GearBots Programs

GearBots Jr. Makerspace

GearBots Sr. STEM Academy

NEW - Sept 2020

Software / Game Design	Digital Design	Engineering Design
- Monday from 4-6pm	- Wednesday from 4-6pm	- Thursday 4-6pm

UFV Makerspace

- Organized and administered by UFV

- By invitation from UFV - targeting Grade 12 students who have demonstrated the required aptitude etc.

GearBots Jr. Makerspace Program

GearBots Jr. Makerspace

STEP ONE

Coding/Robotics Module

STEP TWO

Make Menu Modules

- All new students to our program must successfully complete the mandatory "introduction to coding/robotics" module/unit in the Jr. Makerspace program
  - No extra hardware is required
  - GearBots provides digital access to a virtual programming platform

- Introduction to TinkerCAD - 3D printer - original design

- Introduction to Inkscape - Laser cutter - original design

- Introduction to the MicroBit microcontroller
  - Purchase required:
  https://www.sparkfun.com/products/15228

- Introduction to Arduino Uno microcontroller
  - Purchase required:
  https://www.sparkfun.com/products/14556

- Introduction to autonomous design
  - Purchase required:
  https://www.inksmith.ca/pages/k8-robotics-kit

STEP THREE

GearBots Sr. STEM Academy Invitation

- By invitation from our Jr. Makerspace program STEP 2

- Introduction to Game Design
  - Purchase required:
  https://www.yoyogames.com/get
  - This module is required for the Game Design cohort

- Other: Work on various interest projects with support
  - building on the introductory modules listed above

GearBots Jr. Makerspace Program

- Currently being offered at all our locations
- Considered a feeder program to our GearBots Sr. STEM Academy

TARGET:

- Ages 9 to 12+

FOCUS:

- Developing the core skills required to be a confident Maker in our program

LOCATIONS AND DATES:

- Abbotsford: Abbotsford Christian Middle School on Tuesdays from 4-6pm (on site use postponed due to Covid-19)
- Chilliwack: UFV Trades and Technology campus on Mondays and Thursdays from 4-6pm (on site use postponed due to Covid-19)
- **During the Covid-19 restrictions, this will be a virtual program with weekly meetings via Zoom and google classroom.**
- **Now offering Step 1 on Tuesdays and Step 2 on Thursdays.**

COURSE LENGTH / FEE:

- 7 week course (14 hours per course)
  - Courses offered from Sept.-Oct., Nov.-Dec., Jan.-Feb. and April-May each year

- Fees: $200.00 + GST per course

CONTENT COVERED:

- STEP 1 - Introduction to coding/robotics course (mandatory for all new participants in our program regardless of age)
  - Approx. 20 hours to complete (currently offered on Tuesdays from 4pm-6pm)

- STEP 2 - Maker Menu course
  - Introduction to various technical skills: (currently offered on Thursdays from 4pm-6pm)
  Maker Menu items: Focus on coding, electronics, digital design for digital manufacturing
  - Including but not limited to: Advanced EV3 robotics, introduction to digital manufacturing – 3D design, InkScape software (for 3D printing and laser cutting), introduction to coding (Scratch, Blockly, JavaScript, Python, Arduino IDE), MakeBlock, Raspberry Pi, Learn to MOD - Minecraft, video game design using GameMaker / Unity, littleBits, MakeyMakey, Micro:Bit, OttoBot, Edison robot, Strawbees QuickBot, MakeDo, SumoBot project, K8 robot, ElecFreak kits, SparkFun kits, Kano, Piper, robot and robotics arm build project, learning to solder etc.

SKILL SET DEVELOPED:

- Self-regulation, maturity, focus, teamwork skills, communication, collaboration, critical thinking, creativity, personal drive/interest, being resilient, attention to details, following instructions, independent learning, core technical skills, computational thinking, and thinking like an engineer

GearBots Sr. STEM Academy Overview

- Our Sr. Makerspace program
- STEM = Science, Technology, Engineering, Math

PREREQUISITE:

- Successful completion of one or more of our Jr. Makerspace courses. Invited by one of our instructors and has demonstrated the skills necessary for success in this program. Must have an appreciation for physics/math (computational thinking).

