### AIMS2 Summer research for 2017

## Research Project 1

Faculty: Dr. Vidya Nandikolla Students: upto 5 students Background: Mechanical engineering students Title: Eco four-wheel drive Duration: Summer 4 weeks (End of May – End of June)

**Description:** The overall focus of this project is to seamlessly integrate the interdependent disciplines of Science, Technology, Engineering and Math (STEM) into a focused and real-world robotic project. A robot can be a mechanical agent using an electronically operated mechanical machine guided by computer program or electronic circuitry. They can be autonomous, semi-autonomous or remotely controlled. The eco friendly robotic project will teach the concepts of how to build a four-wheel drive; understand the power requirements; and how to integrate solar panels as power source. This project will develop understanding of various sensor communication, behavior issue, signal processing, microcontroller programming and concepts of motion control.

### Research Project 2

Faculty: Dr. Vidya Nandikolla

**Student:** upto 10 students

Background: open to Mechanical, Electrical and Computer engineering students

### Title: Autonomous drone

# Duration: Summer 4 weeks (End of May - End of June)

**Description:** The goal of this project is to emphasis on engineering (mechanical, electrical, & software), design, innovation, communication, small group collaboration, and critical thinking skills for student to be successful in college, career and community. This project will introduce drone concepts and controlling its navigation system. The project will help the students to learn the following:

- 1. Application of Newton's laws of motion to understand force, acceleration and inertia.
- 2. Design and construction of the drone integrating mechanical, structural, and electrical engineering concepts.
- 3. Developing programs for navigation of the drone.
- 4. Creating test environment to apply and understand the inputs, controls and output operations.
- 5. Selection and implementation of the engineering design, and its performance.