

2020-2021 — Course Catalog



- Visit **builtbyme.com** for full program information

Welcome to Built By Me

Our Vision

Our vision is to help children grow into creators by building creativity through passion about new ideas, an emphasis on hands-on learning/discovery, and encouraging curiosity and participation. We build a love for learning through our use of advanced technology, and build community through mentorship and our inclusive environment.

Our Mission

We are dedicated to using STEM / STEAM technologies as a platform to help children build the skills they need to succeed in the 21st century: **creativity, critical thinking, communication, and cooperation.**

Our Programs (in person or virtual)

Classes: in-person or virtual

6 – 8 SESSIONS; 1 – 2 HOURS EACH Our hands-on, project-based classes engage students with a specific subject while they learn how to use brainstorming, problem solving, troubleshooting, and subject-specific tools and methodology.

Workshops

SINGLE SESSION; 1 – 2 HOURS Workshops include an age-appropriate hands-on project guided by instructors. Some programs include a completed project for students to take home.

Subjects

We offer courses in the following subjects: **Computer Science, Robotics & IoT, Digital Making, Product Design, and Entrepreneurship.**



Computer Science

Coding and Programming • Game Design App Development • Minecraft





For students who are interested in all things computers, we have a wide variety of classes and workshops in coding, game design, application development – even Minecraft! Learning the basics of computer programming and coding can be beneficial for students of all ages – it helps to develop important skills in critical thinking, persistence, problem solving, math, language processing, and creativity. We offer curriculum for students of all ages and skill levels.

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Be a Game Designer with Scratch MIT - Level I

Grades: 3 to 6 Prerequisite: None Tools: Scratch MIT, Zoom Skill Level: Beginner Availability: in-person and virtual

Did you know that popular game designers started their careers from the comfort of their homes rather than in college? We can help your child to kickstart their game designer career much faster and without even leaving their home.

Learn how to code and create simple games using Scratch MIT, a block-based coding developed by MIT. Each session our instructor will guide the participants to build a new and different game or program.

After completing the program, students will:

- learn about various game mechanics
- create games in Scratch MIT
- develop Computational Thinking

Virtual Class Requirements

To take part in the program virtually, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom and Scratch MIT.

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Be an Expert Game Designer with Scratch MIT - Level II

Grades: 4 to 7 Prerequisite: Scratch MIT - Level I Tools: Scratch MIT, Zoom Skill Level: Intermediate Availability: in-person and virtual

This program is for serious coders who want to take their game design skills with Scratch MIT to the next level. During each session, our coaches will guide the young programmers to build more complex games and projects.

After completing the program, students will:

- learn about advanced programming skills such as complex loops, lists, and functions
- use advanced extensions such as video sensing, text-to-speech, and translator
- create art using coding
- create and design artwork for new sprites and backgrounds

To register for this program, students should have completed "Become a Game Designer" or demonstrated comparable skills.

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom and Scratch MIT.

```
background = Actor("background")
    player = Actor("1")
    plaver.x = 200
9
    player.y = 200
10
    enemy = Actor("alien")
    player2 = Actor("2")
12
    coin = Actor("alien", pos=(300,300))
14
    score = 0
    time = 20
15
16
18
    def draw():
19
        screen.clear()
20
        background.draw()
21
        player.draw()
        enemy.draw()
22
```

Be a Game Designer with Python I

Grades: 5 to 8 Prerequisites: Scratch MIT - Level I Tools: Python, Mu Editor, Zoom Skill Level: Intermediate Availability: in-person and virtual

Do you have a budding game designer at home who has mastered Scratch and is itching to write code all by themselves? We've got you covered!

In this program, coders will learn how to make simple video games with Pygame Zero game design tool and Python programming language.

Young coders will learn about data types, user-input, conditional statements, loops, defining functions and will be able to write simple codes and games by the end of the program.

Virtual Class Requirements

To take part in the program, you must have access to a PC or Mac (not Chromebook) with a webcam as well as an Internet connection with access to Zoom.

Must install Mu Editor https://codewith.mu/en/download



Be an HTML, CSS, and JS Web Developer

Grades: 5 to 8 Prerequisite: knowledge with Scratch & Python Tools: codepen.io, Zoom Skill Level: Intermediate Availability: in-person and virtual

Did you know that HTML, CSS, and JS are languages used for programming? Which is why they can be hard to master. Not if there's proper guidance though!

