Summer Camp Plan

4828 RoboEagles

**Who We Are**

**We are a group of boys who have had a few years of robotics experience**

* Harshal Singh
	+ Competed as part of an FLL team, 8 Monkeys and a Robot. Competed at the State level in 2012. Won 2nd Place Champions award at state level in 2013.
	+ Mentored an FLL team, Robobots. Won 1st Place Champions award at state level in 2014.
* Ibrahim Abdeally
	+ Was also part of FLL team, 8 Monkeys and a Robot.
	+ Mentored an FLL team, Legendary Roboticians. Won 1st place project award at Regional level.
* Teja Peddada
	+ Was also part of FLL team, 8 Monkeys and a Robot.
* Prakruth Adari
	+ Was also part of FLL team, 8 Monkeys and a Robot.
* Akaash Sanyal
	+ Participated in other Robotics camps.

**Camps of 2013**

* Developed 2 Lesson plans for a 4th-5th grade age group and a 6th-7th grade age group.
* Monday-Friday 8 am-12 am.
* Operated in a Basement.
* Charged $25 per student.
* Over 2 camps, taught 20 students.

**Relationship with the parents**

As this is more than just a summer camp, we want to have a parent meeting with those parents who are interested in sending their kids to the camp. In this meeting, we will explain not only the goals of the camp, but the future the kids could have with more involvement in FIRST. This would be an hour long presentation.

**Future Camp plan**

**Materials we will use:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Material** | **Single Material Cost** | **# of Materials** | **Total Cost** |
| **EV3 Kits** | ~$350. | 4-5. Will vary on number of kids, but ratio should be 5 kids per kit | $1400-$1750 |
| **Computers** | Varies | 4-5. Should be the same number as that of the kits. | Varies |
| **Misc. Materials (food, papernaphilia, etc.)** | N/A | N/A | Varies. |
| **Projector** | $100 | 1 | $100 |

These are covered by the RoboEagles for the duration of the camp!

Lesson Plan

Age: 9-10

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| **8.30-9** | Introduction | Core Values/ Review | Review/ Project | Core Values/ Review | Sumobot |
| **9-10** | Start Castor-Bot/ Building Basics | Touch Sensor/ Sound Sensor | Light sensor/ Color Sensor | Project Finish | Sumobot |
| **10-11** | Programming Basics | Build Racer | Follow line/Understand Line Follower 2 | Project Presentation | Competition |
| **11-12.30** | Finish Castor-Bot/ Introduce Project | Compete with Drag Race | Create line follower bot | Sumobot | Competition |

* Introduction
	+ Talk about who the mentors are
	+ Play name game for team building
* Castor Bot- A simple Robot capable of 360 degree movement.
	+ Goals: Basic Building Principles
	+ Knowledge of parts
	+ Knowledge of creating stability in a robot
	+ Move in a square
* Programming Basics
	+ Goals: Ability to create a string of code that governs movement.
	+ Knowledge of Move and Motor blocks
	+ Knowledge of order, action tray, and how to read a program quickly
	+ Make Castor bot move
* Project
	+ Goals: Understanding the FLL project aspect
	+ Introduce a past project, give homework
	+ Give them an example of old projects to create understanding of presentation process, solution creation process.
	+ Teach research procedures
	+ Split into groups to create a solution over the camp time.
* Core Values
	+ Goals: Foster teamwork
	+ Teach how to behave in a group environment while being productive
	+ Do a Core Values exercise.
* Touch Sensor/Sound Sensor
	+ Goals: Use touch sensors and sound sensors to govern movement
	+ Use wait blocks and infinity settings to be used in the next project
* Racer
	+ Create a robot using 3 motors to move in a straight line fastest.
	+ Use touch sensor principles to make robot stop at end of track.
	+ Compete with gracious professionalism
* Light sensor/Color Sensor
	+ Utilize switches with light and color sensor
	+ Also, using light sensors and color sensors with wait blocks and infinity settings.
	+ Create a 2 state line follower with switches.
	+ Utilize a line follower bot to follow a path.
* Project
	+ Give time to finalize project presentations.
	+ Have them present their solution and presentation.
	+ Give a judge's response to each presentation
	+ Utilize gracious professionalism throughout the process
* Sumobot
	+ Cumulative wrap up of all concepts learned.
	+ Extensive teamwork involved
	+ Figure out best way to use environment to create most efficient sumo bot.
	+ Designing a strong and sturdy robot
	+ Programming a robot to run faster and efficiently.
* Competition
	+ Have fun, Show parents all the progress.

