|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item category** | **Item Manu. Part** | **Quantity needed** | **Cost per component (£)** | **Total cost per Item (£)** |
| Free issue | | | |  |
| Populated PCB | NUCLEO -F401RE | 1 | 15 |  |
|  | Controller board | 1 | 30 |  |
| Integrated Circuits | LM339 | 1 | 0.64 |  |
|  | ULN2003 | 1 | 0.23 |  |
| Unpopulated PCBs, IC Sockets and Headers | 8 pin IC base | 3 | 0.8 |  |
|  | 4 way SIL Header | 6 | 0.2 |  |
|  | Sensor Mini PCBs | 3 | 1 |  |
| Sensors | TCRT5000 | 2 | 0.64 |  |
|  | AEAT-601BF06 | 2 | 16.85 |  |
|  | HM-10 | 1 | 16.36 |  |
| Mechanical Parts | Chassis | 1 | 42 |  |
|  | Front wheel | 1 | 2.5 |  |
|  | Rubber tyre | 2 | 1.45 |  |
|  | Motor A |  | 5.14 |  |
|  | Motor B |  | 7.11 |  |
|  | Gear Box | 2 | 7 |  |
|  | Jumper cables | 1 | 3 |  |
|  | Sensor PCB empty board | 1 |  |  |
| Misc | Battery Holder | 1 | 3.5 |  |
|  | Batteries | 8 | 2 |  |
| Basic electronic parts | resistors | 12 | 0.1 |  |
|  | Var. resistor | 1 | 0.12 |  |
| Budget | | | |  |
| Sensors | TCRT5000 | 3 | 0.64 |  |
| Unpopulated PCBs, IC Sockets and Headers | 8 pin IC base | 3 | 0.8 |  |
|  | 4 way SIL Header | 10 | 0.2 |  |
|  | Sensor Mini PCBs | 3 | 1 |  |
| Integrated circuits | LM339 | 1 | 0.64 |  |
| Misc | Velcro Order code OE04216 , Onecall | 1 | 3.05 |  |

The budget used only 13.01 pounds out of the 40 pounds limit given, approximately 32.5 %. A low percentage as we concentrated on only buying essential basic items needed to implement the design of the buggy. This is done so that if we need anymore items such as more sensors to replace broken ones we don’t exceed the budget.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **WORK ACTIVITY/**  **WORKPLACE**  **(WHAT PART OF THE ACTIVITY POSES RISK OF INJURY OR ILLNESS)** | **HAZARD (S)**  **(SOMETHING THAT COULD CAUSE HARM, ILLNESS OR INJURY)** | **LIKELY CONSEQUENCES**  **(WHAT WOULD BE THE RESULT OF THE HAZARD)** | **WHO OR WHAT IS AT RISK**  **(INCLUDE NUMBERS AND GROUPS)** | **EXISTING CONTROL MEASURES**  **IN USE**  **(WHAT PROTECTS PEOPLE FROM THESE HAZARDS)** | **WITH EXISTING CONTROLS** | | | |
| **SEVERITY** | LIKELIHOOD | **RISK RATING** | **RISK ACCEPTABLE** |
| **Moving to place or get the buggy.** | **Tripping and falling due to having to move through people watching.** | **Cuts, bruises, breaks and/or sprains due to fall on hard surface.** | **Anyone standing in a crowd and group member watching the race or heats.** | **Areas that will have movement by group members throughout race or heat should have no people present watching in that area except group members. To ensure there no one in that space but the group members, a member of staff, typically the announcer should inform people watching. Small signs and barriers should be erected to coordinate people to wear they should watch.** | **3** | **2** | **6** | **Y** |
| **Moving around room of K3 gym to watch race or heat.** | **Tripping on an object lying on the floor like a buggy, slipping on a wet surface.** | **Cuts, bruises, breaks and/or sprains due to fall on hard surface.** | **Anyone moving around the room.** | **A suitable member of staff, typically cleaning staff, should be assigned to remove any obstructions immediately when they become present. And Clean and dry any wet areas immediately when they become present. Before the race and Heat tests sweep the area for any obstructions and wet areas. Ensure there is adequate lighting in heat tests and race. Report to a qualified member of staff in charge of tests or race when there is damage to flooring in K3 room. Also, Announcer should visually check crowd spacing and coordinate them to space out to ease movement through tight spaces.** | **2** | **2** | **4** | **Y** |
| **Watching or coordinating race or heat tests.** | **Extreme summer heats as race day is in the summer.** | **Heat Exhaustion: Symptoms are pale skin, excessive sweating, headache, nausea and vomiting, blurred vision and dizziness, with the potential for fainting.** | **Anyone watching race.** | **Turn off all heaters in room. Prepare ice cold water served on a spacious table and serve out the drinks. Open windows to let hot air out of room.** | **4** | **1** | **4** | **Y** |
| **Watching or coordinating race or Heat tests.** | **Fire, possible source maybe caused by a short circuit in an electrical circuit of buggy or lighting or batteries left on the floor by students.** | **Serious Injury, Death, major loss from fire.** | **Anyone present while watching or coordinating race or heat tests.** | **A trustable individual that understands the university health and safety policy with experience in coordinating crowds and training in coordinating crowds in fire evacuation, is assigned to coordinate the crowd in fire evacuation. Everyone present should be made aware of fire procedures by the announcers, especially emphasize that no batteries be left on floor with penalization to teams that do.** | **5** | **1** | **5** | **Y** |