This class will teach young web developers how to write code and build programs using HTML, CSS, and JavaScript so that they can develop their first websites, web-based apps, and games. These are real-life coding skills that the students will use in all kinds of programming.

Each session, young engineers will complete short projects such as building a web page, creating a password, making a game and building an app.

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom and codepen.io.



Roblox Game Designer: Build your Own Obby

Grades: 4 to 8 Prerequisite: none Tools: Roblox, Roblox Studio , Zoom Skill Level: Beginner Availability: in-person and virtual

With Roblox Studio game engine that's accessible from any device, imagination is the only limit. So, if your child's dream is a career in game development, this is a great time to get that started!

In this program, students will learn the fundamentals of game design as well as master the technical skills of the numerous Roblox Studio's tools to design their own obstacle course. Gain inspiration from your favorite games and design an Obby of your own to challenge family and friends!

Virtual Class Requirements

To take part in the program, you must have a PC or Mac (not Chromebooks) with Webcam.

Internet connection with access to Zoom. Roblox and Roblox Studio must be installed.



Minecraft Game Designer: Build your World

Grades: 4 to 8 Prerequisite: none Tools: Minecraft Java edition, Zoom Skill Level: Beginner Availability: in-person and virtual

With Minecraft sandbox construction game imagination is the only limit. So, if your child's dream is a career in game development, this is a great time to get that started!

In this program, students will learn the fundamentals of Minecraft gameplay (creative and survival mode) and design. The young builders will learn many skills such as how to build shelter, find resources such as iron and diamonds, create tools, learn to farm, hunt monsters, and obtain armor. Throughout the program, students will have many opportunities to socialize and work together in teams to put in practice the skills learned.

Gain inspiration from your favorite games and design a world of your own to challenge family and friends!

Virtual Class Requirements

To take part in the program, you must have a PC or Mac (not Chromebooks) with Webcam. Internet connection with access to Zoom.

PC Java edition: Downloading Minecraft mc version: https://www.minecraft.net/en-us/download/



Minecraft Game Designer: Harry Potter World and Simple Machines

Grades: 4 to 8 Prerequisite: none Tools: Minecraft Java edition, Zoom Skill Level: Beginner Availability: in-person and virtual

With Minecraft sandbox construction game imagination is the only limit. So, if your child's dream is a career in game development, this program is a great time to get that started!

Builders will collaborate and experience Minecraft in the Harry Potter way! They learn to build amazing structures using architecture dating back to times of witchcraft and wizardry. They also create simple machines and other new inventions such as secret passageways and traps. Quizzes, challenges, and puzzles will help the young game designers to develop critical thinking and problem-solving skills making them the most intelligent and open-minded wizards in the realm! Throughout the program, students will have many opportunities to socialize and work together in teams to put in practice the skills learned.

Gain inspiration from your favorite games and design a Harry Potter world of your own to challenge family and friends!

Virtual Class Requirements

To take part in the program, you must have a PC or Mac <u>(not Chromebooks</u>) with Webcam. Internet connection with access to Zoom.

PC Java edition: Downloading Minecraft mc version: https://www.minecraft.net/en-us/download/

Robotics & IoT

Robotics • Electronics Green/Alternative Energy • Construction



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			Explorer Robotics with mBot			pg. 15			
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Robotics, Artificial Intelligence, Internet of Things – this futuristic technology is quickly becoming part of our everyday lives, and will provide many career opportunities in the future. We offer classes and workshops for students interested in learning more about how to build and use these technologies, including robotics, IoT, general electronics and circuitry, Arduinos, BBC Micro:Bit, and more.



LEGO® WeDo - Junior Robotics and Coding: Level I

Grades: K to 2 Prerequisite: None Tools: Lego WeDo 2.0 kit & App Skill Level: Beginner Availability: in-person

Putting science practices and the engineering habits of mind to work, students will work in pairs to develop, plan, analyze, test, and modify their own robotics creations, using the LEGO® Education WeDo™ Robotics Construction Sets.

Students are introduced to robotics through building models, attaching sensors and motors, and using a computer to program the model's behavior. Students will be exposed to basic programming skills, simple engineering concepts, and the names of the robot components. Working in pairs students will work on guided projects as well as open projects first gaining confidence and then understanding of the world around them.

This course is a great way to prepare young Robotics enthusiasts for the more advanced Robotics course.



