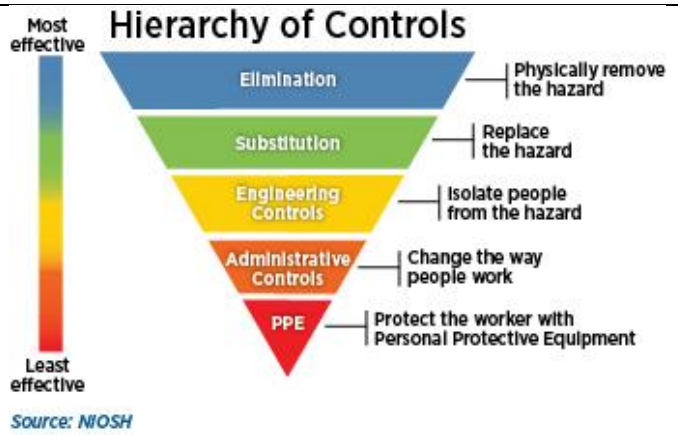
Translational Medical Device Lab
Project Risk Assessment Template

Append any relevant material such as SOP to this document.

Activity	**Desk based and Laboratory Research**
Project Owner(s) (e.g. researcher)	Breandán Gillanders
Activity/Project description:	Near-field Inductive Reader for Wireless, Battery-less Implantable Sensors Design and development of a wireless readout system for passive implantable LC sensor based on inductive coupling. This project will involve analysing a previous iteration of this circuit, identifying areas which require improvement designing circuit schematics and manufacturing a PCB which will read the sensor.
Activity/Project Duration:	September 2025 – April/May 2026
PI or Academic Supervisor:	**Adnan Elahi**
Risk assessments and resources relevant to this Activity/Project Risk Assessment are listed out below as follows:	
1. Materials/Chemicals/CMR	• Lead-free solder • Solder flux • Electronic components
2. Equipment	• Laptop • impedance measurement equipment (autolab/LCR, probe and connections) • Oscilloscope • Soldering iron • Solder and extractor fan • Vector Network Analyser • Lab bench power supply • Function Generator • Lab bench multimeter • 3D printer
3. People affected	Principal investigator, postdoctoral researchers, project owner
4. Machinery/Tools	Computer and accessories
5. Fieldwork	n/a
6. Lab / Equipment Induction training/dates	• Lambe Institute Induction and H&S Online Training: 18/10/2025 • TMD Lab In-person Induction: 22/10/2025 • Fire Safety Training (online): 18/10/2025 • Chemical Safety Training (online): 18/10/2025 • University of Galway EEE Lab Induction (online): 24/09/2025
7. Risk assessments for Room/Lab. UU, Activity VV, Equipment WW,	• Oscilloscope Risk Assessment • RiskAssessment_3D_Printer_AE

Chemical Agents XX, Biological Agents YY ** In assessing the risk ensure that the level, type and duration of exposure has been considered, as well as the quantities stored/used.	• Dielectric Property Risk Assessment, • soldering and circuit construction risk assessment
8. SOPs/Protocols for relevant experiments/procedures	• ImpedanceMeasurements_PGSTAT204_SOPandRA.doc. • DielectricPropertyMeasurement_Protocol_TMD
9. Identify any other safety training needs	n/a

Risk Assessment Methodology



Elimination and Substitution
Most effective at reducing hazards.
Best to implement at design stage.
Most cost effective.

Engineering Controls
Designed to remove the hazard at source.
Independent of user interactions.
Operating costs are frequently lower.

Administrative Controls and PPE
inexpensive but can be costly to sustain.
Less effective than other measures.

Severity Scale			
1. Slightly Harmful	**2. Moderate**	**3. Severe**	**4. Extreme**
► Superficial injuries	► Lacerations	► Amputation	► Fatal disease
► Minor cuts & bruises	► Minor Burns	► Major fractures	► Severely life shortening disease
► Eye irritation from dust	► Concussion	► Deafness	► Poisoning
► Nuisance & irritation	► Minor fractures	► Head injuries	► Fatal injuries
► Temporary discomfort	► Asthma	► Eye injuries	► Occupational cancer
	Minor disability	Severe Burns	► Permanent disability
Likelihood Scale			
1	**2**	**3**	**4**
► Very Unlikely/Yearly	► Unlikely/During a Semester	► Likely/Weekly	► Very Likely/Daily

Risk Assessment

Hazard(s) ***In order of ranking*** *(Highest First)*	***Likelihood*** *(With Controls in place)*	***Severity*** *(With Controls in place)*	***RISK RANKING L x S***	***Controls*** *Must be specific and in accordance with the Hierarchy of Controls*
Lab Work				
Liquid spills/splashes	2	1	2	Electrical equipment is raised. PPE worn.

