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| **NAME (Student ID Number)**  **See overleaf** | | | **LOCATION-**  **3rd / 4th floor electronics/PC laboratory** | | | |
| **SCHOOL/DEPARTMENT:**  **Electrical Engineering, Electronics and Computer Science** | | | **BUILDING: Electrical Engineering and Electronics, A-Block** | | | |
| **TITLE OF PROJECT- Year 2 Project standard risk assessment template** | | | | | | |
| **Description of Work- Undergraduate Low voltage electronics workbench and projects** | | | | | | |
| **HAZARDS**  **(Location, equipment and substances, activities)** | **WHO CAN BE HARMED?** | **CURRENT CONTROLS** | | **RISK SCORE** | **ADDITIONAL CONTROLS REQUIRED**  **(To include responsibilities and timescales)** | **RESIDUAL RISK SCORE** |
| 1. **Live electrical systems with exposed high voltage sources over 30V DC (Live Working) in Laboratory:** Electric shock/death, burns, explosion/fire.   **Including Oscilloscopes, benchtop power supplies, Signal generators etc**   1. **Soldering-**   Fumes, burns, Fire, materials, chemicals. Specifically asthma triggered by colophony sensitization.   1. Hand tools- Cuts, puncture wounds and abrasions. 2. Manual handling of equipment or other objects. Sprains, fractures, bruises. 3. Chemical Hazards. PCB production, solvent cleaners, aerosols. Damage to eyes, skin, lungs through splashes, vapour or indirect contact. Fire. Damage to environment. 4. DSE (Design work, programming, producing documentation). RSI, poor posture leading to muscular discomfort etc. 5. Slips Trips and Falls 6. Food and drink spillage and contamination   **ADD ANY EXTRA RISKS** | Person/s working on the electrical system. Also others within range of possible explosion or fire and also by accidental or indirect contact with voltage sources (i.e. touching someone else who is receiving an electric shock).  Person soldering, Others within immediate work area.  Tool user.  Person handling items.  Person using chemicals, those in the vicinity. Environment.  Person operating DSE.  Any persons in the vicinity  Any persons in the vicinity  **YOU CAN THINK OF!** | No Live Working is permitted at any time.  Never remove the covers from equipment containing a source of high voltages and/or currents.  Check the PAT test labels on equipment before use and ensure they are in date.  Visually inspect equipment for signs of fault damage before use.    Use fume extractor if available. Do not inhale fumes. Use lead and/or colophony free solder where appropriate. Use of temperature controlled soldering station with stand. Solder sponge (wet or brass) to remove excess solder & clean tip.  Do not hold soldering iron by the hot element.  Hand tools may be used by any competent person. Tools to be inspected for wear or damage before use. PPE is provided along with various clamping methods.  Only staff who have been trained in manual handling by undertaking the university Safe manual handling training session or by other safe system of work may undertake manual handling. A full risk assessment may be required (refer to safety circular SC44). Appropriate Safety footwear is provided.  Only trained staff may use chemicals after a suitable COSHH assessment is complete (a list of approved staff is displayed next to the COSHH cabinet along with safety datasheets). Trainees may use chemicals under supervision of trained staff. Safety data sheets and safe working methods for each process must be read, understood and adhered to. Suitable PPE is provided (principally eye protection, nitrile gloves and lab coats). Eye wash stations are available and a sink with fresh running water is available. Suitable containers for disposing of environmentally damaging chemical waste are available and can be disposed of in consultation with the departmental safety coordinator (DSC).  DSE assessment, provision of adjustable height monitors, chairs.  No coats, bags and other personal items should be left in the area around the workbenches  Use the coat hangers provided at the ends of the laboratory  No cables to be trailed on the floor  No food or drink allowed In the laboratory at any time | | **10**  **10**  **5**  **6**  **10**  **6**  **8**  **6** | Guards, insulation and interlocks must be used to ensure users cannot come into contact with or within flashover range of live HV conductors.  Ensure manufacturer safety advice is available and adhered to. Good communication within working environment to ensure that staff and students in immediate vicinity are aware of potential risks.  Novices to be supervised until competent.  Always use the soldering iron stand  Do not place soldering iron directly onto the bench    COSHH information for materials used within processes to be updated continuously. Provision of sharps bin  Updating of DSE assessments, provision of footrests and other adaptations for use of DSE at workbenches where required.  Always practice good housekeeping and keep all experimental areas clean and tidy  Take refreshment breaks outside the laboratory  Confiscate and dispose of food and drink found around the workbenches | **2**  **3**  **5**  **3**  **2**  **1** |

