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| **TITLE:** |  | | **DURATION:** |
| MECHANICAL BUILD | | | 90 mins |
| **OBJECTIVES:** | | **RESOURCES REQUIRED** | |
| * Build the robot * Develop hand tool skills * Read technical engineering assembly drawings | | * Projected Assembly Drawings * Assembly kit inc. fixings, hand tools and parts * Chassis | |
| **SECTION** | **POINTS TO COVER** | | |
| **Introduction:** | * Hand out Assembly drawings * Describe that teams will now build their robots | | |
| **Main:** | * Identify parts of the assembly drawings   + **Bill of Materials (BOM)** – This has the items and quantity required for the robot   + **Fixings** – M3 fixings will me used (3mm wide), the second number is the bolt length. i.e. M3 x 20 is a 20mm long M3 bolt.   + **Balloons** – This is how parts are labelled, the numbers in balloons are the Item Number in the BOM   + **Exploded Views** – Each view indicated which parts are being fixed to the Chassis including parts, mounts and fixings   + **Chassis Orientation** – The ‘UP’ on the chassis should be readable when assembling the chassis, if not, it is upside down   + **Notes** – There are some notes on the assembly drawings, these give more information that should be followed   + **Nylocs** – Nylon Locking Nuts (Nylocs) are used as nuts can loosen under vibration   + **Over-Tightening** – Do not overtighten Nylocs and use washers where indicated, this spreads the load. Excessive load will crack the acrylic Chassis * Tools   + Cadets will be given the tools they need   + Don’t brief the cadets on how to use the tools, they will figure it out for themselves * Health & Safety   + No Horseplay with tools, they can be dangerous and sharp   + Never push drivers towards your body/hand/someone else – if you slip you will cause harm   + Any dangerous behaviour will be met with removing cadets from the course * Team Management   + Discuss how to make use of everyone in the team     - Building     - Reading the drawings     - Preparing the next step     - Quality Control * Start the build * During the build, ensure all DS are monitoring for:   + H&S Issues   + Teamwork issues   + Incorrect Build (allow to make mistakes but correct where critical i.e. upside-down chassis, motors mounted the wrong direction) * Once build is complete:   + Assess build Quality   + Collect in remaining fixings   + If a team is done, send them away on a break – idle cadets fiddle and cause damage | | |
| **Conclusion:** | * Once all teams are done, assess time – If there is time, continue straight onto Electrical Build, if not, take lunch. | | |