# IGVC 2026 – FULL SUMMARY PRESENTATION

AutoNav • Self Drive • Design Challenge • Awards

# Competition Overview

- 33rd Annual Intelligent Ground Vehicle Competition

- May 29 – June 1, 2026 • Oakland University, Rochester, Michigan

- Events: AutoNav, Self Drive, Design Challenge

# Key Updates for 2026

- Introduction of Top Performer Award (AutoNav + Self Drive)
- Design reports must include autonomous subsystem analysis
- Extended Self Drive testing windows
- Continuation of the HBCU Award

# Team Requirements

- Student-led teams with faculty supervision
- Maximum of 3 vehicles per university
- $500 registration fee per vehicle
- 50% discount for dual-event vehicle entries
- International teams limited to 6 students + 2 faculty

# Vehicle Requirements

- Fully autonomous unmanned ground vehicle
- Dimensions: 3–7 ft length, 2–4 ft width, ≤ 6 ft height
- Speed: 1–5 mph, hardware governed
- Mandatory 20 lb payload
- Mechanical and wireless E-stop required

# Qualification Requirements

- All vehicles must pass qualification before competing
- Includes speed test, lane following, obstacle avoidance
- Vehicle safety systems must function flawlessly
- Failure results in immediate disqualification

# AutoNav Challenge – Objective

- Navigate a 500 ft outdoor obstacle course autonomously
- Maintain lane position and required speed
- Avoid static and dynamic obstacles
- Scoring: adjusted time or adjusted distance

# AutoNav Course Details

- Asphalt course with 10–20 ft lane widths
- Obstacles: barrels, potholes, trees, cones
- Minimum 1 mph required within first 44 ft
- 6-minute maximum run duration

# AutoNav Violations & Penalties

- Leaving course: -10 ft + end of run
- Obstacle crash/displacement: -10 ft + end of run
- Sideswipe/touch: -5 ft
- Careless driving: -5 ft
- Payload loss ends run immediately

# Self Drive – Objective

- Emulates high-level autonomous driving behaviors
- Lane following, intersections, and turns
- Stop sign recognition, pedestrian handling
- Focus on perception, ML/DL, decision-making

# Self Drive Qualification Tests

- Q1: Lane Keeping
- Q2: Line Detection
- Q3: Left Turn
- Q4: Right Turn

# Self Drive – Functions Testing (16 Tests)

- Pedestrian detection (static & moving)
- Tire obstacle detection
- Stop sign & fake sign classification
- Parking maneuvers: pull-in, pull-out, parallel
- Lane changes with obstacles
- Curved path navigation
- Pothole detection

# Self Drive – Full Course (21 Functions)

- All functions executed sequentially in one run
- Includes lane following, lane changes, turns
- Pedestrians, obstacles, fake signs
- Score: 2100 points total

# Design Challenge

- Written report: 15–18 pages (strict format)
- Oral presentation & Q&A
- Vehicle technical inspection
- Judged on requirements, design, KPIs, testing

# Design Report Requirements

- Covers system architecture and subsystems
- Mechanical, electrical, software, perception, logic
- KPIs must be measurable and validated
- Annual update required—no reuse

# Awards

- AutoNav Awards
- Self Drive Awards
- Top Performer Award
- Design Challenge Awards
- Rookie of the Year
- HBCU Flight Award
- Grand Award