be placed in the bins provided and clear walkways must be maintained. Students have responsibility for their own safety and for others around them.

- No food or alcohol is to be consumed in the Fab Lab.
- Always wear appropriate clothing, including sensible foot ware and eye/ear protection where required.
- Always tie back long hair, remove personal jewellery and guard against loose clothing when using moving machine tools.
- Always use the guards provided on equipment never remove or disable them
- Familiarise yourself with the correct operating procedures for workshops and machinery.
- Observe safety instructions and unless you are absolutely confident to undertake an operation safely, DO NOT PROCEED, stop and seek advice.
- You are requested to make known to your lecturer or a relevant staff member any information, such as a medical condition which may affect your safety in the Fab Lab or your treatment in the case of an accident. This information is confidential and is for Health & Safety purposes only.
- Always keep fire escapes, corridors or access routes clear.
- It is not permitted to remove equipment or tools from the FAB Lab without prior agreement of both your Lecturer and the Fab Lab Manager. Any borrowed equipment must be signed for in order to keep track its whereabouts, failure to return equipment will be pursued. Students have the responsibility to ensure that all equipment borrowed from the College is returned promptly and in good working order.

**Further specific responsibilities of students working in the Fab Lab include:**

- Co-operating with lecturing and technical staff in relation to any instructions that may be issued in relation to the use of equipment.
- Complying with requirements for wearing personal protective equipment (PPE)
- Ensuring that jewellery is removed (where this poses a potential hazard) and long hair and loose clothing are secured before entering the lab.
- Ensuring that work is being carried out in a safe manner that will cause no harm to self or others.
- Tidying the workspace on completion of a task and prior to departure from the Fab Lab.
- Refraining from using headphones or mobile phones (these may pose a distraction resulting in increased risk to you and those around you).
- It is the responsibility of the student to make use of the required items of PPE, equipment where PPE is required it is shown by relevant signage at each equipment station.
- Students must ensure that they apply safe working and housekeeping practices at all times.
- Students must report any damaged equipment or damaged PPE to technical promptly.

**6: Induction**

Student induction will generally take place at the start of the academic year or when an academic unit may first require access to the FAB Lab, this will be organised by academic and or technical staff.

You will be required to attend a short induction session in the Fab Lab where specific hazards will be described to you. The induction will last approximately half an hour, video and practical demonstration will be used to familiarise you with safe practises and use of the facilities. This will be undertaken by your Lecturer with the assistance of technical staff.

You will be required to sign this induction manual which will be presented to you as a mini course assignment. This states that you have undertaken your induction and that you agree to follow the rules and guidance described to you at the induction and within this document.



## 7: Access to Workshop

Students **MUST** complete their formal lab induction before they are permitted to make use of the Fab Lab facilities.

Some School of Computer Science students may not require access to the FAB Lab as part of their studies. Identified students who require access must undertake the formal induction, discuss your access needs with your lecturer and decide if your induction is needed. Fab Lab facilities are available to certain University courses only, if you are eligible to use the Fab Lab you will be informed by your lecturer.

This will include:

- Introduction by academic staff to the FAB LAB, its location and the available facilities and technical support;
- Overview by academic and technical staff of Health and Safety requirements, including the provisions of this induction manual.
- Demonstration by Fab Lab technical staff of equipment and associated hazards and risks, this is generally delivered to small groups on an ongoing basis as required and may require the student to watch relevant safety videos, links to these are provided towards the end of this document.
- Unsupervised access to the Fab Lab is not permitted (student 'Lone Working' is also not permitted). Access slots are to be arranged in advance, booking of a work station or specific facilities is usually required; discuss your needs with your lecturer who will liaise with lab staff to arrange space for you.