Age 11-12

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| **8.30-9** | Introduction | Circle race | Pick up bacteria competition/Projet work | Maze competition | Sumobot |
| **9-10** | Building Basics/Start Castor-bot | Light sensor/ Line Follower 5 | Ultrasonic Sensor | Present project | Sumobot |
| **10-11** | Programming basics | Follow line/ Line follower Race | Exploring variables | Sumobot Introduction | Sumobot Competition |
| **11-12.30** | Build Circle Robot/Introduction to Project | Pick up bacteria build | Maze | Sumobot | Competition |

The main difference with the older group and younger group is the complexity of the programming and the challenges they compete in, and the lower amount of time to complete the challenges.

(Most of the goals are the same across camps. Only the different aspects are highlighted here)

* Circle Robot-Create the fastest robot to go around a circle track.
	+ Goals: Application of basic programming
	+ Initial foray into Coopertition
* Introduction to project
	+ Form teams and introduce a project to solve
	+ Explain basic/advanced research principles
* Light Sensor/Line Follow 5
	+ Explain switch mechanics and multiple case switches
	+ Explain our version of a 5 state line follower
	+ Utilize it on the castor bot to follow a basic line
* Pick up Bacteria
	+ Add mechanical challenge to line follower
	+ Scatter bacteria around line and challenge them to get as many bacteria as possible.
* Ultrasonic Sensor
	+ Using ultrasonic sensor programming with switches and wait blocks
	+ Account for error
	+ Understand science behind ultrasonic
* Exploring Variables
	+ Storing, comparing and acting upon variables
	+ Understand data wires
* Maze challenge
	+ Create a maze that the robot must navigate using the ultrasonic sensor
	+ Utilize variable storage and comparing to navigate a maze dynamically
* Sumobot
	+ Culmination of all knowledge to have a fun challenge
	+ Use teamwork to design, build, and program a sumo bot
	+ Have fun!

FLL Project bank

· Senior Solutions

· Smart Move

· Body Forward

· Food Factor

· Climate Connection

FLL Core Value Exercises

* Go off and build some totally random hunk of lego parts. Put the same second set of parts but disassembled into a box. Split team in half, they sit back to back facing away from each other. One team hold completed lego sculpture, one team has box of parts. Without each other seeing the other side, the one team verbally explains to the other how to build sculpture.
* Have one kid with earmuffs on and facing away from team. They have a box of random shaped blocks. Have one kid blindfolded and sitting at table. First kid hands ONE block at a time to the builder. The blindfolded kid is the only one that can touch blocks. Other teammates have to verbally instruct him on how to make tallest tower. While they do not know what shape block is coming next. This one, everybody wanted turns at each role.
* Get raw spaghetti and marshmallows. Build tallest or longest X. Same with drinking straws and tape. Instead of always tallest, make a straw structure that can hang over the edge of the table the furtherest.
* In pairs, have them build something with legos/blocks/whatever. But one person only uses right hand, the other only their left.
* Throw one of them a short piece of rope. They have to use it as a prop, like "I am a boat tied to the dock", or "I am holding a snake". Short and quick answer. They can bend rope into a shape on floor and say "look, a spiral galaxy" Once they come up with something, they toss rope to another teammate. This become interesting after the first few ideas get used up. Who the rope gets tossed too, and what the other teammates do to help (or badger) the one trying to think of something - can be valuable info on how to coach the remaining weeks. Resist throwing in a hint, let them squirm (as a team).