IGNITE 8.0 2024

Ignite is an event organized by the ASME NED Student Chapter on January 1st, 2024. The American Society of Mechanical Engineers (ASME) is a well-known and rapidly growing engineering institution in Europe, dedicated to advancing mechanical engineering. The ASME Student Chapter at NED University of Engineering & Technology in Karachi, part of the Mechanical Engineering Department, was established in December 2013 to host technical events that benefit engineering students.

Ignite is an event where students use their engineering knowledge and skills. Students from any field across Pakistan can join and show their talents. Ignite includes four modules:

1- Chase the case

2- Speedy wiring

3- Line following robot

4- CAD competition

The event format and details are briefly described here:

1. Chase the Case:

"Chase the Case" is a competitive event where participants design and build a mechanism to navigate an obstacle course and retrieve or transport a murder story, often called "the case." This challenge involves solving hidden riddles to progress.

Event Format:

- **Objective:** Teams must navigate the obstacles, reach the "case," and return it to a specified location within a set time.
- **Design Criteria:** Participants create a story based on the clues they gather from solving riddles. The story that most closely matches the original is declared the winner.
- **Technical Skills:** Competitors use their general knowledge to solve riddles and get the correct clues, bringing them closer to the original story.
- **Competition Dynamics:** Teams are judged based on their storytelling skills and how closely their story matches the original.

2. Speedy Wiring:

"Speedy Wiring" is a timed event where participants compete to assemble and wire a mechanical or electrical system according to a provided schematic or blueprint. The challenge focuses on speed, accuracy, and following electrical standards and safety protocols.

Event Format:

- **Task:** Each team gets a set of components, like motors, sensors, and actuators, along with a wiring diagram or schematic.
- **Time Constraint:** Teams race against the clock to correctly assemble and wire the components as instructed.
- **Technical Skills:** Competitors show their ability to interpret electrical diagrams, use soldering techniques, route wires, and integrate components.

- **Judging Criteria:** Teams are judged based on the accuracy of their wiring and the time they take to complete the task.

3. Line Following Robot:

The "Line Following Robot" event challenges participants to design and program an autonomous robot, usually a car, that can follow a path marked by contrasting lines or markers. This event involves robotics, sensors, and control systems.

Event Format:

- **Objective:** Robots must navigate a track with twists, turns, intersections, and varying line widths using onboard sensors like infrared or color sensors.
- **Programming:** Teams create algorithms and control logic to interpret sensor data and adjust the robot's speed and direction to stay on the path.
- **Technical Challenges:** Participants optimize their robots for speed, accuracy, and reliability in detecting lines and following the path.
- **Competition Dynamics:** Robots are judged based on completion time, accuracy in following the line, and their ability to handle deviations or obstacles.

4. CAD Competition:

Participants must be able to draw and simulate their designs using CAD software. They perform virtual simulations to test their designs under various conditions, highlighting the need for accuracy and efficiency in engineering solutions. During the competition, each team presents their CAD models and findings to a panel of judges, explaining their design process, the software techniques they used, and the reasoning behind their decisions.

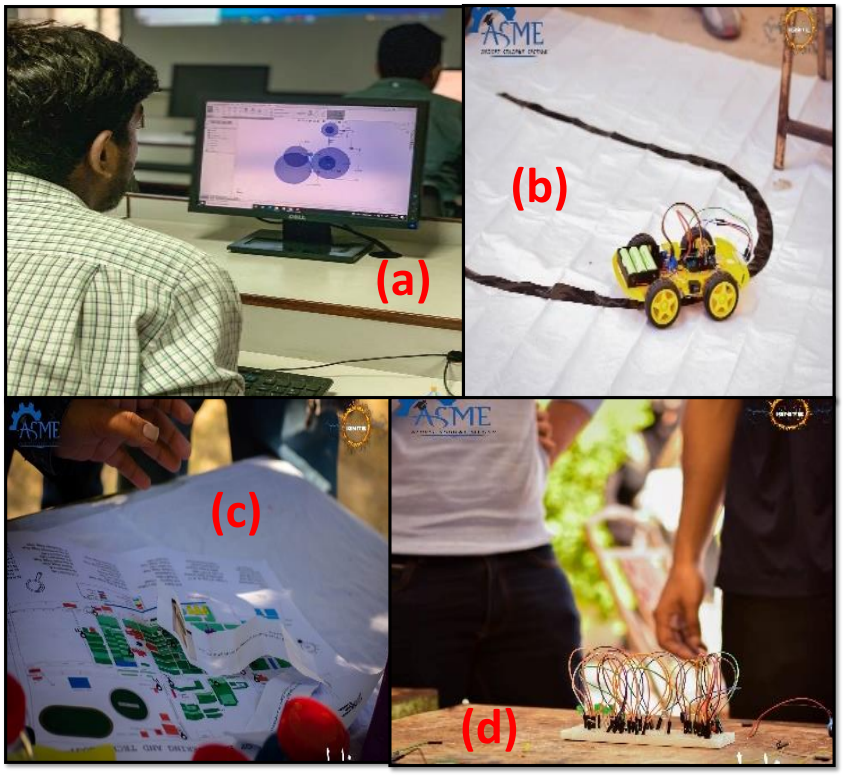

Figure 1. (a) CAD Competition (b) Line Following Robot (c) Chase the Case (d) Speedy Wiring

In conclusion, these events not only improve technical skills but also promote teamwork, creativity, and problem-solving among participants. They offer valuable hands-on experience and prepare students for future careers in mechanical engineering or related fields.

All modules started exactly at 11:00 AM. "Chase the Case" was a university-wide event with desks set up across the campus for participants to solve riddles and collect clues. "Speedy Wiring" and "Line Following Robot" were held at the fountain area of NED University, with essential equipment provided to registered teams. The events attracted significant attention, with an audience of 700-750 people, including 170+ members and 500+ non-members.

Mr. Hammad Baig, the faculty advisor of the ASME-NEDUET student section, presented awards to the winners for their outstanding performance. The competitions were judged by a panel of judges.

Such events are essential because they encourage students to think creatively and develop their skills in an era where innovation and exploration are highly valued.