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| **All boxes must be ticked in the following section to indicate either YES or NO.** | | | |
|  | **N0** | **YES** | **If you have ticked YES please follow the hyperlinks in the attached document, complete and return supplementary paperwork and/or implement and adhere to the guidance given.** |
| Will work require the lifting of weights (heavier than 15kg) |  |  | [SC44-5 Manual Handling](http://www.liv.ac.uk/intranet/eee/safety/forms/#SC44-5_Manual_Handling) |
| Use lasers of any kind? |  |  | [Laser Risk assessment](http://www.liv.ac.uk/intranet/eee/safety/forms/#Laser_Risk_Assessment) [Laser Local rules](http://www.liv.ac.uk/intranet/eee/safety/forms/#Laser_Local_Rules)  [Laser Registration form](http://www.liv.ac.uk/intranet/eee/safety/forms/#Laser_Registration_Form) Read [CoP](http://www.liv.ac.uk/intranet/eee/safety/forms/#CoP_Laser) & [AURPO](http://www.liv.ac.uk/intranet/eee/safety/forms/#AURPO_Laser) |
| Use gas cylinders or compressed gas? |  |  | [Gas Cylinder safety](http://www.liv.ac.uk/intranet/eee/safety/forms/#Gas_Cylinder_Safety) |
| Use Chemicals? |  |  | [COSHH](http://www.liv.ac.uk/intranet/eee/safety/forms/#COSHH) [SCR18 – COSHH assessment](http://www.liv.ac.uk/intranet/eee/safety/forms/#SCR18_COSHH_Assessment) |
| Use voltages over 30V DC/AC |  |  | [Electrical Safety](http://www.liv.ac.uk/intranet/eee/safety/forms/#Electrical_Safety) [Electricity at work](http://www.liv.ac.uk/intranet/eee/safety/forms/#Electricity_at_Work) |
| Use Power tools or rotating motors and machines |  |  | [SCR15-4 PUWER](http://www.liv.ac.uk/intranet/eee/safety/forms/#SCR15-4_PUWER) |
| Use Cryogenic Liquids/gases |  |  | [Cryogenic liquids and solids](http://www.liv.ac.uk/intranet/eee/safety/forms/#Cryogenic_Liquids_and_Solids) |
| Use Vacuum Systems and pressurised vessels |  |  | [Vacuum Systems and Pressure vessels](http://www.liv.ac.uk/intranet/eee/safety/forms/#Vacuum_Systems_and_Pressure_Vessels) |
| Use Radiation (UV, x-rays, microwaves) |  |  | [Control of artificial optical radiation at work](http://www.liv.ac.uk/intranet/eee/safety/forms/#Control_of_Artificial_Optical_Radiation_at_Work) [Radiation safety code of practice](http://www.liv.ac.uk/intranet/eee/safety/forms/#Radiation_Safety_Code_of_Practice)  [Local rules – UV](http://www.liv.ac.uk/intranet/eee/safety/forms/#Local_Rules_UV) [Code of Practice – UV](http://www.liv.ac.uk/intranet/eee/safety/forms/#CoP_UV)  [Microwave registration](http://www.liv.ac.uk/intranet/eee/safety/forms/#Microwave_Registration) |

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| **LEVEL of Supervision?** | **A =** Work May not be started without direct supervision |
| **B =** Work may not start without Supervisor advice or approval |
| **C =** No specific extra supervision requirements |
| Other relevant specific assessments (Local rules)- | |
| I can confirm that Hazards identified and precautions specified are appropriate for the task :-  Academic supervisor Name........................................................................... Signature……………………………………………..Date…………….………..  Acknowledgement by persons involved: Student Name & ID………………………………………………………………….Signature……………………………………………  Student Name & ID………………………………………………………………….Signature……………………………………………  Student Name & ID………………………………………………………………….Signature……………………………………………  Student Name & ID………………………………………………………………….Signature……………………………………………  Student Name & ID………………………………………………………………….Signature…………………………………………… | |

**COMPLETING THE RISK ASSESSMENT FORM**

* School/Department – note down the School and/or Department where the task is being carried out
* Building – note the specific building(s) where the task is being carried out
* Task – specific clearly the task being carried out
* Hazards – make a list of all the relevant hazards associated with the task/activity (i.e. anything that has the potential to cause harm).
* Who can be harmed – make a list of ALL categories of people who could be harmed by the hazard
* Current controls – list what is currently in place to protect people from the hazards. This will include physical controls, e.g. guarding, ventilation, procedural controls, e.g. permits, safe systems of work, and behavioural controls, supervision.
* Risk score – using the tables below and taking into account your current control measures, rate each hazard based on the likelihood of injury occurring and the likely consequence.

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| **Likelihood** | |  | **Consequence** | |  | **Consequences** | **5** | 5 | 10 | 15 | 20 | 25 |
| 1 | Very unlikely |  | 1 | Insignificant – no injury |  | **4** | 4 | 8 | 12 | 16 | 20 |
| 2 | Unlikely |  | 2 | Minor – minor injuries needing first aid |  | **3** | 3 | 6 | 9 | 12 | 15 |
| 3 | Fairly likely |  | 3 | Moderate – up to seven days absence |  | **2** | 2 | 4 | 6 | 8 | 10 |
| 4 | Likely |  | 4 | Major – more than seven days absence; major injury |  | **1** | 1 | 2 | 3 | 4 | 5 |
| 5 | Very likely |  | 5 | Catastrophic – death; multiple serious injury |  |  | **1** | **2** | **3** | **4** | **5** |
|  |  |  |  |  |  | **Likelihood** | | | | | |

* Additional control required - list any additional control required that will reduce the risk rating score. Ensure responsibilities for tasks and timescales are added
* Residual risk score – re-calculate the risk score after the introduction of the additional controls. Compare residual risk score with table below. Take further action if necessary.

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| **ACTION TO BE TAKEN** | |
| 1-4 Acceptable | No further action but ensure controls are maintained |
| 5-9 Adequate | Look to improve at next review. |
| 10-16 Tolerable | Look to improve within specified timescale |
| 17-25 Unacceptable | Stop activity and make immediate improvements |