Mechanical Team Steps
- Design initial structure
- Order VEX parts
- Build robot and module inserts, modifying when needed

Design Challenges
- Maximize number of modules while keeping robot stable
- Distribute weight appropriately throughout robot
- Add modules easily with minimal effort

Mechanical Problems Encountered
Obstacle: The back is weighted down
Solution: spread wheels further apart to redistribute weight
Obstacle: The robot veers to the right
Solution: readjust wheel alignment on the base
Obstacle: Gear ratio is incompatible with needs of robot
Solution: Change gear ratio to slow the robot
Obstacle: Large gears are too close to floor
Solution: Use bigger wheels to lift robot higher
Obstacle: Gear ratio is incompatible with needs of robot
Solution: Change gear ratio to slow the robot

Semester Goals
- Create a prototype of a robot that is modular in design.
- Enable the robot to deliver an item or message between two points
- Construct a module that demonstrates how future modules must be designed to be powered and identified by the robot.

Future Goals
- Develop modules that would benefit the robot in its task of elderly care, such as face recognition or arms and hands for handling medicine.
- Facilitate interfacing between the robot and a person, possibly through a touch screen.

Future Obstacles
- Building a to-scale model of the robot
- Creating an interface between the user and the robot
- Designing more advanced robot algorithms and modules
- Ethical Dilemmas
- Safety
- Job Opportunity
- Efficiency
- Business

Software Problems Encountered
Obstacle: Code divided amongst the team—time taken for development, documentation, and testing varied on the complexity of the algorithm
Solution: Through the help, advice, and support of the other team members these tasks were accomplished successfully
Obstacle: Testing was delayed by the availability and functionality of the robot, work space, and equipment
Solution: Communication and flexibility was necessary to ensure that the area was available and the equipment was present and functional
Obstacle: Lack of RobotC documentation slowed down problem solving
Solution: Searching for online resources such as RobotC wikis, forums, and testing segments of code through trial and error
Obstacle: Began the semester learning Microsoft Robotics Studio, switched to Vex Robotics kit, used EasyC software, and later RobotC

IPRO 334: Robotic System Applications to Elderly Living Environments

T he Assistive Robotics Team (IPRO 334) is faced with the problem of creating a prototype for a robot meant to be used in a hospital setting or assisting the elderly. The robot should be modular so that future improvements and applications can be easily added. The focus of this semester will be on mobility and interfacing. Other modules may be designed and prototyped throughout the course of the semester. Our progress, resources, and results will be compiled and presented to our professor’s department at the Institute of Design.

Software Team Steps
- Development of programming languages
- Develop advanced algorithms
- Develop resource modules
- Integrate these algorithms
- Code for additional modules

Logic Flow

The Team

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Mary Daffron
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Modular Sub-Team Leader
Chief Financial Officers

Sarah Bowes
Mechanical Leader

IPRO Professors
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