

Health and Safety: Risk Assessment Form

Name of Person Carrying Out Assessment: Dr Paul O'Dowd

Title of Work: Student Use of Kits supplied in SEMTM0043 / SEMTM0042

Risk Assessment Number Assigned (where applicable): Click here to enter text.

Activity (State: job, procedure, equipment, substances, hazard phrases, exposure, etc.)

Brief Procedure

Students to study with a small (10cm diameter) two wheeled mobile robot ([Pololu 3Pi+](#)) at the University of Bristol and at other locations, such as their current residential accommodation. The kit is supplied with 4 AAA re-chargable batteries and a battery charger unit to fit standard domestic UK mains power socket. All equipment supplied is consumer grade electronics with relevant consumer certification. The kits also include [a small magnet](#) securely fixed to a 3cm wide plastic pot.

Detailed Procedure

Students will program their robot from a computer via a USB cable, and then the robot may be operated without the USB cable – in which case, there are some risks associated to tripping or obstruction of passageways. Regarding the batteries, there are some potential risks associated to inappropriate use of the charging unit. There are some potential waste risks associated to the disposal of electronics and batteries. There are some potential risks if the small pot and magnet are made available to children.

Location(s) of Activity: UoB Lab spaces, personal spaces	Activity Owner: SEMTM0043 / SEMTM0042 Student Room / Lab Supervisor: Dr Paul O'Dowd
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Who will be doing the activity? (State: competency level (any training required?), ability level (any accessibility issues/allergies where additional controls are needed? See page 4, section 7 for prompts)

Students will conduct self-directed study with the supplied kits. Students also receive 2 hours of practical tuition / contact time through lab sessions, in which they are taught how to program and operate the robot. An overview of this risk assessment and mitigations is provided in the first Lecture prior to the distribution of kits to students.

Who else could be affected by the activity? (e.g. other students in the vicinity, public)

Regarding the operation of the robot, other individuals who are working within the same space, or individuals moving through a space – a trip hazard or obstruction hazard. Regarding the pot & magnet, if made available to children, the small magnet may present a hazard if detached and swallowed.

Hazards Identified	Precautions to be taken (Control Measures)
(Refer to Hazard Identification list and note main hazards here, including chemical exposure limits, hazard statements, etc.)	(Note protective clothing, safety screens, procedures, control, containment, venting, waste disposal, health monitoring, etc.)
<p>1. Snagging, drawing in. (low)</p> <p>The robot has two wheels that can spin relatively quickly, and long hair may get snagged or drawn in.</p>	<ul style="list-style-type: none"> Please keep long hair tied back when working with your Pololu 3Pi+ robot. Items of clothing should not present a hazard, but it is good practice to keep loose clothing tucked in
<p>2. Trip/Obstruction Hazard (low)</p> <p>In cases where the robot is made to operate on the floor (driving around), and/or may be left unattended, and/or in busy environments.</p>	<ul style="list-style-type: none"> Whenever possible, use your robot on a table or contained workspace. Please ensure other people sharing the space with you are aware that you may have your robot moving around on the floor. Please ensure the USB cable is not left obstructing through-ways. Please supervise the operation of your robot at all times. Please ensure you maintain good awareness of your surroundings when operating your robot. Do not allow your robot to operate unattended.
<p>3. Electrical Hazard (low)</p> <p>If a short-circuit occurs on the circuit board, for example, if the electrical hazard above is caused – e.g., metal items on the circuit board. Concerning the exposed circuit board, the main risk being damage to the kit itself.</p>	<ul style="list-style-type: none"> Ensure metallic objects are not placed onto the robot, or allowed to contact with the robot such as loose items placed inside the kit box. If your 3Pi+ robot feels abnormally warm, hot, or smoke appears, or there is a smell of hot electronics, immediately remove the batteries and report the malfunction to Paul O'Dowd. Please supervise the operation of your robot at all times.
<p>4. Electrical Hazard (low)</p> <p>The robot is supplied with 4 AAA batteries, and a battery charging unit that plugs into standard domestic UK mains sockets. A potential fire hazard is present if the charging unit is used inappropriately.</p>	<ul style="list-style-type: none"> The 3Pi+ Kit uses typical low voltage/low current AAA cells, so low risk. Please ensure metallic items are not allowed to contact with the main circuit board exposed on the top surface of the kit – this would lead to damage to the kit. Please keep your 3Pi+ robot dry, do not expose to water, moisture, rain, etc. Please ensure your 3Pi+ robot is switched off once you have finished using it. Ensure batteries are inserted into the charging unit in the correct orientation, following the corresponding labels on the charging unit. Do not leave batteries to charge unattended or whilst you are unable to check the status, such as sleeping. Do not dispose of batteries or any kit contents. Return the kit at the kit collection time, or to the reception desk of the Ada Lovelace Building.

