

Program Risk Assessment

This document has been developed to assist with the development of HIRAC's (Hazard Identification, Risk Assessment and Control) for programs delivered by the Ballarat Tech School.

To fill out the Risk Assessment either highlight all applicable cells or use the drop down arrow to select relevant options.

Then click complete on the page and click "Next" to proceed.

Program Title:

Humanoid Robot (Nao)

| | | | | | | | |
|-------------------------------------|-------------------------------|---------------------|--------------------|-----------------------------------|--------------|-----------------|----------|
| Risk assessment prepared by: | Adrian Borg | Reviewed by: | Liam Mudge | Date of Assessment: | | 30/03/2023 | |
| Select type of activity: | Normal Program Delivery | | | Date due for reassessment: | | 24/03/2024 | |
| Location of Activity | Advanced Manufacturing | Breakout 1 | Presentation Space | Science | Class Room | Food and Fibre | Off Site |
| | New Energies | VR | Foyer Space | Breakout 2 | Studio Space | Cafeteria Space | |

Activities Performed and level of supervision required:

The intention is that this document is to be working through in an interview style with the Safety Officer and those developing/delivering the program. To assist with the identification of any pre-existing HIRACs relevant to the program being delivered, complete the sections below by selecting the activities and hazards involved with your activity/program.

Location(s)

Identify the workspace required to deliver this program e.g. The Chocolate program may require the Food & Fibre lab as well as the Advanced Manufacturing lab.

Workflow

Identify the steps involved with carrying out the program, including the location of step, resources & materials required, as well as any specialized personnel required for the step and identify if this is covered by a pre-existing HIRAC report

Activities/Equipment

Identify all equipment required for delivery of the program e.g. Laser Cutter, tools, chemicals and consumables.

Hazard Identification

Identify the types of Hazard applicable to the program.

Exposure

Identify all groups who will be exposed to risks associated with this activity as well as any staff/specialist skills required to deliver this program e.g. Chocolate may require the assistance of some lab technician and personnel trained to operate the 3d printers/CNC machine.

Chemical Hazards

List any chemicals to be used and generated during this activity. Acquire, review and identify key hazard information from applicable material safety data sheet (MSDS), control measures to be undertaken and disposal requirements.

Biological Hazards

List any Biological Agents to be used and/or generated during this activity. Acquire, review and identify; key hazard information from applicable data sheets, control measures to be undertaken and disposal requirements.

Risk Controls

Identify the potential risk associated with undertaking this program (using the work space, operation of equipment, conducting experimentation etc.)

Approval

After reviewing all relevant MSDSs and HIRACS by supervising staff seek approval of Manager.

Reference Material

List all reference materials, MSDS's and HIRACS used to complete this form.

Workflow

Identify the steps involved with carrying out the program, including the location of step, resources & materials required, as well as any specialized personnel required for the step and identify if this is covered by a pre-existing HIRAC report

| # | Step | Location | Equipment/Materials | Specialist Personnel | Hazard | Notes |
|----|--|------------------------|---------------------|----------------------|-------------------|--|
| 1 | Admit students to building, general Housekeeping | Advanced Manufacturing | None | | Slips/trips/falls | Keep site in tidy condition with no spills or trip hazards left out. |
| 2 | Introduce students to room, demonstrate NAO robot | Advanced Manufacturing | NAO robot | | Crush | NAO has pinch points in its motors. The first activity points out these pinch points and advises how to handle the robot, where not to touch, etc. |
| 3 | Sit students in groups / at computers, begin programming | Advanced Manufacturing | Laptops, NAO robots | | Crush | As above |
| 4 | Test programs on robots and tweak programs at desks | Advanced Manufacturing | Laptops, NAO robots | | Crush | As above |
| 5 | Demonstrate finished programs at end of each program day | Advanced Manufacturing | Laptops, NAO robots | | Crush | As above |
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Activities and Equipment

Identify all equipment required for delivery of the program e.g. Laser Cutter, tools, chemicals and consumables.

| List equipment being used | Location & Quantity | | | HIRAC |
|---------------------------|--------------------------|--------------------------|--|---------------------------------------|
| | Advanced Manufacturing | Foyer Space | | |
| Laptop NAO Robot | 1 per student 8 total | 1 per student 6 total | | Advanced Manufacturing Electronics |

| | |
|---|----|
| Biological hazards | |
| Are there any biological hazards involved with this activity? If YES, please complete the following form | No |

| | |
|---|--|
| Biological Hazard Controls | |
| Recommended banned and restricted hazardous biological agents will not be used? | |
| Biological agents used are recommended for the age group undertaking the practical experiment? | |
| I understand the risks of the practical experiment and will undertake this practical in a 'wet area'? | |
| I have obtained relevant safety data sheets for agents being used and understand the accidental spillage or exposure, emergency response and first aid information? | |
| All hazardous agents and mediums are labelled appropriately? | |
| List any additional activities or equipment being undertaken/used that require an additional risk assessment to be developed | |

[List other measures here](#)

Check: If you answer 'No' to any of the above questions, do not carry out practical experiments until the matter has been resolved.

I will **not** carry out the practical experiment if extreme or high chemical risks exist.

