Future Engineers Project: Volunteer Information

Thank you for volunteering for the Future Engineers project, Robot Camp: Tinker Maker Solder Code.

We are extremely grateful for your time, and it will make a real difference to the young people who attend.

In this document, you will find information about each day of the camp, as well as links to useful websites, example code and worksheets (some of the resources are still in development).

Please click the links below to jump to the day/s you are volunteering:

Day 1: Monday 13th August (programming – introduction)

Location: Rose Hill Community Centre

Time: 9:30-12:30

Schedule / Workshop plan:

Due to the nature of the project, the schedule is approximate!

9:30-10:00	Arrival, registration & assembling of lasercut project boxes
10:00-11:00	Introduction to BBC micro:bits and programming Python & Edublocks
11:00-11:30	Break
11:30-12:30	Writing algorithms to control pre-built robots ('Micro:Bot Mazes')
12:30-13:00	Lunch
13:00	*End of session; young people travel to industry visit*

Links:

Micro:bit Micropython documentation: https://microbit-micropython.readthedocs.io/en/latest/

Micro:bit Micropython editor, Mu: https://codewith.mu/

Micro:bit Micropython blocks editor, Edublocks: https://microbit.edublocks.org/

Introduction to Micro:bit info: https://github.com/ScienceOxford/robot-camp/tree/master/day-1/microbit-intro

Micro:Bot Mazes info: https://github.com/ScienceOxford/robot-camp/tree/master/day-1/microbot-mazes

Day 2: Tuesday 14th August (CAD)

Location: Rose Hill Community Centre

Time: 9:30-12:30

Schedule / Workshop plan:

Due to the nature of the project, the schedule is approximate!

9:30-10:00	Arrival, exploring Thingiverse for examples to 3d print
10:00-11:00	Introduction to TinkerCAD and working through the tutorials
11:00-11:30	Break
11:30-12:30	Designing a robot chassis
12:30-13:00	Lunch
13:00	*End of session; young people travel to industry visit*

Links:

Thingiverse: https://www.thingiverse.com/

TinkerCAD: https://www.tinkercad.com/ (create an Autodesk account to access)

TinkerCAD tutorials: https://www.tinkercad.com/learn/

Robot chassis design info: https://github.com/ScienceOxford/robot-camp/tree/master/day-2/robot-chassis-design

Day 3: Wednesday 15th August (soldering / robot building)

Location: Oxford Centre for Innovation

Time: 10:30-12:30 // 14:00-15:30

Schedule / Workshop plan:

Due to the nature of the project, the schedule is approximate!

10:30 *Approximate arrival time of young people, on minibus from Rose Hill Community Centre*

10:30-11:00 Circuit design in TinkerCAD

We will split the group in half here. One group will visit the lasercutter and 3d printers, while the other is soldering. For soldering, we will have 2-3 kids per soldering iron and you will work with one of these groups around one iron.

11:00-11:45 Soldering LED 'monster' – group 1

11:45-12:30 Soldering LED 'monster' – group 2

12:30-13:00 Lunch

13:00-14:00 Visit to Oxford County Library's Makerspace

14:00-15:30 Building robots

15:30 *End of session; young people return on minibus to Rose Hill Community Centre*

Links (AM):

TinkerCAD: https://www.tinkercad.com/ (create an Autodesk account to access)

Example circuits: https://github.com/ScienceOxford/robot-camp/tree/master/day-3/circuit-design

LED monster instructions: https://github.com/ScienceOxford/robot-camp/tree/master/day-3/led-monsters

Links (PM):

Robot building instructions: https://github.com/ScienceOxford/robot-camp/tree/master/day-3/robot-building

Day 4: Thursday 16th August (programming – sensors)

Location: Rose Hill Community Centre

Time: 9:30-12:30

Schedule / Workshop plan:

Due to the nature of the project, the schedule is approximate!

9:30-10:00	Arrival, micro:bit programming refresher & robot testing
10:00-11:00	Sensor discussion and begin coding chosen sensors
11:00-11:30	Break
11:30-12:30	Continue coding chosen sensors
12:30-13:00	Lunch
13:00	*End of session; young people travel to industry visit*

Links:

Micro:bit Micropython documentation: https://microbit-micropython.readthedocs.io/en/latest/

Micro:bit Micropython editor, Mu: https://codewith.mu/

Micro:bit Micropython blocks editor, Edublocks: https://microbit.edublocks.org/

Introduction to Micro:bit info: https://github.com/ScienceOxford/robot-camp/tree/master/day-1/microbit-intro

Robot sensors info: https://github.com/ScienceOxford/robot-camp/tree/master/day-4

Day 5: Friday 17th August (final build time)

Location: Rose Hill Community Centre

Time: 9:30-12:30

Schedule / Workshop plan:

Due to the nature of the project, the schedule is approximate!

9:30-10:00	Arrival, planning of final build time
10:00-11:00	Continue with sensor programming and improving robot build
11:00-11:30	Break
11:30-12:30	Continue with sensor programming and improving robot build
12:30-13:00	Lunch
13:00-14:00	Continue with sensor programming and improving robot build & prepare room for celebration
14:00-16:00	*Celebration*

Links:

Micro:bit Micropython documentation: https://microbit-micropython.readthedocs.io/en/latest/

Micro:bit Micropython editor, Mu: https://codewith.mu/

Micro:bit Micropython blocks editor, Edublocks: https://microbit.edublocks.org/

Introduction to Micro:bit info: https://github.com/ScienceOxford/robot-camp/tree/master/day-1/microbit-intro

Robot sensors info: https://github.com/ScienceOxford/robot-camp/tree/master/day-4

Robot building instructions: https://github.com/ScienceOxford/robot-camp/tree/master/day-3/robot-building