


Activity / Task / Location: Michelson-Morley Experiment / Callaghan SB308-309; Ourimbah EXSA1.01/1.02	Reviewed / Approved By: Renee Goreham  Signature and Date: 26/04/2023
Risk Assessment Developed by: Galiya Sharafutdinova	Date:

Risk Matrix

Likelihood

N.B. For more details regarding use of this matrix / definitions refer to final page of this document

Consequence

	Rare	Unlikely	Possible	Likely	Almost Certain
Severe <i>Eg. Potential Fatality or Injury or Illness with permanent disability</i>	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
Major <i>Eg. Potential Lost Time Injury (but non-permanent disability)</i>	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate <i>Eg. Potential Medical Treatment injury or illness (but no lost time)</i>	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor <i>Eg. Potential First Aid injury</i>	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal <i>Eg. Hazard or near miss requiring reporting and follow up action</i>	LOW	LOW	LOW	LOW	LOW

Actions required based on Risk Assessment

Extreme	An "extreme" risk requires immediate assessment and senior staff consideration is required; a detailed mitigation plan must be developed, and consideration should be given to ceasing the activity unless the risk can be reduced to a level of high or less; regular monitoring and reported on to the relevant management/steering committee; Target resolution should be within 1 month.
High	A "high" risk may also require immediate assessment and senior staff consideration; a mitigation plan must be developed; regular monitoring and reported on to the relevant management/steering committee. Target resolution (ideally reduction to medium or low level of risk) should be within 3 months.
Medium	A mitigation plan must be developed; existing controls need to be reviewed. Target resolution (ideally reduction to low level of risk) should be within 1 year.

Low

Risk is tolerable; manage by well established, routine processes/procedures and be mindful of changes to nature of risks.

Hazard Identification and initial Risk Rating			Control measures and Residual Risk Rating		Remaining Hazards	Actions required
What are the steps of the activity / items of equipment?	What are the potential hazards?	Risk Rating based on Risk Matrix	What control methods or measures will be used to reduce the likelihood and/or the consequence of an illness or injury from those hazards?	Residual Risk Rating based on Risk Matrix	What hazard remains?	What additional actions are required (by who and in what timeframe) to raise the level of control?
Using laboratory space	Trip hazard due to: <ul style="list-style-type: none"> • obstructions in walkways • wires trailing over bench edges May cause a serious injury, but unlikely to occur.	Medium	On lab session advise students to <ul style="list-style-type: none"> • keep bags under benches to avoid obstructions; • Keep the work area clean and tidy; • Ensure reasonable precautions not to let long wires dangle over bench edges and no loose cables near feet. 	Low	Tripping, but unlikely to happen	Instruct students on the Lab Induction. Staff to observe

			May require first aid			
Use of a laser source	<p>Eye damage due to laser radiation</p> <p>May require medical attention, but unlikely to happen.</p>	Medium	<p>A low class LED laser source (red, about 630 nm; visible) is rigidly fixed into a holder. Then the beam is expanding through a lens and projected to a screen. Setup will be ensured by a lab officer. Apparatus then is covered (black cloth, etc) so there is no direct access to the beam for students and staff.</p> <p>The human blink reflex provides adequate protection. Do not stare on a beam for a long time.</p> <p>Warning notice adjacent to equipment. Warning in notes On lab session advise students on the hazard</p>	Low	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe.
Heave equipment: Michelson-Morley	<p>If dropped on floor could cause a physical injury. May require medical attention, Only demonstrators/tech personal to handle the apparatus</p>	Low	<p>Locate the apparatus appropriately on a bench to eliminate accidental push and/or fall down</p>	Low	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe

Mechanical rotation stage	Keep hands clear of mechanical moving parts.	Low	Instruct students to keep equipment in the middle of the bench	Low	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Using electrical equipment	Exposure to dangerous voltages from faulty equipment May cause death or serious injury, but very unlikely to happen.	High	Regular checking and tagging of mains powered equipment, including power supply and lamp, for frayed cords and poor earth continuity to case of equipment. Check all power cords for visible deterioration prior to each use.	Medium		Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Personal protective equipment such as a lab coats or glasses are not required						

