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| Capstone/Senior Design Hazard Assessment and Safety Plan | |

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| Project Title: Artemis Lunar Surface Autonomous Transportation System | Program Advisor: Yosef Allam |
| Team members: Luis Cisneros, Dillon Kolstad, Tate Holms, Ryan Hunter, Marcin Koral, Nathaniel White, Anand Zorig | |
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| Brief project summary: This project involves designing and prototyping a vehicle that is able to travel a minimum round trip of 25 miles autonomously. In addition to this the vehicle is required to carry a payload that is 1.5m x 3m x 1m and weighs up to 500kg. | |
| Locations where fabrication will take place: Machine shop and Senior Design lab. | |
| Materials list (you can reference other documents): Reference Bill of Materials. | |
| Personal Protective Equipment list: Face covering, safety glasses, latex gloves, ear protection, and closed-toe shoes. | |
| List of the things that might go wrong:   * Catch on fire due to electrical failure * COVID outbreak * Common machine shop * Depending on the eventual scale, risk of heavy things falling or improper lifting. * Property damage as a result of autonomous testing. | |

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| **Possible Sources of Harm** | | |
| **Hazard** | **Present?** | **Control method** |
| Dust generated? | **Yes** | **Proper ventilation and masks will be used** |
| Paint vapors and spray? | **No** |  |
| Fumes from 3D printers | **No** |  |
| Soldering fumes? | **Yes** | **Will only be used in well ventilated area** |
| Electrical cords – trip hazards, water hazards | **Yes** | **Ground fault interrupter** |
| Frayed cords? | **No** |  |
| Power tools | **Yes** | **Basic machine shop safety will be followed** |
| Sharp objects | **Yes** | **Basic machine shop safety will be followed** |
| Rotating machinery | **Yes** | **Basic machine shop safety will be followed** |
| Glassware, slippery when washing | **No** |  |
| Tight spaces | **Yes** | **Maintain social distancing** |
| Long hair | **Yes** | **Basic machine shop safety will be followed** |
| Flying projectiles | **Yes** | **Safety goggles will be worn** |
| Falling/rolling objects (= foot injuries) | **Yes** | **Proper footwear will be worn** |
| Hand injuries | **Yes** | **Appropriate gloves will be worn** |
| Noise | **Yes** | **Ear protection will be worn** |

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| **General Safety (a checklist)** | | |
| I have a buddy working with me |  |  |
| Emergency contact card at room entrance |  |  |
| First aid kit? |  |  |
| Work areas clean, orderly, and uncluttered? |  |  |
| Surfaces dry, slip resistant materials? Walkways clear? |  |  |
| Phone? |  |  |
| Fire Extinguisher? |  |  |
| Lighting? Activated by occupancy sensors, and can the sensors see across the room? |  |  |
| Handwashing sink? |  |  |
| Eating/drinking prohibited? |  |  |
| Nearest Eyewash/drench showers? Is an eyewash necessary? |  |  |
| Fire protection, are there smoke detectors in the space that may be activated by dust generation? |  |  |
| Need a designated hot work area? What kind of hot work will be performed? Grinding, torch (soldering irons do not necessitate Hot Work process), |  |  |
| Have combustibles near spark producing equipment been removed? |  |  |
| Portable ladders, fixed ladders, rolling stairs, scaffolds, lift trucks in good condition? |  |  |

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