<p>5. Choking hazard (low)</p> <p>The kit provides a small magnet securely fixed to a 3cm wide plastic pot. This small magnet may present an object of fascination to children. If detached, the magnet is small enough to present a choking hazard, and/or series gastronomic tract hazards.</p>	<ul style="list-style-type: none"> When the kit is not in use, please ensure that your kit is returned inside the kit box, and the kit box is stowed out of reach of children and infants. When the kit is in use, please operate the robot out of reach of children, and ensure that the pot & magnet are out of reach of children and under your supervision.
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Services required.

<input type="checkbox"/> Water	<input type="checkbox"/> Compressed Air	<input type="checkbox"/>	Electrical Power	<input type="checkbox"/> Other please specify _____
			<input type="checkbox"/> - 240V/13A	
			<input type="checkbox"/> -3 Phase	

Emergency procedures in case of accident

(Note any special procedures, consider Human Factors page 4, section 7, also any hazards associated with loss of services, i.e. power, air, etc.)

Click here to enter text.

Special training requirements

(e.g. by advisor or another competent person, video, course etc.)

Students will receive a discussion of this risk assessment and mitigations in the first lecture prior to kit distribution, and this risk assessment form is made available/visible on the blackboard unit page.

Other Documents

(e.g. Manuals, Safety Data Sheets (SDS), procedure documents, etc. If any chemicals are used, a SDS must be provided)

Technical information on the robot can be found at:

<https://www.pololu.com/product/4975>

Technical information on the magnet can be found at:

<https://www.first4magnets.com/product/10mm-dia-x-04mm-thick-n42-neodymium-magnet-015kg-pull-19265?variant=1151>

Access restrictions

(Note out-of-hours working rules, supervision requirements, etc.)

The Kit is not a toy – please do not give to children or allow the kit to be available to children. The kit is your responsibility, please do not loan your kit to any other persons.

Waste Disposal

Please do not attempt to dispose of any of the kit contents. Please return the whole kit to Paul O'Dowd, either on the kit collection day, or to the reception desk of Ada Lovelace Building, University of Bristol.

	Name(s)	Status	Signature	Date
Individual(s) involved in this activity	SEMTM0043 / SEMTM0042 Students			

Supervisor / Line Manager	Dr Paul O'Dowd		Paul O'Dowd	23/09/25
Safety Advisor	Dr Paul O'Dowd	Choose an item.	Dr Paul O'Dowd	23/09/25
Technical Services (If Lab-based)				

- The signatures from the activity owner(s) and their supervisor(s) are compulsory.
- When possible, physical signatures are preferred. Digital signatures are accepted, if necessary.
- If laboratory / workshop-based activity, one of the signatures must be from Technical Services.
- When carrying out this specific activity, after this risk assessment has been approved and signed, please sign the additional signatures sheet at the end of this form.

All Risk assessments must be reviewed at regular intervals and after a significant change or event.

Risk Assessment Issue Date:

Review Due Date:	Review Completion Date:	Completed By:
Sep 2026		

Guidance for Writing Risk Assessments

Risk assessments should be about practical steps to protect people from real harm and suffering - not bureaucratic back covering. We need to establish that risk assessments are suitable and sufficient to ensure that:

- ❖ Staff, students and the public are properly protected
- ❖ innovation and learning are enabled not stifled
- ❖ those who create risks manage them responsibly
- ❖ individuals understand that as well as the right to protection, they also must exercise responsibility

How to assess the risks in your work

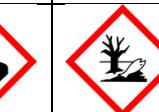
Follow the six steps:

Step 1	List the work tasks/activities	Included the location of the work, activity planned, equipment and chemicals that may be in use
Step 2	Identify the hazards	Use the check list on the form to help you but remember this does not cover all hazards.
Step 3	Decide who might be harmed and how, so estimate the risks	Think about yourself, others around you, technicians, cleaners etc
Step 4	Evaluate the risks and decide on precautions	Be sensible - do you need signs to warn other people, protective equipment, work in a different location etc
Step 5	Record your findings and implement them	Use this form and follow the precautions you have identified as being required. Have a copy of this form in the location where you are working.
Step 6	Review your assessment and update if necessary	This should be done regularly or when you notice something is not working correctly

When thinking about your risk assessment, remember:

- ❖ a **hazard** is anything that may cause harm, such as chemicals, electricity, working from ladders/step stools, an open drawer etc;
- ❖ the **risk** is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.

