Beta bots

Designed by *FIRST* Quebec to teach core concepts in Robotics

BetaBots Program

BetaBots was created from the ground up to expose participants to as many aspects of robotics as possible. It is not meant to replace *FIRST* robotics, rather to exist alongside it, giving participants a good taste of the program. BetaBots is particularly useful for rookie teams as well as new team members, giving them an idea of what to expect during a robotics season. It is also useful for veteran teams, allowing them to give senior students leadership positions and gain valuable experience on key decision making.

The *FIRST* robotics program is very involved. It introduces participants to many aspects of robotics through a sport-like competition. The *FIRST* Robotics Competition season begins each year in January, and includes a short but intense build period followed by a competition season. Training participants as soon as possible is essential to the success of a team. The BetaBots program is designed to prepare participants for the *FIRST* Robotics Competition without overwhelming them.

The BetaBots program consists of two main components: a drive base kit and a competition. The BetaBots drive base is modular and designed for education. It allows participants to explore various mechanical concepts, and is reconfigurable for multiple drive styles. The BetaBots game is a straightforward challenge which can be accomplished using a simple robot. Competitions are held in the fall, and feature judges who interact with teams in order to prepare them for the *FIRST* Robotics Competition season.

BetaBots is a small scale robotics program designed as an introduction to the *FIRST* Robotics Competition

2016 BetaBots Game

BetaBots Drive Base

BetaBots is:

- **Designed for education**
- **Small scale and accessible**
- **For beginner and experienced teams**
- **Great preparation for the *FIRST* Robotics Competition**

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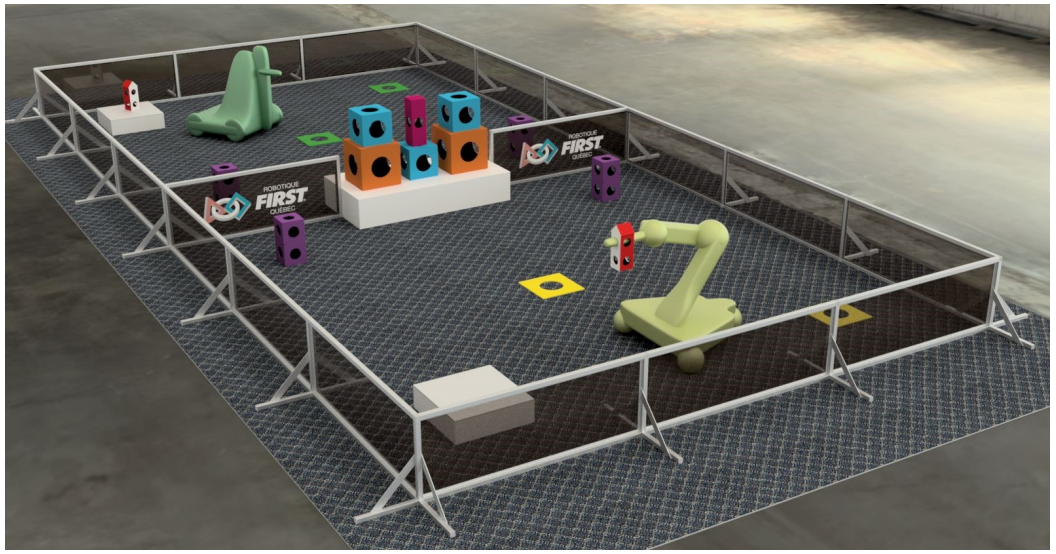
BetaBots Game

A simple game is announced in early October, with competitions beginning at the end of November. The game uses a small field and has one robot competing against one robot. The game is simple enough for beginner teams to excel, but uses the subtleties of a full scale FIRST Robotics Competition game for experienced teams to benefit as well.

An autonomous period is used in the BetaBots game, followed by teleoperated play. The game is designed such that it can be accomplished using a single mechanism, allowing beginners to learn without being overwhelmed. Judges are present at BetaBots competitions, and interact with teams in their pits. Furthermore, teams are required to give a private presentation to judges, requiring teams to prepare for the judges on any aspect they wish relating to the team or the robot. Awards are given at the end of the competition for the winning team, as well as for creativity, innovation in control, quality and the judges' award.

A BetaBots competition takes place over the course of a single day, and can be played in a high school gym. Capacity is generally limited to 10 teams, allowing teams to play as many matches as possible while still exposing them to other teams and robot designs. Registration fees are very modest, and teams can register for multiple events depending on availability.

The BetaBots game is a preseason competition allowing teams to experience all the aspects of a *FIRST* Robotics Competition event on a small scale



2016 BetaBots Game - Cubism

During the course of the BetaBots season, teams experience:

- **Game reveal**
- **Reading and interpretation of game rules**
- **Strategy and robot design sessions**
- **Robot construction with hard deadlines**
- **Preparing for competition - making team shirts, robot cart, team pit**
- **Competition dynamics - working in the pits, adhering to a schedule**
- **Playing matches in a competition setting**
- **Presenting to judges**