## 8: Available Equipment.

Equipment	Purpose	Hazards
100W CO2 Laser Cutter	Automated cutting of wood and plastics, Requires CAD drawing	Fire, Exposure to Laser (eye damage), Burns
Prusa 3D Printer	Automated production of plastic parts Requires CAD drawing	Burns, Entanglement, Fumes
Bosch PBD40 Bench Drill	Drilling of metals, Plastics and Wood	Entanglement, Burrs, Cuts and Abrasions, Workpiece expelled at speed
Soldering Stations	Soldering of Electronics components	Burns, Fumes, Chemical Exposure (fluxes and solder)
Tool Trolley (Hand Tools)	General hand tools used in the production of items	Cuts, Abrasions, Bruising
Screw Drivers,		
Spanners,		
Pliers,		
Wire Cutters,		
Hacksaws,		
Knives, Hammers etc		
PPE – located in the PPE cupboard – use as needed (keep an eye on equipment signage and return when finished)		

## 9: Personal Protective Equipment (PPE)

PPE is mandatory for certain types of lab equipment, follow the signs in the lab.

A PPE cupboard is located in the lab; here you will find items like ear defenders, eye protection and gloves. Check the lab equipment you intend to use is available and take note of the signs nearby, the required PPE is described by the signs. Ensure that you use the required PPE and that you return it to the PPE cupboard when you have completed your task. Ensure you work safely, ask for assistance if you are unsure how to use specific equipment.

PPE must be in serviceable condition and must not be used if damaged, please report damaged PPE to technical staff. PPE should be cleaned prior to use and again before return.

If you are unsure which type of PPE to use seek advice.

## 10: Evacuation in Case of Emergency.

There is only one access door in INB1104. In case of an emergency such as fire (including the building fire alarm going off) and the lab must be evacuated, leave in an orderly manner, follow the fire exit signs and leave the building via the fastest route following the green exit signs. You have been made aware of the assembly point for each building you use as part of your general University induction. Attend your assembly point area so that you may be accounted for. University Fire Marshalls will be on hand to guide you where needed. If you have made yourself known to the University as requiring a PEEP (Personal Emergency Evacuation Plan) or additional help during evacuation (if you use a wheel chair for example) those arrangements will come into force and you should follow the guidance given to you when you disclosed your additional requirements to the University.

The Assembly Point for the Isaac Newton Building is located at the rear of the building near the Typi's.

## **11: Identification of Risks and Hazards in the Fab Lab**

Appendix 1 contains typical risk assessments maintained on a yearly basis by the University for the equipment in the Fab Lab.

***Please scan and understand the general content of these documents.***

For each piece of equipment a risk assessment is undertaken describing hazards, risks and preventative measures. Familiarise yourself with the general theme, typically caution when using equipment is advised, the use of PPE (Personal Protective Equipment) is mandatory in many cases and is strongly encouraged where not mandatory.

Awareness of general H&S procedures is not only a sensible thing to address for the Fab Lab, as a student moving forward into your future career you will encounter H&S in whichever career path you take, understanding the general principles will prove very useful to you as you move forward, it is advised that you treat H&S related materials as part of your general learning experience here at the University of Lincoln.

## **12: What to do in case of an accident.**

If you are able and in the first instance, report the incident to technical staff who will take appropriate action, this may involve summoning a first aider or an ambulance or both. Such incidents will be recorded in the schools accident book.

Minor injuries are not uncommon in workshop environments, minor burns and abrasions are unfortunately quite common, University first aider's are more than capable for the majority of minor injuries. Where a more serious incident has occurred a first aider will attend promptly and provide the immediate care required whilst waiting for an ambulance to attend.

Clearly the best course of action as an individual is to avoid accidents in the first place. Pay careful attention to the advice and guidance set out in your induction and in this manual to prevent personal injury.

A first aider can also be directly summoned by dialling 6666 from a UoL internal phone or call: 01522 886666 from a mobile.