				Spill training given and tools provided. Use of food grade samples
Contact/contamination with biological tissues	2	1	2	PPE worn. Clean station after use. Tissue preparation on disposable biohazard mat.
Sharps injuries from dissection of biological tissues	2	1	2	Use scalpel one time only – do not clean. Dispose in sharps bin. Training given on accident protocol.
Injury from use of soldering iron and hand tools e.g. cutters, pliers, blades, screwdrivers etc.	2	1	2	See soldering and circuit construction risk assessment.
Injury from rotating/moving parts on test rigs or the use of powered hand tools. Injuries such as, but not limited to, cuts and abrasions, puncture wounds, nips, pinches, eye damage, crush/trap injuries etc,.	1	2	2	Training given on SOPs for powered tools and risk assessment completed. All rotating parts should be covered. Visually inspect all tools before use to ensure in good condition and use the correct tool for the job. Seek assistance if unsure.
Blood spillage/splatter	1	1	1	PPE worn. Splash guard between stations. Clean station after use.
Broken glass (beakers, etc)	1	1	1	Spill training given and tools provided. Training given on accident protocol.
Electrocution/shock/fire/burns from faulty/unsafe/badly wired apparatus/test rigs utilising both AC and DC voltages	1	3	3	Visually inspect the equipment prior to use for damage Unsafe or damaged equipment labelled and removed from use. Contact supervisor. Do not attempt to repair. Suitable enclosures/boxes, terminal covers/insulation to be used anywhere that high voltages (less than 50V) are present. All test rigs must have a separate valid risk assessment.
Contact with moving parts with 3D printing- Entrapment or entanglement	1	2	2	Enclosed system guarding around moving parts Training and SOP
Direct/Indirect contact with parts in 3D printing - Electric Shock	1	2	2	Training and SOP Repairs and maintenance by competent person only Regular maintenance & Electrical Inspection Test & Tag
Exposure to fumes and ultrafine particles with 3D printing - Potential health effects on	2	1	2	Place the printer away from workstations Adequate ventilation and exhaust capability

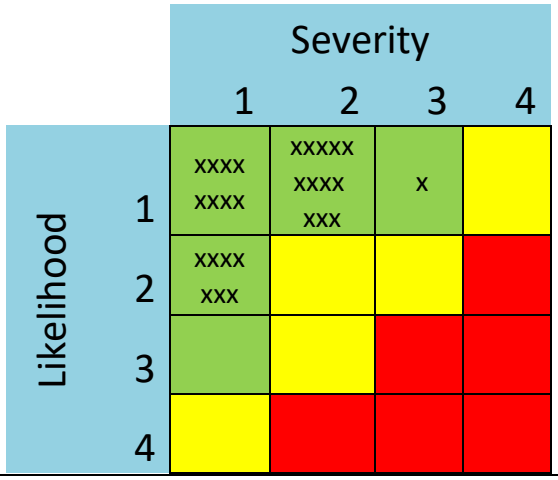
respiratory system from long term exposure				Training and SOP Use of personal protective equipment (mask, gloves etc.) Regular changing of High Efficiency Particulate Arrestance HEPA filters
Contact with particles generated from post processing (e.g. sanding) of printed object with 3D printing - Potential health effects on respiratory system from long term exposure	2	1	2	Training and SOP Use of personal protective equipment (mask, gloves, safety glasses etc.)
Heat from extrusion head in 3D printing - Burns, scalds and other injuries by possible contact with objects and materials while they are still hot	1	2	2	Guarding system that prevents user from touching the nozzle or the end product until it has cooled. Training and SOP
Unstable surface with 3D printing – Printer may fall	1	2	2	Appropriate setup
3D Printer catching fire due to electric fault	1	2	2	Repairs and maintenance by competent person only
Overheating of electronic components	2	1	2	Ensure that the component is not defective and all connections are as intended, no short circuit and all instruments are properly grounded. Use of heat sinks where needed.
Clothes caught in drill	1	1	1	No loose fitting clothes and wear a lab coat
Waste material (swarf/shards) projecting from drill into the eyes	1	1	1	Wear Eye protection always
Hands injured with Drill	1	1	1	Do not wear gloves when operating machine and do not touch spindle when in operation
Unsecured work piece in Soldering	1	1	1	Appropriate clamps in place to ensure work pieces are secure
Contact with hot soldering iron/work piece	1	2	2	Use tweezers/pliers or a vice to hold work piece where possible. Always assume that the soldering iron is hot and place back in its holder when not being used. Switch the iron off when it is not in use and replace in holder. First aid box available locally for treatment of minor burns. First aiders contact details listed.
Combustible items coming in to contact with hot soldering iron.	1	2	2	Keep work area tidy at all times. Ensure that combustible/flammable items (e.g. paper, clothing, flammable substances) are stored well away from the hot soldering iron/work area. Check the work area is in a safe state when work has been completed. Switch soldering iron off after use..
Potential for solder or flux to spit	1	2	2	Wear protective glasses when soldering. Avoid working close to face.

