

**Description:** Build a longitudinal dynamic model of a vehicle and integrate it with a model of an Electric Vehicle to follow two EPA cycles.

Project Timeline	Due Date
Week 1 – Weekly Progress	<a href="#">7 Mar 2026, 11:59 PM</a>
Week 2 – Weekly Progress	<a href="#">21 Mar 2026, 11:59 PM</a>
Week 3 – Project Submission	<a href="#">28 Mar 2026, 11:59 PM</a>

### WEEK 1: Project 3

This week, you will be asked to complete the following:

- Build a longitudinal simulation model of a vehicle:
  - Consists of the chassis and wheels.
  - Assume you can control the torque on the wheels.
  - Assume no slip at the tires.
  - Build a simple driver model to drive the vehicle across two EPA cycles so that the vehicle error is less than 3 mph throughout the cycle
    - EPA Urban and Highway Cycles can be found here: <https://www.epa.gov/vehicle-and-fuel-emissions-testing/dynamometer-drive-schedules>
- In a README.md file, write a short report (~150 words) that summarizes what has been done and provides instructions for running and checking
- Commit and push all work into your Team Leader's repository by **11:59 PM on Sunday**. This will allow time for the TA to assess your weekly progress. Commit with the message "**htProject 3 Week 1 Submission**"

### WEEK 2: Project 3 (Continued)

- Build an Electric Vehicle powertrain model and integrate with the longitudinal vehicle dynamics.
- The powertrain model shall include the Motor and a Single Speed Transmission
- Predict the energy consumed by the vehicle when driving on the two EPA cycles.
- Can assume an infinite source of power for the motor and assume no regenerative braking.
- Update the README.md file with a short report (200-300 words) that summarizes what work has been done and provides instructions for running and checking
- Commit and push all work into your Team Leader's repository by **11:59 PM on Sunday**. This will allow time for the TA to assess your weekly progress. Commit with the message "**Project 3 Week 2 Submission**"

### WEEK 3: Project 3 (Continued)

- Add a battery model to the continued model and

incorporate regenerative braking.

- Predict the energy consumed by the vehicle driving on two EPA cycles.
- Update the README.md file with a final report (200-300 words) that summarizes what has been done and provides instructions for running and checking. Explain your findings about the project and describe how your model reacts to the different EPA cycles
- Commit and push all work into your Team Leader's repository by **11:59 PM on Sunday**. This will allow time for the TA to assess your weekly progress. Commit with the message **"Project 3 Final Submission"**
- Submit the Peer Evaluation Form on Canvas