## 13: Bringing Equipment, Materials or Chemicals into the FAB Lab


Equipment, Materials and Chemicals not normally stocked by the Fab Lab which are owned by a student must be cleared for use in the Lab. Before bringing any such items into the Lab discuss with technical staff or your lecturer the items you intend to bring. Some external items may pose hazards and risks unaccounted for by the lab's H&S provisions. If you are unsure how this may apply to you ask technical staff first.

## 14: University of Lincoln H&S Department Student Safety Leaflet

### HOUSEKEEPING

**GOOD PRACTICE**

- **DO NOT** place bags in walkways.
- Place electrical items as close as possible to electrical sockets to avoid trailing wires.
- **NEVER** place objects in front of fire exits.
- If you spill liquids, wipe them up.
- A build up of rubbish can pose fire, pest or health risks.

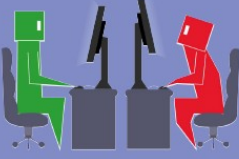


- It is important that rubbish is placed in bins and not left on tables or work stations
- If you notice the floor is slippery, notify a member of staff who will locate a wet surface sign.

### DISPLAY SCREEN EQUIPMENT


**GOOD PRACTICE**

- Set up a comfortable workstation.
- Regularly look away from your screen at more distant objects.
- Take regular breaks away from your workstation.
- Visit an optician for regular eye check ups.
- Follow DSE workstation guide, available at Student Safety via Blackboard.



### HEALTH AND SAFETY DEPARTMENT

Watch our Fire Safety Video  
Visit Student Safety via Blackboard  
Talk to us at Welcome Week  
Email us at: [safety@lincoln.ac.uk](mailto:safety@lincoln.ac.uk)  
**LOOK OUT FOR REGULAR STUDENT SAFETY MESSAGES AROUND CAMPUS.**



### STUDENT RESPONSIBILITY

Health and Safety is everyone's responsibility

**DO**

- Obey all safety signs and warnings.
- Seek advice from tutors / supervisors when needed.
- Read and comply with all safety instructions provided by your tutors / supervisors.
- Know how to exit the building you are in, in the event of an emergency.



**DO NOT**

- Take part or encourage any other person to take part in potentially dangerous situations.
- Use equipment which you have not been trained to use or for which it was not intended.
- Damage or misuse equipment supplied for Health and Safety purposes. (e.g. Fire extinguishers)

### FIRE EVACUATION


On activation of a fire alarm . . .

- **DO NOT** use lifts.
- Leave calmly via your nearest available exit.
- Where possible close fire doors behind you.
- Make your way to the building's fire assembly point.
- Fire Action Notices will tell you where your assembly point is.
- **DO NOT RE-ENTER** the building until you are instructed to do so.
- Listen to the instructions of the appointed Fire Marshals. They wear high visibility vests.

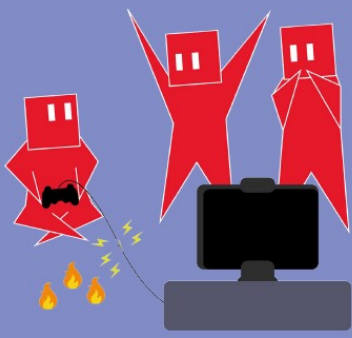


### ON DISCOVERING A FIRE

- Operate the nearest fire alarm point.
- Leave the building calmly via your nearest available exit.
- Dial 999 and request the fire service (9999 from a University phone).
- Dial 01522 886062 and inform security that there is a fire (6062 from a University phone).



## WELCOME TO THE UNIVERSITY OF LINCOLN FROM THE HEALTH AND SAFETY DEPARTMENT




### STUDENT SAFETY LEAFLET

### REFUGE AREAS

If you have mobility issues, contact Student Wellbeing. They will prepare a Personal Emergency Evacuation Plan (PEEP) for you, which will address your individual needs and establish what assistance you require.

Please make sure your tutor / lecturer is aware of your requirements, this will usually involve going to a refuge area.