Summary of Requirements based on Risk Assessment		Review Period / Date
Personal Protective Equipment	Not Applicable	Annually
Other Equipment and Equipment Protection	Equipment for the experiment: <i>Photo Electric Effect instrument with a Lamp as a light source</i>	Annually
Training Requirements	No special training is required for students.	Annually
Procedures, SOPs etc	All instructions are provided in the document called Experiment Fest booklet: <i>Physics Handbook or similar</i>	Annually
Relevant Legislation etc.	WHS Act 2011 (NSW) & Regulations / Codes of Practice	


Questions to ask in order to determine the hazards relating to the task:


<p>A Could people be injured or made sick by things such as:</p> <ul style="list-style-type: none"> • Noise • Light • Radiation • Toxicity • Infection • High or low temperatures • Electricity • Moving or falling things (or people) • Flammable or explosive materials • Things under tension or pressure (compressed gas or liquid; springs) • Any other energy sources or stresses • Biohazardous material • Laser 	<p>D What could go wrong?</p> <ul style="list-style-type: none"> • What if equipment is misused? • What might people do that they shouldn't • How could someone be killed? • How could people be injured? • What may make people ill? • Are there any special emergency procedures required?
<p>B Can workplace practices cause injury or sickness?</p> <ul style="list-style-type: none"> • Are there heavy or awkward lifting jobs? • Can people work in a comfortable posture? • If the work is repetitive, can people take breaks? • Are people properly trained? • Do people follow correct work practices? • Are there adequate facilities for the work being performed? • Are universal safety precautions for biohazards followed? • Is there poor housekeeping? Look out for clutter • Torn or slippery flooring • Sharp objects sticking out • Obstacles 	<p>E Are procedures or organisational systems missing or not being followed?</p> <ul style="list-style-type: none"> • Standard Operating Procedures? • Risk Assessments? • Induction or training? • Management of change? • Safety Inspections? • Hazard reporting? • Contractor Management?
<p>C Imagine that a child was to enter your work area?</p> <ul style="list-style-type: none"> • What would you warn them to be extra careful of? • What would do to reduce the harm to them? 	<p>F What kinds of injuries could possibly occur?</p> <ul style="list-style-type: none"> • Broken bones • Eye damage • Hearing problems • Strains or sprains • Cuts or abrasions • Bruises • Burns • Lung problems including inhalation injury/ infection • Skin contact • Poisoning • Needle-stick injury • Psychological illness or injury

How to Assess Risk

Step 1 – Consider the Consequences		Step 2 – Consider the Likelihood		Step 3 – Calculate the Risk Rating						
<p>What are the potential consequences of an incident occurring? Consider what could reasonably happen as well as what may actually happen.</p> <p>Look at the descriptions and choose the most suitable Consequence.</p>		<p>What is the likelihood of the consequence identified in step 1 happening? Consider this with the current controls in place.</p> <p>Look at the descriptions and choose the most suitable Likelihood.</p>		<p>A. Take Step 1 rating and select the correct column.</p> <p>B. Take Step 2 Rating and select the correct line.</p> <p>C. The calculated risk rating is where the two ratings cross</p>						
Consequence		Likelihood		LIKELIHOOD						
					Rare	Unlikely	Possibly	Likely	Almost Certain	
Serious	Potential Fatality or Injury or Illness with permanent disability	Almost Certain	The event could be expected to occur in most circumstances: "This is a common problem here".	CONSEQUENCE	Serious	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
Major	Potential Lost Time Injury requiring time off work (but non-permanent disability)	Likely	The event has a reasonable chance of occurring in usual conditions: "It has happened here before".		Major	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate	Potential medical treatment Injury or Illness but no lost time	Possible	The event might occur occasionally, has occurred sometime: "Has infrequently happened here before".		Moderate	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor	Potential First Aid Injury	Unlikely	The event has a small chance of occurring. "It has not happened here but has occurred elsewhere".		Minor	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal	No injury but hazard exists or near miss occurred requiring reporting and follow up action	Rare	Very unlikely to occur. "It would be extremely rare for it to occur here".		Minimal	LOW	LOW	LOW	LOW	LOW

