QUANSER
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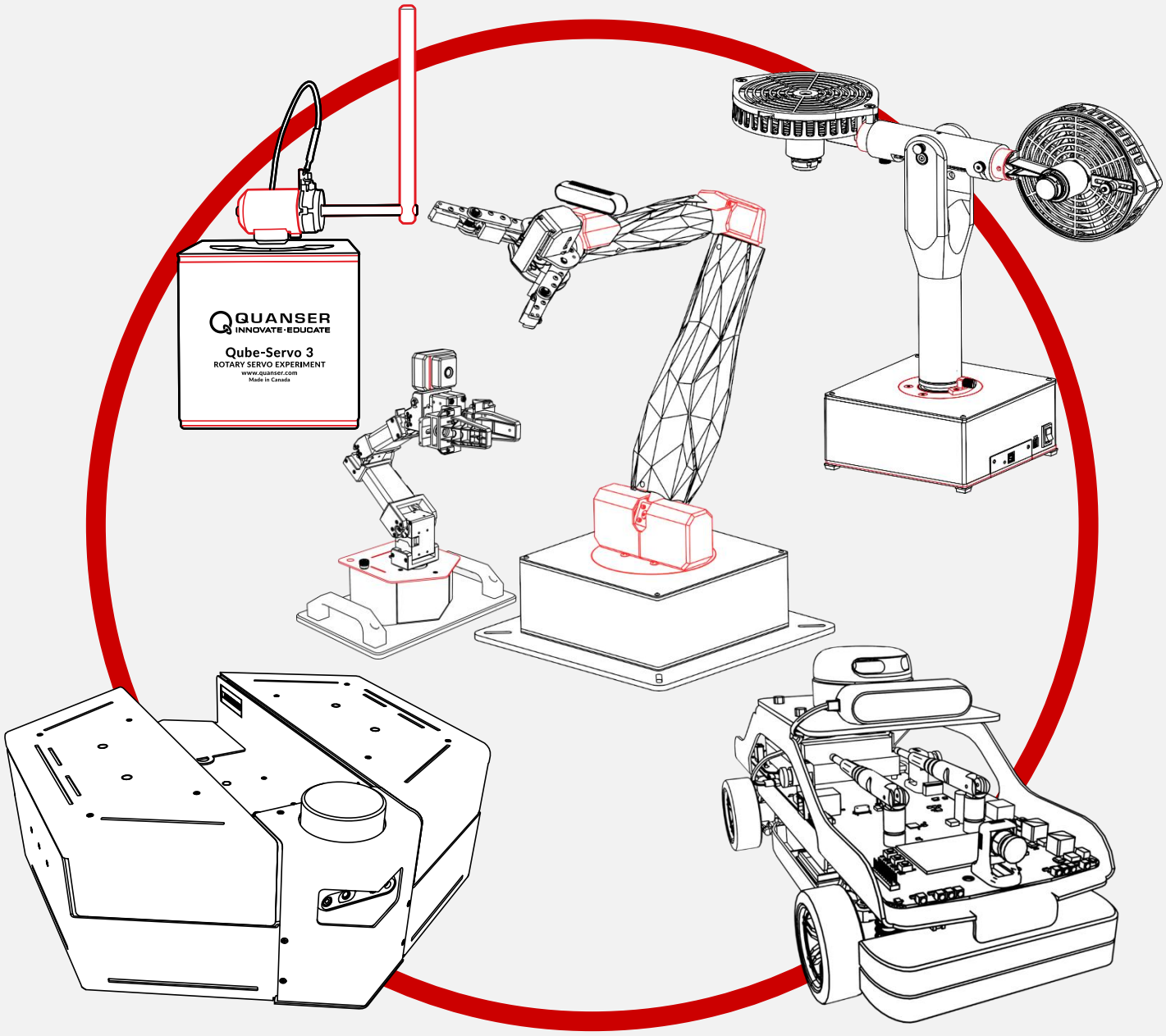

Teaching Content Guide

Products & Content

V1.1 – 6th March 2025

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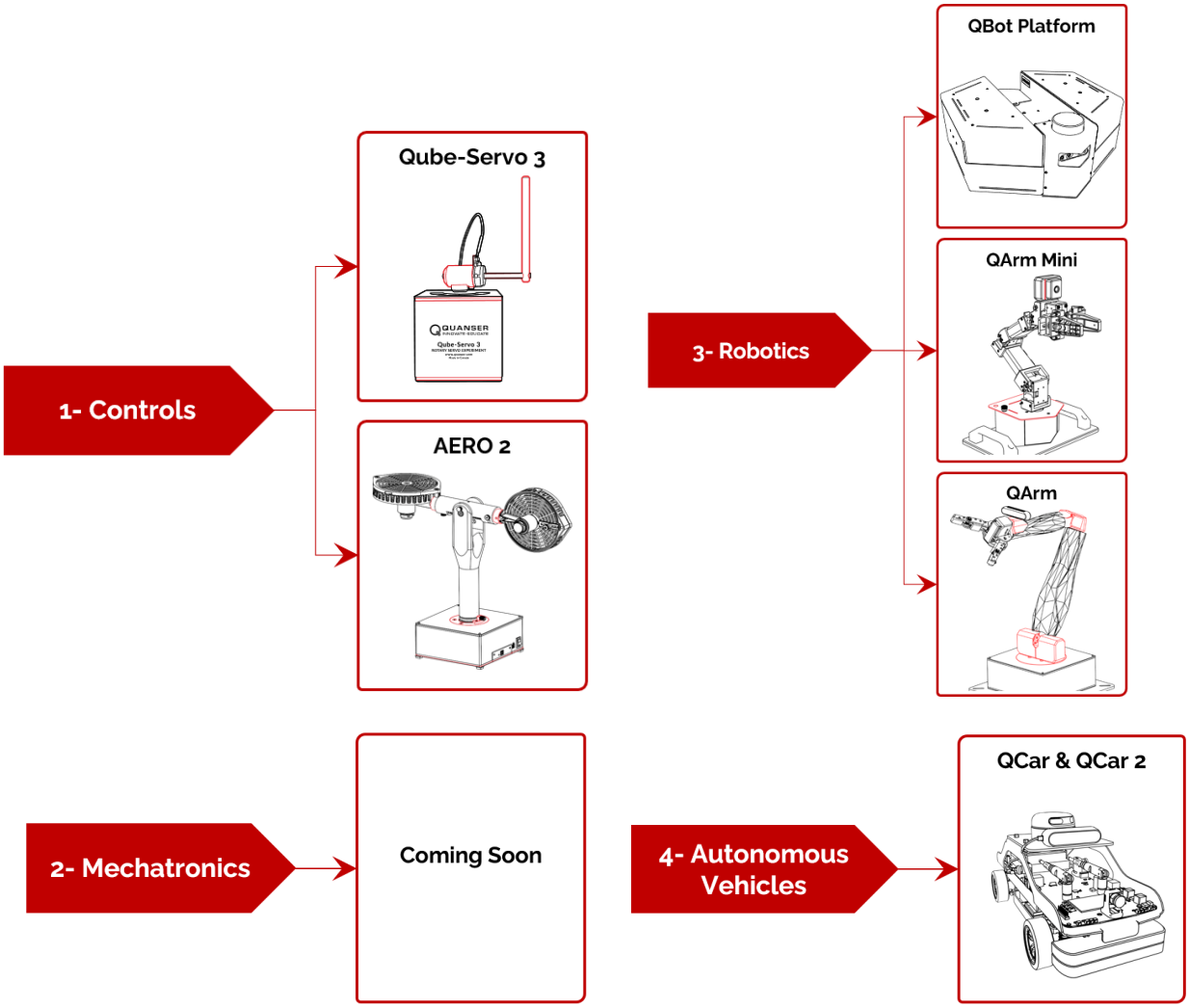
Background

Teaching content is separated by different engineering areas and product type. Currently separated in 4 core topics: Controls, Mechatronics, Robotics and Autonomous Systems. Each of these topics are taught with different Quanser products as shown below.



Every lab consists of the following documentation,

- **Concept Reviews:**
  Independent reference material for student use that serves as a means for them to refresh the most important concepts and equations for any lab. These exist mostly in a separate concept_reviews folder in the Quanser folder or could be placed alongside the lab.

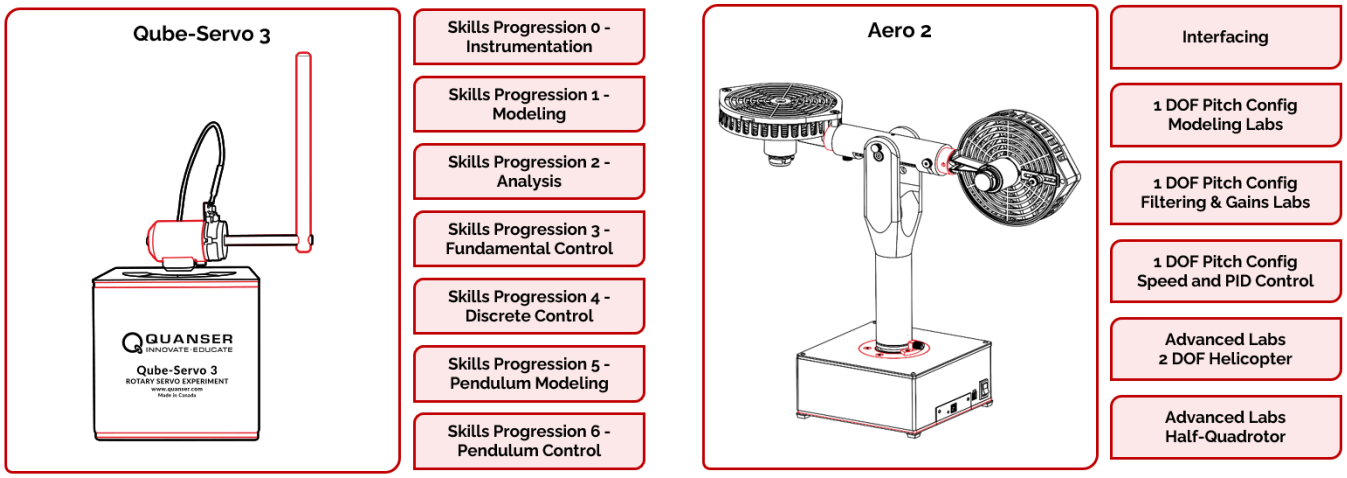
- **Application Guides:**
  Lab specific introduction that guides students towards why the lab is important and what they will learn as well as things they need to know before starting the lab.

- **Lab Procedures:**
  Lab specific instruction manuals with guided steps to walk students through the lab, reflect on important considerations and take notes or screenshots and capture results.

- **Recommended Assessments:**
  Lab specific take home questionnaire that requires critical thinking and further analysis of lab results. The results from the lab procedure will be analyzed here by the student.

Controls

The Qube-Servo 3 curriculum is broken down into a list of 7 pipelines in total with more than 16 labs. For more information, refer to the curriculum pipeline document under the 1_Controls/Qube_Servo_3 directory. The Aero 2 curriculum has 10 labs for the 1DOF Pitch configuration of the device as well as 3 labs each for the advance configurations of 2DOF Helicopter and Half-Quadrotor. The following image shows these divisions.

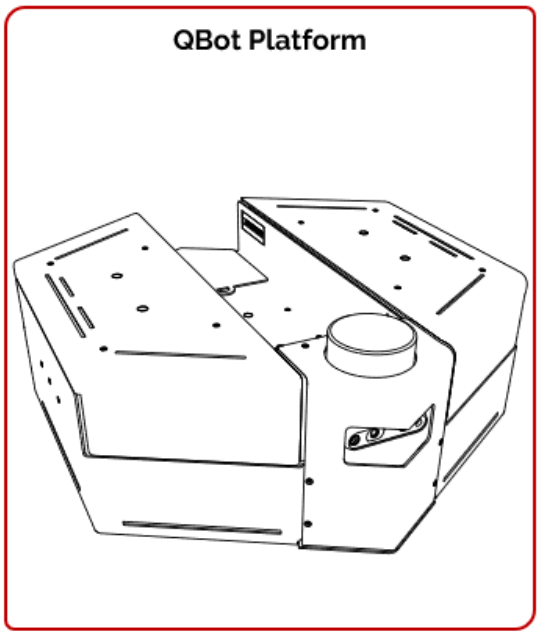


Mechatronics

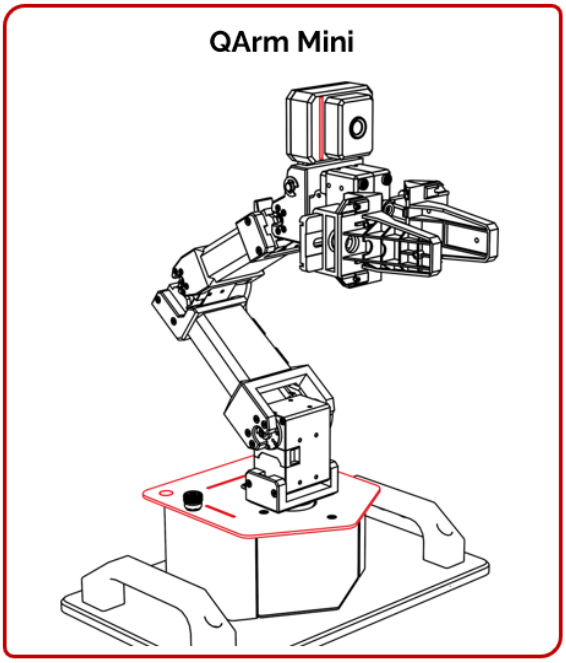
The Mechatronics teaching content will be released later this year.

Robotics

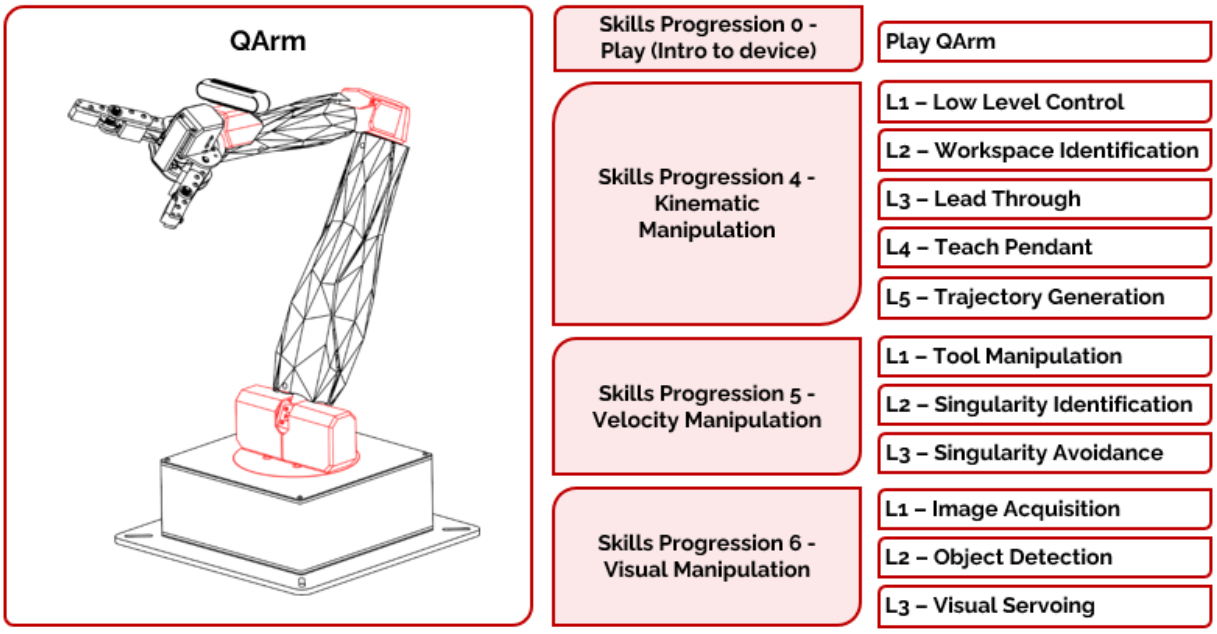
The Robotics curriculum include labs for the QBot Platform, QArm and QArm Mini and is separated by skills progressions to learn different aspects of robotics. The skills progressions that match each robot are shown in the following images. Use this as a reference of which skills progressions are part of the curriculum for each robot



Skills Progression 0 - Play (Intro to device)	Play QBot
Skills Progression 1 - Task Automation	L1 – Forward Kinematics
	L2 – Inverse Kinematics
	L3 – Line Following
	L4 – Object Detection
Skills Progression 2 - Surveying	Coming Soon



Skills Progression 0 - Play (Intro to device)	Play QArm Mini
Skills Progression 3 - Pick and Place	Coming Soon



Autonomous Systems

The Autonomous Systems curriculum supports the devices from the Self-Driving Car Studio (SDCS), which are QCar and QCar 2. The curriculum is separated by skills activities that are different from the rest of the curriculum, these are more advanced and just include a lab guide to follow to create a self driving stack. Currently there are 6 released skills activities. Use the following image as a reference.