

Young Engineers – Robo Bricks

First semester – Software Engineering Introduction

Model Name	Lesson Topic
Racing Car- Formula	Introducing the kit and its parts, becoming familiar motors, their connection and use.
Flourmill	Becoming familiar various kinds of transmissions, including belt transmission, gear transmission and crown transmission (90° gear transmission).
Sand Strainer	Introducing the WE-DO software used throughout the program; learning about and discussing: algorithms, shifting from circular to linear movement, speed acceleration transmission and using power commands.
Circus Carousel	Introducing the “pseudo code” that we will write after discussing the model algorithm. Familiarizing with the “Start” command, motor time restriction and idle commands.
Vehicle Navigation Course	Simultaneous use of two motors and the operation of each motor. Motor rotation and motor stop commands. Competition among the students’ mechanisms.
Bullseye	Loop and appendix command, – setting the competition timeline with the students.
Touching the Clouds	Sound command, display command and programming chain to calibrate motor adjustment.
Fan	Start command using keyboard and copying commands.





Model Name	Lesson Topic
Drummer – Rhythmic Lesson	“Letter” command, “Start” command using the “Letter” and random appendix.
Cheerleader	Sound commands, text appendix and use of more than one programming chain: multi-threading
Super Beyblade	Angular momentum conservation law and enhancing the work platform using the WeDo program.
Surprise Box	Competition between the students’ mechanisms and an intro lesson to the second semester using distance sensors.

Second semester – Engineering Masters

Model Name	Lesson Topic
Smart Gate	Distance sensor and command appendix: distance sensor.
Banana and Monkey	Distance sensor and its mechanism.
Skateboard	Tilt sensor, command appendix – tilt sensor and a competition among the students’ mechanisms.
Balance	Tilt sensor and its mechanism.
Soccer	Using keyboard and a competition among the students’ mechanisms.
Candy Factory	Loop command, distance sensor and calculation commands.
Car Race	Reading values from the tilt sensor and letter command.
Lazy Donkey	Using the tilt sensor as a power control, calculation command and reading values from the display memory.

Model Name	Lesson Topic
Tank	Using four programming chains and operating them with the keyboard, complex calculation commands and the letter command.
Painting Easel	Using two motors concurrently and keyboard keys.
Forklift	Writing two programming chains and using the keyboard to activate them.
LEGO Lottery	Teamwork, command appendix – random, keyboard use and a competition among the students' mechanisms.

Third semester – Professional Engineers

Model Name	Lesson Topic
Lifting Crane using a Winch	Using four different programming chains and operating them with the keyboard.
Lost in a Maze	Loop command, distance sensor, spatial motion and a competition among the students' mechanisms.
A Different Friend	Using telegram commands, timing and command chains for motor reset.
Unloading Truck	Writing four programming chains and using four keyboard to activate them.
Project (Seven preparation lessons)	Market testing and constructing a Lego model, including programming. The model will meet an existing need. Students will learn about using Internet search engines, preparing presentations, methods for appearing and presenting to an audience and will develop creative and critical thinking.
Final Lesson – Investors' Event (Project Completion)	Certificate ceremony, presenting projects to parents, investor competition and year-end summary.