LEGO® WeDo - Explorer Robotics and Coding: Level II

Grades: K to 2 Prerequisite: LEGO® WeDo Level I Tools: Lego WeDo 2.0 kit & App Skill Level: Beginner Availability: in-person

Putting science practices and the engineering habits of mind to work, students will work in pairs to develop, plan, analyze, test, and modify their own robotics creations, using the LEGO® Education WeDo™ Robotics Construction Sets.

Students will continue to work with robots through building models, attaching sensors and motors, and using a computer to program the model's behavior. Students will continue to be exposed to programming skills, simple engineering concepts, and the names of the robot components. Working in pairs students will work on guided projects as well as open projects first gaining confidence and then understanding of the world around them.

Students registering for this class should have completed Junior LEGO® WeDo - Junior Robotics and Coding (Level I) or demonstrated comparable skills.



Junior Robotics with mBot

Grades: 3 to 7 Prerequisite: None Tools: mBot robot, iPad, Zoom Skill Level: Beginner Availability: in-person and virtual

Is your child excited about robots and coding? Now's the time act on this passion and turn it into practical skills! In this program, young engineers will discover the basics of coding and robotics. They will learn how to program the mBot robot through lessons that will incorporate various learning modalities and set the foundation for computational thinking, an essential skill for today's learners.

During the program, campers will learn: -essential robotics programming concepts -interactive activities and games -be introduced to Computational Thinking

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom.

Must have an iPad (iPad 3, iOS 9.0 or above) or Android Tablet (Android 4.3 or above) with mBlock Blockly from Makeblock App installed.

Must have a mBot robot (\$60 from amazon.com) or if you are local to East Brunswick, NJ you can borrow from us (call for more details).



Explorer Robotics with mBot

Grades: 3 to 7 Prerequisite: Junior Robotics with mBot Tools: mBot robot, iPad, Zoom Skill Level: Intermediate Availability: in-person and virtual

Enter the exciting world of robotics where students use the modern-day language of programming to write and adapt challenges and then watch it all come to life with a working robot!

Students will spend time building, rebuilding, and testing their robot in the field to sense the environment and navigate obstacles. They will also have the chance to transform their robots into a light-emitting cat one day and a Japanese sumo wrestler the next!

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom.

Must have an iPad (iPad 3, iOS 9.0 or above) or Android Tablet (Android 4.3 or above) with mBlock Blockly from Makeblock App installed.

Must have a mBot robot (\$60 from amazon.com) or if you are local to East Brunswick, NJ you can borrow from us (call for more details).



Coding with micro:Bit

Grades: 5 to 8 Prerequisite: None Tools: micro:Bit, Zoom Skill Level: Intermediate Availability: in-person and virtual

Bill Gates developed his first program at the age of 13 and is now one of the wealthiest people in the world!

During this introductory course, students will be able to work with block-based languages or develop code in text-based programming languages such as Python and JavaScript.

Students will jump into the world of this amazing technology with the live support of expert educators and create games and projects using built-in LED screens, buttons, and sensors.

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom.

Micro:Bit kit recommended but not necessary (virtual simulator available).



Intro to Arduino and Internet of Things

Grades: 5 to 8 Prerequisite: None Tools: Arduino, Zoom Skill Level: Intermediate Availability: in-person and virtual

Is your child keen on picking apart old electronic devices to see how they work? It's time to turn this passion into action!

In this course, students will learn the foundations of IoT (Internet of Things) using Arduino, an electronic circuit board that makes it easy to learn electronics. Students will learn about digital input\output, display, wiring of Arduino and IR Remote.

In each session, the students will complete a short project, and by the end of the program, they will have completed an entire engineering project all by themselves (and a little expert help).

Virtual Class Requirements

To take part in the program, you must have access to a PC or Mac (not Chromebook) with a webcam as well as an Internet connection with access to Google Meet or Zoom and Tinkercad.com.

Arduino Uno kit recommended but not necessary (virtual simulator available).



LEGO® MINDSTORMS® - Robotics and Coding

Grades: 5 to 8 Prerequisite: None Tools: Lego WeDo 2.0 kit & App Skill Level: Beginner Availability: in-person

Using the engineering design process and basic programming, Robotics enthusiasts will unleash their creative powers to build fully functional robots from LEGO® MINDSTORMS® EV3 core sets that can walk, talk and even think.