Additional information for chemical hazards - GHS Chemical hazard symbols

GHS01	GHS02	GHS03	GHS04	GHS05	GHS06	GHS07	GHS08	GHS09
								
Explosive	Flammable	Oxidising	Gas under pressure	Corrosive	Acute Toxicity	Health hazard	Serious health hazard	Hazardous to the environment

This form must be completed electronically; no handwritten forms will be accepted as handwriting can make it difficult to understand information in an emergency.

A copy of the final risk assessment should be available to you and others around you when you are working.

For **off-site activities**, please follow the guidance available at:

<https://www.bristol.ac.uk/safety/staff/travel/#dropdown-heading1-0>

And, if necessary, please use: [field-risk-assessment-latest.docx \(sharepoint.com\)](#)

Health and Safety: Hazard Identification

The check list is guidance to help you but remember this does not cover all possible hazards.

Location / Job – Click here to enter text.			Date: Click here to enter a date.
Name of Assessor: Click here to enter text.			
1. Mechanical Hazards	Yes	No	Hazard Description
1.1. Crushing	<input type="checkbox"/>	<input type="checkbox"/>	
1.2. Cutting / shearing	<input type="checkbox"/>	<input type="checkbox"/>	
1.3. Entanglement	<input type="checkbox"/>	<input type="checkbox"/>	
1.4. Drawing-in, trapping	<input type="checkbox"/>	<input type="checkbox"/>	
1.5. Impact	<input type="checkbox"/>	<input type="checkbox"/>	
1.6. Stabbing	<input type="checkbox"/>	<input type="checkbox"/>	
1.7. Slips, trips, falls	<input type="checkbox"/>	<input type="checkbox"/>	
1.8. Abrasion	<input type="checkbox"/>	<input type="checkbox"/>	
1.9. High pressure injection	<input type="checkbox"/>	<input type="checkbox"/>	
1.10. Other mechanical hazards	<input type="checkbox"/>	<input type="checkbox"/>	
2. Electrical Hazards	Yes	No	
2.1. Direct Contact	<input type="checkbox"/>	<input type="checkbox"/>	
2.2. Indirect Contact	<input type="checkbox"/>	<input type="checkbox"/>	
2.3. Short circuit / overload	<input type="checkbox"/>	<input type="checkbox"/>	
2.4. Source of ignition	<input type="checkbox"/>	<input type="checkbox"/>	
2.5. Other electrical hazards	<input type="checkbox"/>	<input type="checkbox"/>	
3. Radiation Hazards	Yes	No	
3.1. Lasers	<input type="checkbox"/>	<input type="checkbox"/>	
3.2. Ionising radiation	<input type="checkbox"/>	<input type="checkbox"/>	
3.3. Other electro-magnetic spectrum	<input type="checkbox"/>	<input type="checkbox"/>	
3.4. Other radiation hazards	<input type="checkbox"/>	<input type="checkbox"/>	
4. Work practice Hazards	Yes	No	
4.1. Highly repetitive actions	<input type="checkbox"/>	<input type="checkbox"/>	
4.2. Stressed postures	<input type="checkbox"/>	<input type="checkbox"/>	
4.3. Lifting / Handling	<input type="checkbox"/>	<input type="checkbox"/>	
4.4. Working at heights	<input type="checkbox"/>	<input type="checkbox"/>	
4.5. Visual fatigue	<input type="checkbox"/>	<input type="checkbox"/>	
4.6. Mental overload, stress	<input type="checkbox"/>	<input type="checkbox"/>	

