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| UTS SAFE WORK METHOD statement (SWMS) |

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| 1. **WORK ACTIVITY DESCRIPTION**  |  |  | | --- | --- | | 1. **FACULTY/SUBJECT** | | | Faculty/Subject title | 41013 Industrial Robotics | | Subject supervisor/coordinator | Gavin Paul | | SWMS prepared by | Dennis Nguyen, Thomas Parish, and Julien Wang | | | | | | | |
| 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. | Mandarin Picking Project  Utilise UR3 Robot to simulate the picking of a mandarin off of a mandarin tree branch. | | | | | |
| 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)** | | | | | | |
| http://www.orr.uts.edu.au/images/pictograms/protection/hearing.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/face.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/hand.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/eye.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/foot.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/ppe.png | | | | | | |
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| http://www.orr.uts.edu.au/images/pictograms/protection/hair.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/head.pnghttp://www.orr.uts.edu.au/images/pictograms/protection/respiratory.png | | | | | | |
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| 1. **EMERGENCY EQUIPMENT** | | | | | | |
| http://www.orr.uts.edu.au/images/pictograms/equipment/eyewash.pnghttp://www.orr.uts.edu.au/images/pictograms/equipment/shower.pnghttp://www.orr.uts.edu.au/images/pictograms/equipment/spill.png | | | | | | |
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| 1. **work activity steps** |
| **before you start:**   * Identify the hazards * Conduct risk assessment * Control risks by adjusting work environment and wearing PPE * Monitoring controls    **steps in work activity:**   1. Activity Breakdown 2. Clear workspace appropriately. 3. Dawn appropriate PPE. 4. Prepare UR3 Robot. 5. Test UR3 basic movement 6. Run UR3 program to move towards mandarin. 7. Run UR3 program to grasp mandarin. 8. Run UR3 program to move mandarin to bucket. 9. Run UR3 program to release mandarin in bucket. 10. Alert peers that UR3 robot will be in use. 11. Use UR3 robot and monitor for hazards. 12. Switch off UR3 robot. 13. Let peers know that UR3 is no longer in use. 14. Clean workspace.   **emergency procedures:**   * Press emergency button * Notify security or dial 6 using the UTS internal phone   **training required:**   * Demonstration provided within class * Appropriate pre-requisites completed |

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| 1. **sign off** | | |
| **prepared by:**  **NAME: Dennis Nguyen** | **Lab Supervisor**  **Name: Michael Lee** | **Date: 18/102023**  **Review Date:** |