TUOM_4COL**Assessment ID Number** (E&EE\_Initials\_DATE\_Number)**…ESP\_2018/19\_group 22 Activity Location: Sackville building K-Floor gym**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | **THIS RISK ASSESSMENT WILL BE SUBJECT TO A REVIEW NO LATER THAN: (MAX 12 MTHS)** |
| **MANAGER/SUPERVISOR** | **NAME:** | **SIGNED:** | **DATE:** |  |
| **Student:** | **NAME: Osama Othman** | **SIGNED:** | **DATE:** |  |

**IF THE ANSWERS TO ANY OF THE QUESTIONS BELOW IS YES THEN ADDITIONAL SPECIFIC RISK ASSESSMENTS MAY BE REQUIRED.**

|  |  |  |  |
| --- | --- | --- | --- |
| IS THERE A RISK OF FIRE? | Y/N | DOES THE ACTIVITY REQUIRE ANY HOME WORKING? | Y/N |
| ARE SUBSTANCES THAT ARE HAZARDOUS TO HEALTH USED? | Y/N | ARE THE EMPLOYEES REQUIRED TO WORK ALONE | Y/N |
| IS THERE MANUAL HANDLING INVOLVED? | Y/N | DOES THE ACTIVITY INVOLVE DRIVING | Y/N |
| IS PPE WORN OR REQUIRED TO BE WORN? | Y/N | DOES THE ACTIVITY REQUIRE WORK AT HEIGHT | Y/N |
| ARE DISPLAY SCREENS USED? | Y/N | DOES THE ACTIVITY INVOLVE FOREIGN TRAVEL | Y/N |
| IS THERE A SIGNIFICANT RISK TO YOUNG PERSONS? | Y/N | IS THERE A SIGNIFICANT RISK TO NEW / PREGNANT MOTHERS? | Y/N |

TUOM_4COL

***Severity value*** **= potential consequence of an incident/injury**

5 Very High Death / permanent incapacity / widespread loss

4 High Major Injury (Reportable Category) / Severe Incapacity / Serious Loss

3 Moderate Injury / illness of 3 days or more absence (reportable category) / Moderate loss

2 Slight Minor injury / illness – immediate First Aid only / slight loss

1 Negligible No injury or trivial injury / illness / loss

***Likelihood value* = what is the potential of an incident or injury occurring**

5 Almost certain to occur

4 Likely to occur

3 Quite possible to occur

2 Possible in current situation

1 Not likely to occur

***risk rating* = *severity value* × *likelihood value***

***risk ratings* are classified as *low* (1 – 5), *medium* (6 – 9) and *high* (10 – 25)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **SEVERITY** | | | | |
| **LIKELIHOOD** |  | **1** | **2** | **3** | **4** | **5** |
| **1** | **Low** | **Low** | **Low** | **Low** | **Low** |
| **2** | **Low** | **Low** | **Medium** | **Medium** | **High** |
| **3** | **Low** | **Medium** | **Medium** | **High** | **High** |
| **4** | **Low** | **Medium** | **High** | **High** | **High** |
| **5** | **Low** | **High** | **High** | **High** | **High** |

**Risk Classification and Actions:**

**Rating Classification Action**

1 – 5 Low Tolerable risk - Monitor and Manage

6 – 9 Medium Review and introduce additional controls to mitigate to

“As Low As Reasonably Practicable” (ALARP)

10 – 25 High Stop work immediately and introduce further control measures

**Risk Classification and Actions:**

**Rating Classification Action**

1 – 5 Low Tolerable risk - Monitor and Manage

6 – 9 Medium Review and introduce additional controls to mitigate to

“As Low As Reasonably Practicable” (ALARP)

10 – 25 High Stop work immediately and introduce further control measures

All risks with the current control measures should reduce the risks of the hazards taking place to a low-level risk rating which means that the risk are acceptable for their associated hazards. This means we only have to monitor that the actions of control measures are being done and manage them so that they are done.