



Blue Lobster

Jobsite Safety Analysis

One Degree North, Singapore American School



Safety First
2024 MATE

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Jobsite Safety Table

Task	Hazards	Controls	Persons In-Charge
Entering/Exiting the Pool Deck Area	Slipping on a wet surface	Members are required to wear closed-toe, non-slip footwear when working on deck.	Austin Thompson Kaito Liventals
	Damaging equipment	When loading the ROV onto the carrier, a person in charge must ensure the tether is securely packed to prevent damage.	
System Set Up	Misplaced Equipment	Blue Lobster has a physical checklist of important equipment attached to the control station to ensure no equipment is misplaced.	Krishna Kundalia Alan Chen
Power Up Checks	Excessive current sent to the ROV system	A 25-amp fuse is present to prevent any damage to the ROV.	Angela Soultati Iida Alice Yang
Pool Side Operations	Injury	Participating members must maintain a safe distance from the pool's edge to avoid falling in. Blue Lobster also brings towels and expediently dries off the ROV when it is out of the pool.	Genis Kim Savitur Swarup
System Breakdown	Equipment Damage	Persons in charge must ensure that all equipment is securely placed on the carrier to ensure nothing falls off.	Vyjayanti Vasudevan Sumedh Mittal

Appendix

Appendix 1 - Operations Checklist-Revised Before Every Test Run

ROV	Ensure that the enclosure is fully waterproofed and sealed	Ensure that all cables and wires are not exposed	Ensure that all electronics properly function	Ensure that nothing is loose on the ROV (screws, electronics, attachments, etc.)
Control	The Control Station is at least one meter away from the pool		The anti-splash barrier is placed alongside the Control Station.	
Driver	Inform the crew when the ROV is turned on		Test all thrusters and servos to ensure all mechanisms function correctly.	
Crew	Have towels prepared at all times and aid in tether management so they don't weigh down the ROV.			
During Run	Before retrieving the ROV, turn off the power and wait until the ROV stops running.			

Appendix 2 - Safety Training Mandatory Session Implementation Into Lesson Curriculum

Lesson
1.1 Introduction
1.2 Safety
1.3 Documentation
1.4 Waterproofing
2.1.1 Data Types and Structures
2.1.2 Logical Operators and Gates
2.2.1 Circuits and Arduino Basics
2.2.2 ESCs, Thrusters, Servos (PWM)
2.2.3 Soldering and Wire Connections
2.2.5 SIDs
2.3.1 Python Basics
2.3.2 PySerial
2.2.4 Packets and Serial Communication
2.3.4 PyQt
2.4.1 Introduction to Linux and CLI
2.4.2 Git and GitHub
2.5.1 Open CV
Control theory (PID, feed forward, etc)
NanoPI / OrangePI specifics
Python UDP
CircuitPython (?) (maybe RP2040 specifics)

Appendix 3 - Safety Training Slides and Mandatory Requirements When In the Lab - Electronics

Electronics

- Make sure power is off before working with electronics
- Don't have electronics dangled close together
- Make sure power distribution can't easily touch
- Check connections before turning power on (w multimeter)
- Make sure that Ground and Power are connected correctly
 - Otherwise you could cause a short circuit
- Turn off power when not in use
- Don't touch any bare wires



Appendix 4 - Safety Training Slides and Mandatory Requirements When In the Lab - General Hardware Safety Tips

General Hardware Safety Tips

- Just because something isn't sharp doesn't mean it won't cut or hurt you
- NEVER multi-task when working with mechanical components
- Keep track of all moving parts around you and ensure you are not operating near them
- Never force things with your entire body weight or force things in randomly
- Keep your workspace clean
- Don't use power tools if you don't know how to use them
- Don't play with tools
- Wear safety glasses when working in the shop



Appendix 5 - Safety Training Slides and Mandatory Requirements When In the Lab - Soldering

Soldering

- Don't touch the iron
- Don't melt random things (especially epoxy)
- Always solder with the fume extractor (toxic fumes)
- Wear safety goggles when soldering