				Cover exposed skin with clothing or lab coat if available.
Use of hand tools e.g. cutters, pliers, blades, screwdrivers etc.	1	2	2	Wear protective glasses When trimming component legs, point towards the floor or into a waste container/bin. Visually inspect hand tools prior to use. If tools are damaged, do not use and contact technical staff for replacement.
Solder fumes	1	2	2	Use fume extraction and ensure adequate ventilation when soldering. Check that the bench top fume extractor unit is operating correctly before soldering.. Tin/lead solder must not be used.
Fire from Soldering	1	2	2	Always use a damp sponge for wiping the soldering irons tips (not paper towels). A competent person e.g. supervisor/technical staff should check circuits. Visually inspect all "in-house" constructed circuits for short circuits, incorrectly orientated components e.g. capacitors, batteries etc., before connecting to a power supply. Correctly store soldering head during use All staff, PG and MSc students to have completed fire training within the last year. Fire extinguishers are provided in all buildings and only to be used by those trained and with CO2/foam extinguishers.
Desk Work				
Ergonomics of use	1	1	1	If using a computer habitually as a significant part of normal duty (for continuous spells of three hours or more daily) a DSE assessment must be completed. If using a laptop, a monitor should use be used with separate mouse and keyboard at your workstation. Place the laptop/notebook on a firm surface (not on the lap) at the right height for keying. Ensure that a suitable 5-star chair that is adjustable has been used to support your back.
Vision Fatigue	1	1	1	Ensure that frequent breaks and time away from the workstation for every hour of use.

				If glasses are required for computer work, ensure that they are been used
Slips, Trips and falls	1	1	1	Workstations should be kept clear of cables and other trip hazards

Personal Protective Equipment Employed - *this is the least effective control.*								
								
		P					P	
State standard of PPE:								
	Hard hat	Safety Glasses				Toe protector	Sharp protection	For all in vicinity

Risk Assessment Matrix



Risk Assessment **with** controls
(Taken as the highest colour in matrix)

High		Medium		Low	X

Risk Action

Assessment	Priority	Action
Very Low Risk 1-2	Non-urgent	No additional controls required. These risks are considered acceptable.
Low Risk 3	Non-urgent	No additional controls are required unless at very low cost/effort. Actions to further reduce these risks are assigned low priority. (6 months) Ensure that the controls are maintained
Medium Risk 4-6	Action needed	Controls required as soon as possible Can the risks be lowered; costs can be considered. The measures should be implemented within a defined time period (1 month) Arrangements should be made to ensure that the controls are maintained, particularly if the risk levels are associated with harmful consequences
High Risk 8-9	Urgent action needed	Controls are required immediately Substantial efforts should be made to reduce risk.

		Risk reduction measures should be implemented urgently (2weeks) It might be necessary to consider suspending or restricting the activity, or to apply interim risk controls.
Very High Risk 12-16	Urgent action needed	Controls are required immediately These risks are unacceptable. The work activity should be halted If it is not possible to reduce risk the work should remain prohibited.

Signed: _____
Principal Investigator/Academic Supervisor

Signed:
Project Owner(s): 

Date: _____

Date: 20/10/2025

For further information see NUI Galway Safety Statement Policy, Part 5: STUDENTS (POST GRADUATE AND UNDER GRADUATE) AND THE ROLE OF ACADEMIC SUPERVISORS.