Controlling the Risk: Risk control is a method of managing the risk with the primary emphasis on controlling the hazards at source. For a risk that is assessed as "extreme" or "high", steps should be taken immediately to minimize risk of injury. The method of ensuring that risks are controlled effectively is by using the "hierarchy of controls". The Hierarchy of Controls are:

 <p>Elimination</p> <p>Substitution</p> <p>Engineering controls</p> <p>Administrative controls</p> <p>Personal protective equipment</p>	Control Type	Example
	Eliminate	Removing the hazard, eg taking a hazardous piece of equipment out of service.
	Substitute	Replacing a hazardous substance or process with a less hazardous one, eg substituting a hazardous substance with a non-hazardous substance.
	Engineering	Redesign a process or piece of equipment to make it less hazardous, Isolating the hazard from the person at risk, eg using a guard or barrier, or containing the hazard in an enclosure.
	Administrative	Adopting safe work practices or providing appropriate training, instruction or information.
	Personal Protective Equipment (PPE)	The use of personal protective equipment could include using gloves, glasses, earmuffs, aprons, safety footwear, dust masks. NOTE: This is a last resort control and should be used in conjunction with higher level controls.

Activity / Task / Location: Photoelectric Effect/ Callaghan SB308-309; Ourimbah EXSA1.01/1.02	Reviewed / Approved By: Renee Goreham  Signature and Date: 24/04/2023
Risk Assessment Developed by: Galiya Sharafutdinova	Date: 16/05/2022

Risk Matrix

Likelihood

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Consequence

	Rare	Unlikely	Possible	Likely	Almost Certain
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Moderate <i>Eg. Potential Medical Treatment injury or illness (but no lost time)</i>	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor <i>Eg. Potential First Aid injury</i>	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal <i>Eg. Hazard or near miss requiring reporting and follow up action</i>	LOW	LOW	LOW	LOW	LOW

Actions required based on Risk Assessment

Extreme	An "extreme" risk requires immediate assessment and senior staff consideration is required; a detailed mitigation plan must be developed, and consideration should be given to ceasing the activity unless the risk can be reduced to a level of high or less; regular monitoring and reported on to the relevant management/steering committee; Target resolution should be within 1 month.
High	A "high" risk may also require immediate assessment and senior staff consideration; a mitigation plan must be developed; regular monitoring and reported on to the relevant management/steering committee. Target resolution (ideally reduction to medium or low level of risk) should be within 3 months.
Medium	A mitigation plan must be developed; existing controls need to be reviewed. Target resolution (ideally reduction to low level of risk) should be within 1 year.
Low	Risk is tolerable; manage by well established, routine processes/procedures and be mindful of changes to nature of risks.

Hazard Identification and initial Risk Rating			Control measures and Residual Risk Rating		Remaining Hazards	Actions required
What are the steps of the activity / items of equipment?	What are the potential hazards?	Risk Rating based on Risk Matrix	What control methods or measures will be used to reduce the likelihood and/or the consequence of an illness or injury from those hazards?	Residual Risk Rating based on Risk Matrix	What hazard remains?	What additional actions are required (by who and in what timeframe) to raise the level of control?
Using laboratory space	Trip hazard due to: <ul style="list-style-type: none"> • obstructions in walkways • wires trailing over bench edges May cause a serious injury, but unlikely to occur.	Medium	On lab session advise students to <ul style="list-style-type: none"> • keep bags under benches to avoid obstructions; • Keep the work area clean and tidy; • Ensure reasonable precautions not to let long wires dangle over bench edges and no loose cables near feet. 	Low	Tripping, but unlikely to happen	Instruct students on the Lab Induction. Staff to observe