I have considered all chemical exposure routes of the eyes, skin, inhalation, ingestion and injection to be used and generated.

List the chemicals to be used and generated. Identify key hazard information from safety data sheets, control measures to be undertaken and disposal requirements.

| |
|-------------------|
| Hazards |
| Electrical |
| Slips/trips/falls |
| Entanglement |
| Temperature |
| Noise |
| Crush |
| Ergonomic |
| Atmospheric |
| Human |
| Chemical |
| Radiation |
| Shear |
| Biological |
| Fumes |
| Food Safety |
| Collision |
| Other |

| | | | | | | |
|---|-----------------|----------|----------|------------|----------------|-------|
| Identify all groups who will be exposed to risks associated with this activity as well as any staff/specialist skills required to deliver this program e.g. Chocolate may require the assistance of some lab technician and personnel trained to operate the 3d printers/CNC machine. | | | | | | |
| Program Staff | Technical Staff | Students | Teachers | Volunteers | Cleaning Staff | Other |
| Notes: As discussed the risk is for a painful but not serious injury if a finger or other soft tissue is enmeshed in NAO's gears. The most likely pinch / crush injury would be located under NAO's arms. | | | | | | |

Risk Assessment Matrix

Assessing OHS Risks

Risk assessments in matters of Occupational Health and Safety* are based on 2 key factors:

- The severity of any injury/illness resulting from the hazard(s), and
- The likelihood that the injury/illness will actually occur.

| |
|--|
| Based on the Risk Assessment Matrix, identify the level of hazard |
| LOW |
| If the initial risk is LOW or VERY LOW you do not need to complete a full Risk Assessment |

| Assessment of risk level based on likely severity and probability of harm | | LIKELIHOOD | | | |
|---|---|--|---|---------------------------------|--------------------------------------|
| | | Very Unlikely Could happen, but probably never will | Unlikely Could happen, but very rarely | Likely Could happen sometime | Very likely Could happen any time |
| SEVERITY | Death or permanent disability | MEDIUM | HIGH | EXTREME | EXTREME |
| | Long-term illness or serious injury | LOW | MEDIUM | HIGH | EXTREME |
| | Medical attention and short-term incapacity | VERY LOW | LOW | MEDIUM | HIGH |
| | First aid needed | VERY LOW | VERY LOW | LOW | MEDIUM |

| | |
|--|-------------------|
| Notes: | |
| STEM Educator | Reviewer Comments |
| It is unlikely that even first aid would be needed, in the event of a pinch. Failing to follow the correct handling procedure may occur and so the likelihood is 'Likely'. | |

| | |
|---|-------------------|
| List Hazards Identified: Pinching / Crushing | Reviewer Comments |
| | |

| Hazards |
|-------------------|
| Electrical |
| Slips/trips/falls |
| Entanglement |
| Temperature |
| Noise |
| Crush |
| Ergonomic |
| Atmospheric |
| Human |
| Chemical |
| Radiation |
| Shear |
| Biological |
| Fumes |
| Food Safety |
| Collision |
| Other |

| Hazard | Control | Control Type | Notes |
|-------------------|-----------------------------------|----------------------------------|-------|
| Slips/trips/falls | Removal of hazard | Elimination | |
| Crush | Training/Induction Supervision | Administration Administration | |
| | | | |
| | | | |
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| | | | |

If the initial risk is **LOW** or **VERY LOW** you do **NOT** need to complete a full Risk Assessment

Notes:

| Risk controls | | | | |
|----------------------|--|---------------------------------|-----------------------|------------------------|
| Initial Risk Level | LOW | | | |
| Elimination | Alternate type of practical | Relocate work area | Removal of hazard | |
| Substitution | Alternative equipment to be utilized | Alternative chemical to be used | Specialized equipment | |
| Isolation | Electrical isolation | Safe work zones | Mechanical isolation | Security |
| | Restricted areas | Chemical storage cabinet | | |
| Engineering | Locking | Guarding | Fume cupboard | Spill trays/ bund wall |
| | | | | |
| Administration | Hazardous chemicals register | Training/Induction | Workplace inspections | Risk assessment |
| | Safe work procedures | Material Safety Data Sheets | Supervision | First aid kit |
| PPE | Eye protection | Sun Screen | Hand protection | Hearing protection |
| | Lab coat or apron | Face Shield/Mask | Safety footwear | Enclosed footwear |
| Emergency facilities | Eye wash | Spill kit | | |
| COVID-19 | <p>Note COVID-19 specific controls, especially shared equipment or resources</p> <p>Example: Restrict sharing between students. Replace paper resources with digital. Cleaning processes (including resources in plastic pockets) Students work in pairs or groups of 5-6. These students will be restricted to a single table, and will not share resources between tables. All equipment will be sprayed/wiped/cleaned after use.</p> | | | |
| Residual Risk Level | VERY LOW | | | |

Activity Approval

This activity has been reviewed and determined that it can be carried out safely. Where risks have been identified appropriately mitigation measures will be implemented.

Date

Completed By

Adrian Borg

30/03/2023

Reviewed by:

Liam Mudge

31/03/2023

Reviewed by supervisor, where high risks are involved.

Changes that need to be considered next time: