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| UTS SAFE WORK METHOD statement (SWMS) |

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| 1. **FACULTY/SUBJECT** | |
| Faculty/Subject title | 41013 Industrial Robotics |
| Subject supervisor/coordinator | Gavin Paul |
| SWMS prepared by | Pawarat Phatthanaphusakun |

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| 1. **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 work activity involves operating a Universal Robots UR3 robotic system for the purpose of demonstrating Assignment Lab 1 as part of the Industrial Robotics subject. This assignment likely includes tasks that showcase the robot's capabilities, programming, and its role in various industrial applications. | | | | | |
| 1. 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 |
| 1. **CONTROLS MEASURES: Choose those that apply for hazards identified** | | | | | | |
| **Eliminate/Isolate/Substitute / Engineering Controls**   * 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 | | | **Admin specific: Licenses/permits Work Methods**   * 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 | | **Emergency Response Systems**   * First aid kit * Chemical spill kit * Safety shower * Eye wash station * Emergency Stop button * Remote Communication Mechanism | |
| **Other controls not listed** | | | | | | |
| 1. **PPE REQUIRED (Tick those that apply)** | | | | | | |
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| 1. **EMERGENCY EQUIPMENT** | | | | | | |
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| 1. **work activity steps** |
| **before you start:**   * Check the robot power supply to ensure it's connected and functional. * Check the Raspberry Pi power supply to ensure it's connected and functional. * Inspect all electronic wires for any signs of damage, including fraying or exposed wires. * Ensure there are no leaks in any of the wires. * Connect the wires to the power supply of the Raspberry Pi and the robot. * Verify that the connections are stable and secure. * Inspect the overall work station for any potential hazards or obstructions. * Notify nearby people to move out of the range of the robot.   **steps in work activity:**   * Turn on the robot's power supply using the designated switch or button. * Turn on the Raspberry Pi's power supply using the designated switch or button. * Clear the entire workspace, ensuring that there are no objects or obstacles in the robot's path. * Notify nearby people to move out of the range of the robot. * Load the desired program or task onto the robot controller, following the appropriate software procedures. * Confirm that the robot's end-effector (tool or gripper) is properly attached and secured. * Use the step for each end-effector to operate to ensure that robot’s movement are in correct form. And slow down the movement of the robot to minimum to ensure the movement not too fast. * After finished with work activity. Disconnect wifi, shutdown the robot and Raspberry Pi power, and packup all wire to original position.   **emergency procedures:**   * Press emergency button * Notify security or dial 6 using the UTS internal phone   **training required:**   * Watch video tutorial on how to use the robot * Read the document of how to use the robot |

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| 1. **sign off** | | |
| **prepared by:**  **NAME: Pawarat Phatthanaphusakun** | **Lab Supervisor**  **Name: Michael Lee** | **Date: 15/09/23**  **Review Date: 15/09/23** |