			May require first aid			
Using the equipment: light source	Burns from hot surfaces on lamp housing. May require medical attention, but unlikely to happen.	High	Warning notice adjacent to equipment. Warning in notes On lab session advise students on the hazard	Low	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Using the equipment: plastic filters	Burns from melting plastic in coloured filters May require first aid, but unlikely to happen.	High	Instruct students to position filters in correct housing slot.	Low	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Using the equipment	If dropped could result in broken glass. Cut Injury from broken glass May require medical attention, Only tech personal to handle the lamp replacement.	Medium	Instruct students to keep equipment in the middle of the bench	Low	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Using electrical equipment	Exposure to dangerous voltages from faulty equipment May cause death or serious injury,	High	Regular checking and tagging of mains powered equipment, including power supply and lamp, for frayed cords and poor earth continuity to case of	Medium		Instruct students on the Lab Induction and prior to using the equipment. Staff to observe

	but very unlikely to happen.		equipment. Check all power cords for visible deterioration prior to each use.			
Personal protective equipment such as a lab coats or glasses are not required						

Summary of Requirements based on Risk Assessment		Review Period / Date
Personal Protective Equipment	Not Applicable	Annually
Other Equipment and Equipment Protection	Equipment for the experiment: Photo-Electric Effect instrument with a Lamp as a light source; power supply; Set of colour glass filters; Set of apertures; graph	Annually
Training Requirements	Before the experiment, instruct students on Hazards for the specific experiment. Students to follow the procedure. No other special training is required for students	Annually
Procedures, SOPs etc	All instructions are provided in the document named Experiment Fest booklet: Physics Handbook or similar.	Annually
Relevant Legislation etc.	WHS Act 2011 (NSW) & Regulations / Codes of Practice	

Questions to ask in order to determine the hazards relating to the task:


<p>A Could people be injured or made sick by things such as:</p> <ul style="list-style-type: none"> • Noise • Light • Radiation • Toxicity • Infection • High or low temperatures 	<p>D What could go wrong?</p> <ul style="list-style-type: none"> • What if equipment is misused? • What might people do that they shouldn't • How could someone be killed? • How could people be injured? • What may make people ill? • Are there any special emergency procedures required?
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<ul style="list-style-type: none"> • Electricity • Moving or falling things (or people) • Flammable or explosive materials • Things under tension or pressure (compressed gas or liquid; springs) • Any other energy sources or stresses • Biohazardous material • Laser 	<p>E Are procedures or organisational systems missing or not being followed?</p> <ul style="list-style-type: none"> • Standard Operating Procedures? • Risk Assessments? • Induction or training? • Management of change? • Safety Inspections? • Hazard reporting? • Contractor Management?
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How to Assess Risk

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 <p>The diagram shows a pyramid with five levels from top to bottom: Elimination, Substitution, Engineering controls, Administrative controls, and Personal protective equipment.</p>	Control Type	Example
	Eliminate	Removing the hazard, eg taking a hazardous piece of equipment out of service.
	Substitute	Replacing a hazardous substance or process with a less hazardous one, eg substituting a hazardous substance with a non-hazardous substance.
	Engineering	Redesign a process or piece of equipment to make it less hazardous, Isolating the hazard from the person at risk, eg using a guard or barrier, or containing the hazard in an enclosure.
	Administrative	Adopting safe work practices or providing appropriate training, instruction or information.
Personal Protective Equipment (PPE)	The use of personal protective equipment could include using gloves, glasses, earmuffs, aprons, safety footwear, dust masks. NOTE: This is a last resort control and should be used in conjunction with higher level controls.	

Activity / Task / Location: Projectile Motion/ Callaghan SB308-309; Ourimbah EXSA1.01/1.02	Reviewed / Approved By: Renee Goreham  Signature and Date: 26/04/2023
Risk Assessment Developed by: Galiya Sharafutdinova	Date: 16/05/2022

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Minor <i>Eg. Potential First Aid injury</i>	LOW	LOW	LOW	MEDIUM	MEDIUM
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Actions required based on Risk Assessment

