

MIRACLES OF ENGINEERING



OUR NOTEBOOK

Our Engineering Notebook will contain **documented thoughts, decisions, lessons learned**, and the actions we took in order to make what our robot is now. It features **design matrices, whiteboard pictures, and many other visual aids**. We follow a specified **Design Process** as a guideline for all of our decisions. Our Engineering Notebook also includes how we **positively** affected the **FIRST and STEM Community** through various outreach events.

OUR TEAM

MOE 365 FTC is a FIRST Tech Challenge (FTC) team. We design, build, and program robots to play games released every year by FIRST (FIRST stands for the Inspiration and Recognition of Science and Technology). Our full team name is **MOE – the Miracle Workerz**. MOE stands for **Miracles of Engineering**.

NOTEBOOK SECTIONS

SECTION A: TEAM BIOGRAPHIES

SECTION B: OUR DESIGN PROCESS

SECTION C: ENGINEERING SECTION

SECTION D: DESIGN DOCUMENT

SECTION E: TEAM/OUTREACH SECTION

SECTION F: CONTROL DOCUMENT

SECTION G: TEAM PLAN

SECTION H: SEASON TIMELINE

OUR MOETIFS

We want to highlight key points (“MOEtifs”) of our journey through the Skystone season. To demonstrate the following MOEtifs, we noted key examples in the notebook:

TEAM SUSTAINABILITY

Because we have 5 graduating seniors, one of our main focuses is team sustainability. We reorganized the **team structure** with subteams led by experienced members to teach our newer members: **found on page G5**

OUTREACHES:

One of our three main goals of our outreach is **expanding the FIRST Program and Delaware FTC**; We have invited several teams to our lab for a collaboration meeting, notably *Juliette’s Revenge #14851*: **found on page E31**

DESIGN PROCESS:

We created a color-coded, **iterative design process** to handle not only our decision-making process but also our notebook writing process. Our main focus is “user-friendliness”: **found on page B2**

MECHANICAL:

One unique aspect of our robot is its “**serviceability**”: its design makes it easy to replace and iterate our mechanisms. This means we can upgrade our designs and also make major hardware changes very quickly, like when we changed our the entire drivetrain within a meeting **found on page C226**

PROGRAMMING:

One of the main ideas of programming is **path planning** in autonomous. We use odometry wheels aided by a positional PID to get to set position in autonomous. This code is still being implemented: **found on F13-F16**

✉ prettyre@yahoo.com

moe365.ftc@gmail.com