

# DESIGN AND CONSTRUCTION OF INVERTED PENDULA

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## Description

Inverted pendula are a popular benchmark for optimal control and reinforcement learning, providing interesting non-linear dynamics despite having a simplistic design. The goal of this project is to design and construct one of these pendula as a collaboration with students at the University of Rhode Island. Most of the required work will be done in video conferences and shared documents. The construction will be done in parallel in both Universities, aiming for identical setups. Project start will be in February 2022 and running until end of May 2022.

### The following tasks have been identified:

- Choice and design of the inverted pendulum
- Identification and ordering of required hardware and materials
- Construction of the pendulum (at both universities in parallel)
- Implementation of a simple set point control for either directional velocity (Cartpole) or angular velocity (Furuta pendulum)



This project is directed at students interested in an international exchange with the University of Rhode Island or other international experiences.