Extreme	An "extreme" risk requires immediate assessment and senior staff consideration is required; a detailed mitigation plan must be developed, and consideration should be given to ceasing the activity unless the risk can be reduced to a level of high or less; regular monitoring and reported on to the relevant management/steering committee; Target resolution should be within 1 month.
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Using laboratory space	Trip hazard due to: <ul style="list-style-type: none"> • obstructions in walkways • wires trailing over bench edges May cause a injury, but unlikely to occur.	Medium	On lab session advise students to <ul style="list-style-type: none"> • keep bags under benches; • Keep the work area clean and tidy; • Ensure reasonable precautions not to let long wires dangle over bench edges and no loose cables near feet. • Do not move around the lab unnecessarily 	Low	Tripping, but unlikely to happen	Instruct students on the Lab Induction. Staff to observe

			during the experiment. May require first aid			
Using the equipment	Finger injury from fingers being caught in ball launcher May require first aid; but unlikely to happen.	Medium	Use plastic key to operate ball launcher. Keep fingers clear of ball launcher mechanism. Warning in notes On lab session advise students on the hazard	Low	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Using the equipment:	Eye injury from launching ball. May require first aid	High	Instruct students to <ul style="list-style-type: none"> Wear safety glasses Do not place face in front of the ball launcher. 	Medium	unlikely to happen	Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Using the equipment	Injury from retort and stand falling onto bench or floor. May require medical attention,	Medium	Keep stand away from bench edge and ensure stand is sitting in a stable manner. Use covered footwear.	Low		Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Personal protective equipment required: protective safety glasses						

Summary of Requirements based on Risk Assessment		Review Period / Date
Personal Protective Equipment	Protective safety glasses	Annually
Other Equipment and Equipment Protection	Equipment for the experiment: <i>Computer to analyze video and/or results</i>	Annually
Training Requirements	Before the experiment, instruct students on Hazards for the specific experiment. <i>Students to follow the procedure. No other special training is required for students.</i>	Annually
Procedures, SOPs etc	All instructions are provided in the document named Experiment Fest booklet: <i>Physics Handbook or similar</i>	Annually
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Questions to ask in order to determine the hazards relating to the task:

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<p>B Can workplace practices cause injury or sickness?</p> <ul style="list-style-type: none"> • Are there heavy or awkward lifting jobs? 	<p>E Are procedures or organisational systems missing or not being followed?</p> <ul style="list-style-type: none"> • Standard Operating Procedures? • Risk Assessments? • Induction or training? • Management of change? • Safety Inspections? • Hazard reporting? • Contractor Management?
	<p>F What kinds of injuries could possibly occur?</p> <ul style="list-style-type: none"> • Broken bones


<ul style="list-style-type: none"> • Can people work in a comfortable posture? • If the work is repetitive, can people take breaks? • Are people properly trained? • Do people follow correct work practices? • Are there adequate facilities for the work being performed? • Are universal safety precautions for biohazards followed? • Is there poor housekeeping? Look out for clutter • Torn or slippery flooring • Sharp objects sticking out • Obstacles 	<ul style="list-style-type: none"> • Eye damage • Hearing problems • Strains or sprains • Cuts or abrasions • Bruises • Burns • Lung problems including inhalation injury/ infection • Skin contact • Poisoning • Needle-stick injury • Psychological illness or injury
<p>C Imagine that a child was to enter your work area?</p> <ul style="list-style-type: none"> • What would you warn them to be extra careful of? • What would do to reduce the harm to them? 	


How to Assess Risk

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Major	Potential Lost Time Injury requiring time off work (but non-permanent disability)	Likely	The event has a reasonable chance of occurring in usual conditions: "It has happened here before".		Major	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate	Potential medical treatment Injury or Illness but no lost time	Possible	The event might occur occasionally, has occurred sometime: "Has infrequently happened here before".		Moderate	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor	Potential First Aid Injury	Unlikely	The event has a small chance of occurring. "It has not happened here but has occurred elsewhere".		Minor	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal	No injury but hazard exists or near miss occurred requiring reporting and follow up action	Rare	Very unlikely to occur. "It would be extremely rare for it to occur here".		Minimal	LOW	LOW	LOW	LOW	LOW

For more information visit - <http://www.newcastle.edu.au/current-staff/working-here/work-health-and-safety/managing-health-and-safety-risks>

