**ME 463**

**Malott Awards (Innovation, Engineering,**

**Mfg. & Validation, and Research)**

**Project Description Template**

**Semester: \_Spring 2025\_**

Team Name: Down2Earth (D2E) Company Class Instructor: Yung Shin

Team Member Names:

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Awadhoot (Avie) Ghatge

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Jacob McKenrick

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Project Title: TerraProbe

TerraProbe is a portable soil sampling robot designed to bridge the gap between manual tools and expensive industrial equipment. Aimed at small to medium-sized farmers, TerraProbe burrows into the ground to collect accurate, uncontaminated soil samples up to 12” deep. It provides real-time insights on soil health, including moisture and NPK concentrations, across various soil depths via a testing probe and integrated dashboard. In addition to in-field analysis, the collected core samples are preserved for optional lab testing, enabling deeper diagnostics. Traditional methods are labor-intensive and inconsistent, TerraProbe addresses these challenges with an efficient, on-demand solution that combines automation, depth-specific sampling, and data integration. This allows users to make timely, informed decisions that improve crop yield, sustainability, and land use planning. TerraProbe is a compact, efficient, and affordable solution that transforms soil burrowing and monitoring into an automated and smart all-in-one solution to support soil sampling and real-time testing.