TARGET:

- Ages 12+ by invitation only
  - Candidate must demonstrate a readiness and a willingness to accept this challenge. We will identify and communicate with parents directly when we feel the student has demonstrated a readiness for the next level. Students could be eligible for one or both our academy options.
  - Soft skills required: aptitude, self-regulation, maturity, focus, teamwork skills, communication, collaboration, critical thinking, creativity, personal drive/interest, being reliant, attention to details, following instructions, independent learning, core technical skills

FOCUS:

- Developing intermediate to advanced skills in: coding, engineering design, modern fabrication, and electronics

LOCATIONS AND DAYS:

- Chilliwack: at UFV Trades and Technology campus on Mondays, Wednesdays, Thursdays from 4-6pm
  - Mondays - Software / Game Design cohort course
  - Wednesdays - Digital Design cohort course
  - Thursdays- Engineering Design cohort course
- **During the Covid-19 restrictions, this will be a virtual program with weekly meetings via Zoom and google classroom**

COURSE LENGTH / FEE:

- 14 week course (28 hours per course) - $450.00 + GST
  - Courses offered from Sept.-Dec., Jan.-May each year (no classes during spring break)

INSTRUCTIONAL FORMAT:

- Direct instruction/lecture format with lab time to work on long-term projects
  - Projects will have the opportunity to develop over a number of years and/or take more than 14 weeks to complete

OTHER:

- All participants in the program must have their own computer

- Registration for this program will be done through a special link emailed directly to the participant's parents/guardians for payment.

GearBots Sr. STEM Academy: Software Design

Focus: Understanding all the various aspects of effective coding skills through an interactive Game Design environment (coding will be done in a C-based environment)
- The course agenda will be set by the instructor and will cover various aspects related to computational thinking and graphic design skills

Date / Time: Mondays from 4pm-6pm - 14 weeks - 2 hours per class

* Location: Chilliwack: UFV Trades and Technology campus in the electronics lecture classroom - #2030

Fees: $450.00 + GST per course
- additional fees may apply for supplies and equipment

Instructor: Mr. Laszlo Kovacs

GearBots Sr. STEM Academy: Digital Design

Focus: Building of the introduction to the 3D printer and laser cutter modules in the Jr. Makerspace program, this option will focus on a variety of technical skills related to the field of Digital Design in the real world. This includes advancing CAD skills (using Fusion 360) and principals of production (how to actually make a device that works and is functional.
- Course agenda will be set by the instructor and will cover various aspects related to Digital Design

Date / Time: Wednesdays from 4pm-6pm - 14 weeks - 2 hours per class

* Location: Chilliwack: UFV Trades and Technology campus in the electronics lecture classroom - #2030

Fees: $450.00 + GST per course
- additional fees may apply for supplies and equipment

Instructor: Mr. Trevor Schamuhn

GearBots Sr. STEM Academy: Engineering Design

Focus: IoT, Electronics, robotics, coding with a focus on JavaScript, Andriod App development, RC/Wifi and autonomous vehicles, machine learning, Phonegap Cordova, Particle.io and TensorFlowjs
- Course agenda will be set by the instructor and cover aspects of the items listed above.

Date / Time: Thursdays from 4pm-6pm - 14 weeks - 2 hours per class

* Location: Chilliwack: UFV Trades and Technology campus in the electronics lecture classroom - #2030

Fees: $450.00 + GST per course
- additional fees may apply for supplies and equipment

Instructor: Mr. Jeremy Ellis

* NOTE: During the Covid-19 restrictions, this will be a virtual program with weekly meetings via Zoom and google classroom