Controlling the Risk: Risk control is a method of managing the risk with the primary emphasis on controlling the hazards at source. For a risk that is assessed as “extreme” or “high”, steps should be taken immediately to minimize risk of injury. The method of ensuring that risks are controlled effectively is by using the “hierarchy of controls”. The Hierarchy of Controls are:

	Control Type	Example
	Eliminate	Removing the hazard, eg taking a hazardous piece of equipment out of service.
	Substitute	Replacing a hazardous substance or process with a less hazardous one, eg substituting a hazardous substance with a non-hazardous substance.
	Engineering	Redesign a process or piece of equipment to make it less hazardous, Isolating the hazard from the person at risk, eg using a guard or barrier, or containing the hazard in an enclosure.
	Administrative	Adopting safe work practices or providing appropriate training, instruction or information.
Personal Protective Equipment (PPE)	The use of personal protective equipment could include using gloves, glasses, earmuffs, aprons, safety footwear, dust masks. NOTE: This is a last resort control and should be used in conjunction with higher level controls.	

Activity / Task / Location: Properties of Light (Speed of light and Young's double slit) / Callaghan SB308-309; Ourimbah EXSA1.01/1.02	Reviewed / Approved By: Renee Goreham Signature and Date:  26/04/2023
Risk Assessment Developed by: Galiya Sharafutdinova	Date: 16/05/2022

Risk Matrix

Likelihood

N.B. For more details regarding use of this matrix / definitions refer to final page of this document

Consequence

	Rare	Unlikely	Possible	Likely	Almost Certain
Severe <i>Eg. Potential Fatality or Injury or Illness with permanent disability</i>	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
Major <i>Eg. Potential Lost Time Injury (but non-permanent disability)</i>	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate <i>Eg. Potential Medical Treatment injury or illness (but no lost time)</i>	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor <i>Eg. Potential First Aid injury</i>	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal <i>Eg. Hazard or near miss requiring reporting and follow up action</i>	LOW	LOW	LOW	LOW	LOW

Actions required based on Risk Assessment

Extreme	An "extreme" risk requires immediate assessment and senior staff consideration is required; a detailed mitigation plan must be developed, and consideration should be given to ceasing the activity unless the risk can be reduced to a level of high or less; regular monitoring and reported on to the relevant management/steering committee; Target resolution should be within 1 month.
High	A "high" risk may also require immediate assessment and senior staff consideration; a mitigation plan must be developed; regular monitoring and reported on to the relevant management/steering committee. Target resolution (ideally reduction to medium or low level of risk) should be within 3 months.
Medium	A mitigation plan must be developed; existing controls need to be reviewed. Target resolution (ideally reduction to low level of risk) should be within 1 year.
Low	Risk is tolerable; manage by well established, routine processes/procedures and be mindful of changes to nature of risks.

Hazard Identification and initial Risk Rating			Control measures and Residual Risk Rating		Remaining Hazards	Actions required
What are the steps of the activity / items of equipment?	What are the potential hazards?	Risk Rating based on Risk Matrix	What control methods or measures will be used to reduce the likelihood and/or the consequence of an illness or injury from those hazards?	Residual Risk Rating based on Risk Matrix	What hazard remains?	What additional actions are required (by who and in what timeframe) to raise the level of control?
Using laboratory space	Trip hazard due to: <ul style="list-style-type: none"> • obstructions in walkways • wires trailing over bench edges May cause a injury, but unlikely to occur.	Medium	On lab session advise students to <ul style="list-style-type: none"> • keep bags under benches; • Keep the work area clean and tidy; • Ensure reasonable precautions not to let long wires dangle over bench edges and no loose cables near feet. • Do not move around the lab unnecessarily 	Low	Tripping, but unlikely to happen	Instruct students on the Lab Induction. Staff to observe

			during the experiment. May require first aid			
Using the equipment: light source	Access to a laser beam (red). The laser is located inside the Perspex box. There is no emitting aperture from the Perspex box.	Medium	All sides of the enclosure are covered to protect viewing bright reflection spots. For the switch on/off procedure, demonstrator to remove jewellery and other high reflective surfaces to avoid beam reflection. On lab session advise students on the hazard	Low	unlikely to happen	Tech staff and demonstrators to observe procedure and Instruct students on the Lab Induction and prior on safety for using light source.
Using electrical equipment	Exposure to dangerous voltages from faulty equipment May cause death or serious injury, but very unlikely to happen.	High	Regular checking and tagging of mains powered equipment, including power supply and lamp, for frayed cords and poor earth continuity to case of equipment. Check all power cords for visible deterioration prior to each use.	Medium		Instruct students on the Lab Induction and prior to using the equipment. Staff to observe
Personal protective equipment such as a lab coats or glasses are not required						

Summary of Requirements based on Risk Assessment		Review Period / Date
Personal Protective Equipment	Not Applicable	Annually
Other Equipment and Equipment Protection	Equipment for the experiment: A box with assembled parts required for	Annually
Training Requirements	Before the experiment, instruct students on Hazards for the specific experiment. Students to follow the procedure. No other special training is required for students Before the	Annually
Procedures, SOPs etc	All instructions are provided in a document named Experiment Fest booklet: Physics Handbook or similar.	Annually
Relevant Legislation etc.	WHS Act 2011 (NSW) & Regulations / Codes of Practice	

Questions to ask in order to determine the hazards relating to the task:

<p>A Could people be injured or made sick by things such as:</p> <ul style="list-style-type: none"> • Noise • Light • Radiation • Toxicity • Infection • High or low temperatures • Electricity • Moving or falling things (or people) • Flammable or explosive materials • Things under tension or pressure (compressed gas or liquid; springs) • Any other energy sources or stresses • Biohazardous material • Laser 	<p>D What could go wrong?</p> <ul style="list-style-type: none"> • What if equipment is misused? • What might people do that they shouldn't • How could someone be killed? • How could people be injured? • What may make people ill? • Are there any special emergency procedures required?
<p>B Can workplace practices cause injury or sickness?</p> <ul style="list-style-type: none"> • Are there heavy or awkward lifting jobs? 	<p>E Are procedures or organisational systems missing or not being followed?</p> <ul style="list-style-type: none"> • Standard Operating Procedures? • Risk Assessments? • Induction or training? • Management of change? • Safety Inspections? • Hazard reporting? • Contractor Management?
	<p>F What kinds of injuries could possibly occur?</p> <ul style="list-style-type: none"> • Broken bones


<ul style="list-style-type: none"> • Can people work in a comfortable posture? • If the work is repetitive, can people take breaks? • Are people properly trained? • Do people follow correct work practices? • Are there adequate facilities for the work being performed? • Are universal safety precautions for biohazards followed? • Is there poor housekeeping? Look out for clutter • Torn or slippery flooring • Sharp objects sticking out • Obstacles 	<ul style="list-style-type: none"> • Eye damage • Hearing problems • Strains or sprains • Cuts or abrasions • Bruises • Burns • Lung problems including inhalation injury/ infection • Skin contact • Poisoning • Needle-stick injury • Psychological illness or injury
<p>C Imagine that a child was to enter your work area?</p> <ul style="list-style-type: none"> • What would you warn them to be extra careful of? • What would do to reduce the harm to them? 	


How to Assess Risk

<p>Step 1 – Consider the Consequences</p> <p>What are the potential consequences of an incident occurring? Consider what <u>could reasonably</u> happen as well as what may actually happen.</p> <p>Look at the descriptions and choose the most suitable Consequence.</p>		<p>Step 2 – Consider the Likelihood</p> <p>What is the likelihood of the consequence identified in step 1 happening?</p> <p>Consider this with the current controls in place.</p> <p>Look at the descriptions and choose the most suitable Likelihood.</p>		<p>Step 3 – Calculate the Risk Rating</p> <p>A. Take Step 1 rating and select the correct column.</p> <p>B. Take Step 2 Rating and select the correct line.</p> <p>C. The calculated risk rating is where the two ratings cross</p>					
Consequence		Likelihood		LIKELIHOOD					
				CONSEQUENCE					
Serious	Potential Fatality or Injury or Illness with permanent disability	Almost Certain	The event could be expected to occur in most circumstances: "This is a common problem here".	Serious	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
Major	Potential Lost Time Injury requiring time off work (but non-permanent disability)	Likely	The event has a reasonable chance of occurring in usual conditions: "It has happened here before".	Major	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
Moderate	Potential medical treatment Injury or Illness but no lost time	Possible	The event might occur occasionally, has occurred sometime: "Has infrequently happened here before".	Moderate	LOW	LOW	MEDIUM	MEDIUM	HIGH
Minor	Potential First Aid Injury	Unlikely	The event has a small chance of occurring. "It has not happened here but has occurred elsewhere".	Minor	LOW	LOW	LOW	MEDIUM	MEDIUM
Minimal	No injury but hazard exists or near miss occurred requiring reporting and follow up action	Rare	Very unlikely to occur. "It would be extremely rare for it to occur here".	Minimal	LOW	LOW	LOW	LOW	LOW

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Activity / Task / Location: ExpFest:- Charge Particle, SB308/309	Reviewed / Approved By: Renee Goreham Signature and Date:  26/04/2023
Developed by: Simon Utteridge	Date: 16 May 2022

Summary of Requirements

Personal Protective Equipment	Enclosed Footwear
Training	Standard Student Induction. Safety precautions listed in laboratory manual.
Equipment	None
Relevant Legislation etc.	WHS Act 2011 (NSW) & Regulations / Codes of Practice
Review period/date	Annual

Risk Matrix

Likelihood

N.B. For more details regarding use of this matrix / definitions refer to final page of this document

	Rare	Unlikely	Possible	Likely	Almost Certain
Severe <i>Eg. Potential Fatality or Injury or Illness with permanent disability</i>	MEDIUM	MEDIUM	HIGH	EXTREME	EXTREME
Major <i>Eg. Potential Lost Time Injury (but non-permanent disability)</i>	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
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Minor <i>Eg. Potential First Aid injury</i>	LOW	LOW	LOW	MEDIUM	MEDIUM

Minimal <i>Eg. Hazard or near miss requiring reporting and follow up action</i>	LOW	LOW	LOW	LOW	LOW
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[Text Box]

Actions required based on Risk Assessment

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High	A "high" risk may also require immediate assessment and senior staff consideration; a mitigation plan must be developed; regular monitoring and reported on to the relevant management/steering committee. Target resolution (ideally reduction to medium or low level of risk) should be within 3 months.
Medium	A mitigation plan must be developed; existing controls need to be reviewed. Target resolution (ideally reduction to low level of risk) should be within 1 year.
Low	Risk is tolerable; manage by well established, routine processes/procedures and be mindful of changes to nature of risks.

Hazard Identification		Control		Risk Assessment
What are the steps of the activity / items of equipment?	What are the potential hazards?	What methods will be used to reduce the likelihood and/or the consequence of an illness or injury from those hazards?	What hazard remains?	What is the level of risk remaining based on the Risk Assessment matrix?
Use of electrical equipment	Foot injury from test equipment and falling from bench.	Advise students to keep equipment away from bench edge. Ensure that all students have covered footwear.	May require medical attention, but unlikely.	Low
	Exposure to dangerous voltages from electrical	Ensure high voltage connections are correctly connected and covered.to stop the student touching the high voltage connections.	May require medical attention for electric shock, but unlikely.	Medium

	equipment.			
	Exposure to dangerous voltages from faulty equipment.	Regular checking and tagging of mains powered equipment, including computers, for frayed cords and poor earth continuity to case of equipment. Check all power cords for visible deterioration prior to each use.	May cause death or serious injury, but very unlikely.	Medium
	Trip hazard due to wires trailing over bench edges.	Warn students not to let long wires dangle over bench edges.	May require first aid, but unlikely to occur.	Low
	Trip hazard due to obstructions in walkways.	Advise students to keep bags under benches to avoid obstructions.	May require first aid, but unlikely to occur.	Low