- There are suitable refuge areas at each stairwell.
- Use the call button or phone to contact security and request assistance.
- If phones are not working, ask a passing Fire Marshal to tell security where you are.
- Guidance will be displayed in the area for you to follow.
- The University has evacuation chairs on site, and there are trained operatives available to aid your evacuation.





### FIRST AID

First Aid care will be available for students who become ill or injured on University teaching premises during working hours.

The University have trained first aiders and defibrillator operators located around the campus. If you or a fellow student requires medical assistance you should...

- Inform a nearby member of staff.
- Telephone the switchboard on 6666 from a University phone or 01522 886666 from a non-University phone.
- Tell them your precise location and provide details about what has happened.
- They will then assist you by contacting a nearby first aider.

Some buildings have first aid rooms. These rooms do not have First Aiders in them, you will need to summon a First Aider.



## 15. Induction Completion Signature

I have received the FAB Lab formal induction and agree to adhere to the guidance set out in this manual and the practical induction session.

**Before signing this document please watch these videos in section 16. These provide further information relating to Health and Safety.**

Welcome to the Fab Lab, we hope you enjoy your experience.

<b>Student Name:</b>	
<b>Course or Unit</b>	
<b>Student ID:</b>	
<b>Student Signature:</b>	
<b>Date of Induction:</b>	

## 16. Additional relevant information links

Before signing this document please watch these videos and read the documents, these provide further relevant information relating to Health and Safety.

### University of Lincoln Health and Safety Department Video

<https://www.youtube.com/watch?v=8dEUD-gFrYo>

### Knives and Sharps

#### Policy

[https://universityoflincoln.sharepoint.com/sites/HS/ResourcesLibrary/Document%20Library/Sharp%20Blades%20and%20Knives%20Policy%20\(Reviewed%20April%202019\).pdf](https://universityoflincoln.sharepoint.com/sites/HS/ResourcesLibrary/Document%20Library/Sharp%20Blades%20and%20Knives%20Policy%20(Reviewed%20April%202019).pdf)

#### Guidance

<https://universityoflincoln.sharepoint.com/sites/HS/ResourcesLibrary/Document%20Library/Sharp%20Blades%20and%20Knives%20Guidance.pdf>

### Electrical Safety Video

<https://www.napofilm.net/en/napos-films/napo-in%E2%80%A6shocking-situations>

### Manual Handling Video

<https://www.napofilm.net/en/napos-films/napo-lighten-load>

## Hand Tools Risk Assessment Detail Sheet

### **Pillar Drill Risk Assessment Detail Sheet**

Pillar Drill Risk Assessment Detail Sheet

Task	Hazard	Who might be harmed	Before Controls (Initial risk)			Control Measures (Existing)	Control Measures (Proposed)	After Controls (Revised risk)		Overall Risk
			P <sup>I</sup>	S <sup>I</sup>	3+			P	S	
Pillar Drill	CUTS AND ABRASIONS	Operator or bystanders	3	2	6	Restricted access area.		2	2	4
	Eye Injuries from ejected materials				Eye and Ear Protection located in Wall Cabinet next to Cross Cut saw.					
	Damage to hands or fingers in contact with drilling bits				Emergency stop button signs.					
	Hand injuries from material handling				Machine guard in place.					
	ENTANGLEMENT	Operator	2	3	6	Clamping device availability.				
	Hair pulled into drilling bit				Inducted Staff and Student use only.	1		3	3	
	Cloths and Jewellery pulled into drill bit	Operator				Use restriction when working alone.				
	SLIPS AND TRIPS		2	2	4	Maintenance.				
	Material handling					House Keeping.				
	Materials left on machine or on floor	Operator or bystanders				Bystanders at discretion of Authorised Technician.	2	2	4	
	EJECTED MATERIAL		2	1	2					
	Materials being drilled						2	1	3	

Risk Assessment:

Low

☒

Medium

☐

High

☐

Highest Score on any line

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