4.7 Driving vehicles		<input type="checkbox"/>	<input type="checkbox"/>	
4.8 Working out of normal hours		<input type="checkbox"/>	<input type="checkbox"/>	
4.9 Lone working		<input type="checkbox"/>	<input type="checkbox"/>	
4.10 Other work practice hazards		<input type="checkbox"/>	<input type="checkbox"/>	
5. Chemical risks (GHS hazard symbols)		Yes	No	List Hazard statements from Safety Data Sheets (SDS) where available
5.1. Explosive chemicals GHS01		<input type="checkbox"/>	<input type="checkbox"/>	
5.2. Flammable chemicals GHS02		<input type="checkbox"/>	<input type="checkbox"/>	
5.3. Oxidisers - GHS03		<input type="checkbox"/>	<input type="checkbox"/>	
5.4. Pressurised gases - GHS04		<input type="checkbox"/>	<input type="checkbox"/>	
5.5. Corrosive chemicals - GHS05		<input type="checkbox"/>	<input type="checkbox"/>	
5.6. Acute Toxic chemicals – GHS06		<input type="checkbox"/>	<input type="checkbox"/>	
5.7. Health hazard (Irritants/sensitisers) - GHS07		<input type="checkbox"/>	<input type="checkbox"/>	
5.8. Serious Health hazard (Carcinogens/mutagens) - GHS08		<input type="checkbox"/>	<input type="checkbox"/>	
5.9. Ecological hazards - GHS09		<input type="checkbox"/>	<input type="checkbox"/>	
5.10. Biological hazards		<input type="checkbox"/>	<input type="checkbox"/>	
5.11. Other chemical hazards		<input type="checkbox"/>	<input type="checkbox"/>	
6. Environmental Hazards		Yes	No	
6.1. Localised hot surface(s)		<input type="checkbox"/>	<input type="checkbox"/>	
6.2. Localised cold surface(s)		<input type="checkbox"/>	<input type="checkbox"/>	
6.3. High ambient temperature		<input type="checkbox"/>	<input type="checkbox"/>	
6.4. Cold ambient temperature		<input type="checkbox"/>	<input type="checkbox"/>	

6.5. Poor ventilation	<input type="checkbox"/>	<input type="checkbox"/>	
6.6. Significant noise	<input type="checkbox"/>	<input type="checkbox"/>	
6.7 Significant vibration	<input type="checkbox"/>	<input type="checkbox"/>	
6.8 Poor lighting	<input type="checkbox"/>	<input type="checkbox"/>	
6.9 Working outside	<input type="checkbox"/>	<input type="checkbox"/>	
6.10 Other environmental hazards	<input type="checkbox"/>	<input type="checkbox"/>	
7. Human Factor Considerations	Yes	No	
7.1. Accessibility issues	<input type="checkbox"/>	<input type="checkbox"/>	
7.2. Allergies	<input type="checkbox"/>	<input type="checkbox"/>	
7.3. Autism	<input type="checkbox"/>	<input type="checkbox"/>	
7.4. Anxiety/Depression	<input type="checkbox"/>	<input type="checkbox"/>	
7.5. Dyslexia	<input type="checkbox"/>	<input type="checkbox"/>	
7.6. Deafness/Blindness	<input type="checkbox"/>	<input type="checkbox"/>	
7.7. Colour blindness	<input type="checkbox"/>	<input type="checkbox"/>	
7.8. Language barriers	<input type="checkbox"/>	<input type="checkbox"/>	
7.9. Age	<input type="checkbox"/>	<input type="checkbox"/>	
7.10. Behavioural issues	<input type="checkbox"/>	<input type="checkbox"/>	
7.11. New/expectant mothers	<input type="checkbox"/>	<input type="checkbox"/>	
7.11. Other medical conditions (skin conditions, respiratory problems etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<i>Assess whether the activity would be more hazardous for those with certain medical conditions</i>
7.11. Other, please state	<input type="checkbox"/>	<input type="checkbox"/>	

Faculty of Engineering RISK ASSESSMENT

ADDITIONAL SIGNATURE SHEET

TITLE: Click here to enter text.

Risk Assessment Number:

(*If applicable*)

THIS SIGNATURE SHEET ACCOMPANIES THE RISK ASSESSMENT REFERED TO ABOVE.

All additional workers involved in the work covered by this risk assessment must sign below before commencing said work.

By signing below, you confirm that you have read this risk assessment and that you agree to abide by the protocols and guidelines contained therein.

Name (in block letters)	Signature	Date