UTS SAFE WORK METHOD STATEMENT (SWMS)

1. FACULTY/SUBJECT

Faculty/Subject title	41013 Industrial Robotics
Subject supervisor/coordinator	Gavin Paul
SWMS prepared by	Connor Rudd & Claire Matthews

2. WORK ACTIVITY DESCRIPTION

Describe the work activity E.g. Operating, Handling, Using..
Include names of hazardous equipment, substances or materials used,
and any quantities and concentrations of substance(s) or reaction products.

The task is to model multiple robotic systems in a kitchen environment. The robots will be handling raw materials involved in cooking activities for baking a cake, with weight <1kg added to end effector of robotic arm/gripper. The system will be operating pick and place tasks

Hazardous equipment: Dobot, Custom 6DOF Robotic Arm, Control System, Oven
Hazardous substances or materials: Robot arm lubricants/grease (typically only a few mL), cleaning agents (typically small quantities determined dependent on use). While raw materials used for cooking are not reactive or hazardous, they can impair the robot's ability to function if workspace isn't kept clean.

Similar System baking cookies.

3. HAZARDS: Choose those hazard types that will need to have control measures in Section 4

Work Environment
- Working in Remote Locations
- Working Outdoors/fieldwork
- Clinical/Industrial setting
- Poor ventilation/Air quality
- Temperature extremes
- Working at Height
- Slip/Trip/Fall hazards

Plant
- Noise
- Vibration
- Working with compressed air
- Lifts Hoists or Cranes
- Moving parts (Crushing, friction, cut, stab, shear hazards)
- Pressure Vessels or Boilers

Chemical
- Hazardous Chemicals use
- Skin/eye irritant
- Sensitiser
- Mutagen
- Carcinogen
- Toxic to reproduction
- Aquatic toxicity
- Toxic
- Corrosive
- Dangerous when wet

Ergonomic/Manual Handling
- Repetitive or awkward movements
- Lifting heavy objects
- Over reaching
- Working above shoulder or below knee height
- Poor workstation set up

Electrical
- Plug in equipment
- High voltage
- Exposed wiring
- Exposed conductors

Radiation
- Ionising Radiation
- Non-ionising radiation (Lasers, Microwaves, Ultraviolet light)

Biological
- Sharps/Needles
- Cytotoxins
- Pathogens/infectious materials
- Infectious materials
- Communicable diseases
- Animal/insects
- Work with fungi/bact/viruses

Psychosocial
- Aggressive or violent clients/students
- Working in isolation
- Working with timeframes
- Staffing issues

4. CONTROLS MEASURES: Choose those that apply for hazards identified

Eliminate/Isolate/Substitute / Engineering Controls	Admin specific: Licenses/permits Work Methods	Emergency Response Systems
• Remove hazard • Restrict access • Redesign equipment • Guarding / Barriers / Fume Cupboard / exhaust • Biosafety cabinet • Use safer materials/substances • Ventilation • Regular maintenance of equipment • Redesign of workspace / workflow	• Training Information or Instruction • Licensing or certification of operators • Test and tag electrical equipment • Restricted access • Regular breaks • Task rotation • Work in pairs • Document Chemical risk assessment • Ladder / Sling register	• First aid kit • Chemical spill kit • Safety shower • Eye wash station • Emergency Stop button • Remote Communication Mechanism

Other controls not listed

5. PPE REQUIRED (Tick those that apply) ✓


EYE PROTECTION ☐


HEARING PROTECTION ☐


CLOSED-IN FOOTWEAR MUST BE WORN ☑


HAND PROTECTION ☑


FACE SHIELD ☐


PROTECTIVE CLOTHING ☐


RESPIRATORY PROTECTION ☐


LONG HAIR MUST BE CONTAINED ☑


HEAD PROTECTION ☐

6. EMERGENCY EQUIPMENT

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7. WORK ACTIVITY STEPS

BEFORE YOU START:

- Safety Induction course
- Inspect wires and cabling
- Know load specs
- Shutdown robot
- Open oven door
- Clean work area, return everything to start pose and replenish ingredients
- Reposition robot to starting pose
- Electrically isolate
- Clean robot
- Exit fenced area
- Power on robot
- Announce start of robot movements (warn people around)

STEPS IN WORK ACTIVITY:

1. Check all cameras and sensors are clear and receiving data
2. Stand next to e-stop button
3. Stand next to laptop/control system
4. Supervise entire movement and remain outside workspace area
5. Let people around know when activating
6. Entire workspace is secured (gate closed)
7. Power off robot
8. Enter workspace
9. Inspect results

EMERGENCY PROCEDURES:

- Press emergency button
- Activate fire alarm
- Remove all people in proximity
- Call emergency services

TRAINING REQUIRED:

- Custom robot induction including supervised training
- Supervisor of use

8. SIGN OFF

PREPARED BY:	**LAB SUPERVISOR**	**DATE:** 28/08/24
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