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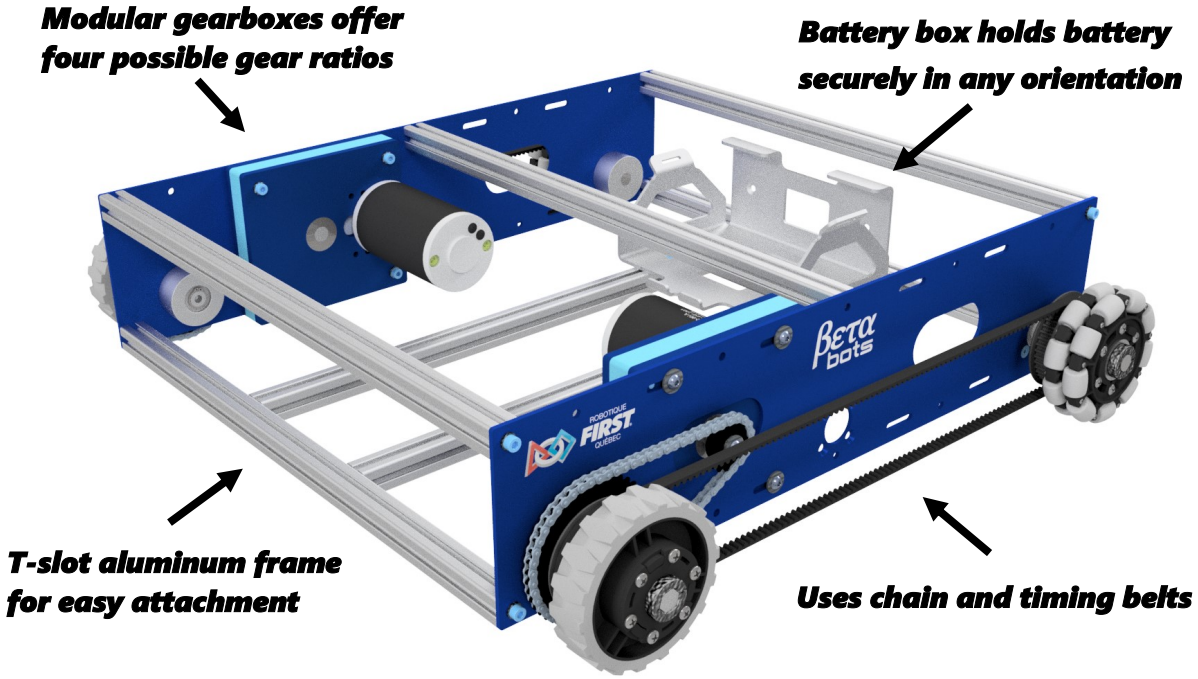
BetaBots Drive Base

The BetaBots drive base is designed to be as flexible as possible, offering many different configurations as well as showing off different mechanical concepts. The single stage gearboxes have different motor mounting positions, allowing for four different gear ratios. The front wheels are driven from sprockets and chain, offering another gear reduction. The kit uses both live and dead shafts, allowing participants to explore the difference between them. Timing belts are also used on the four and six wheel drive configurations. Different wheels can be used as well, including mecanum wheels which offer more maneuverability than tank style drive.

The base uses t-slot aluminum extrusion in the chassis, allowing mechanisms to be easily attached and adjusted. A custom made battery box holds the battery securely, and can be oriented so that it stands up or lies flat. The BetaBots drive base is light, compact and easy to assemble - only a few basic tools are required for full assembly, disassembly or reconfiguration. The base is meant to be used year after year, allowing any new team member to explore its various mechanical concepts.



- **Configurable to two, four, six wheel, and mecanum drive**
- **FRC standard components**
- **Designed for education**
- **Compact and low-cost**
- **Flexible and expandable**
- **Re-usable year after year**

BASIC KIT:

$695

Ready to drive with addition of control system and battery

BAREBONES KIT:

$425

Includes essential components

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ROBOTIQUE FIRST QUÉBEC

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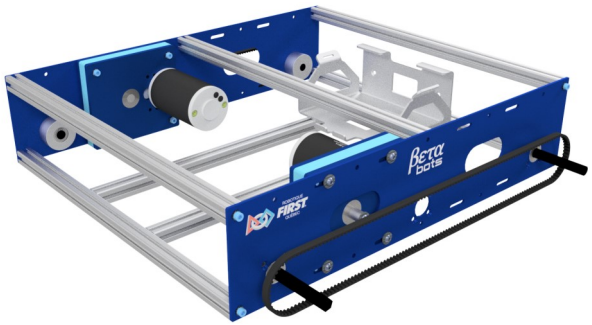
BetaBots Drive Base

The basic BetaBots drive base is ideal for beginner teams. It includes all the mechanical components required for a four wheel drive base.

The barebones kit is an option for teams who already have robotics components. It includes custom machined parts, but excludes some hardware such as sprockets and wheel assemblies. These parts can be purchased at robotics suppliers such as Vex Pro or AndyMark.

Regardless of the kit chosen, a control system is required to drive the base. The control system includes components required to communicate with the robot, distribute power to the motors and to control their movement. It is available at suppliers such as Studica or AndyMark. A complete control system is included in the *FIRST* Robotics Competition rookie kit.

A Wi-Fi enabled computer is required to communicate with the control system, as well as to program the robot. A laptop is recommended, but a desktop with wireless connectivity can also be used.



BASIC KIT:

$695

Includes:

- **Frame**
- **2 side plates**
- **2 CIM motors with pinions**
- **2 gearboxes**
- **2 live shaft assemblies**
- **2 dead shaft assemblies**
- **Battery box assembly**
- **2 HTD timing belts**
- **2 live wheel assemblies**
- **2 dead wheel assemblies**
- **2 gearbox sprockets**
- **2 chain assemblies**

BAREBONES KIT:

$425

Includes:

- **Frame**
- **2 side plates**
- **2 CIM motors with pinions**
- **2 gearboxes**
- **2 live shaft assemblies**
- **2 dead shaft assemblies**
- **Battery box assembly**
- **2 HTD timing belts**

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