Step-by-step projects will guide students as they work in pairs to explore robotics concepts. Students will be challenged to use and strengthen their computational thinking skills as they immerse themselves in the world of computer science, robotics, software engineering, and more!

Digital Making

Podcasting • Computer Animation Video/Film Production • Virtual Reality





In our computer lab, we offer classes and workshops in computer animation, virtual reality, video production, filmmaking, photography, podcasting, and music composition. Instructors guide students through the creative process and provide technical instructions, empowering them to bring their creative ideas to life using cutting-edge software and technology.



The Art of Filmmaking - Stop Motion

Grades: 2 to 7 Prerequisite: None Tools: Tablet with Stop Motion Pro app, Zoom Skill Level: Beginner Availability: in-person and virtual

Filmmaking running in your child's veins? Then, let's get the lights and camera ready for action!

This class introduces students to the art and technique of filmmaking using stop-motion techniques. The young directors will go through the steps required to make a short stop-motion movie, including writing a script, drawing a storyboard, developing characters, making puppets or using Lego®, shooting scenes, editing, and adding sound effects.

By the end of the program, each student will have completed a short movie on a subject of their choice. You can watch it together during the last session!

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom.

Must have a tablet with Stop Motion Pro App installed. Headphones and microphone recommended.



Digital Photographer & Videographer

Grades: 3 to 7 Prerequisite: None Tools: iPad with iMovie app, Zoom Skill Level: Beginner Availability: in-person and virtual

This camp will introduce to the art and the process of digital photography and filmmaking. Participants will develop their ideas exercising their creativity while learning the required skills and basic production concepts to make a short movie from start to finish including: writing a script, drawing storyboards, basic cinematography, shooting scenes, editing and adding sound effects.

At the end of the week, each student will have completed the production of a short movie about a subject of their own choosing.

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom.

Must have an iPad with iMovie App installed. Headphones and microphone recommended.



The Art of Podcasting

Grades: 4 to 7Skill Level: BeginnerPrerequisite: NoneAvailability: in-person and virtualTools: iPad with Garageband app or table/computer with Bandlab, Zoom

This class introduces children to the art and technique of podcasting. It will explore exactly what a podcast is and why it's so powerful for storytelling.

Our coaches will teach students the steps required to make a podcast, including planning, scriptwriting, editing, and publishing. They will strengthen their skills in research, writing and collaboration while building their creativity and confidence.

At the end of the program, each student will have completed a short podcast on a subject of their own choice and it will be available to download.

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom.

Must have an iPad with GarageBand or tablet with Bandlab installed. Headphones and microphone recommended.

Product Design

3D Modeling/Printing • Design Thinking Prototyping • Laser Cutting





We have a variety of tools for students interested in product design, including computer-aided design (CAD) software, laser cutters, and 3D printers. In our product design classes and workshops, students will start with a problem, brainstorm solutions, develop ideas and create prototypes, troubleshoot, and improve their designs through to completion.



Maker's Club

Grades: 4 to 7 Prerequisite: None Tools: Maker kit, Zoom Skill Level: Beginner Availability: in-person and virtual

It's never too early to get started with STEM. In fact, STEM makes learning fun (and not feel like learning at all) while teaching crucial skills such as problem-solving, critical thinking, and creativity.

Our Maker's Club introduces the amazing world of STEM through science kits. Each session, our expert coaches will guide students through different STEM projects such as building a LED lantern, an electric fan, or a catapult and learn the history and science behind them.

Our STEM science kits are available for curbside pick-up at our main location in East Brunswick, New Jersey, or we can ship them directly to your home for a small additional fee.

Virtual Class Requirements

Required maker kits for the class – addition fee. To take part in the program, you must have a laptop or Chromebook with Webcam. Internet connection with access to Zoom.



Intro to 3D Design and 3D Printing

Grades: 5 to 8 Prerequisite: None Tools: MakerBot, Tinkcad, Zoom (for virtual class) Skill Level: Beginner Availability: in-person and virtual

Creating from scratch has never been easier. During this program, students will gain a fundamental understanding of 3D Modeling and 3D Printing as well as learn the Design Thinking Process through a series of short-term projects.

Students will use Tinkercad 3D modeling tool to design their projects, and Built by Me team will 3D print them using our MakerBot Replicator printers.

Virtual Class Requirements

To take part in the program, you must have access to a laptop or Chromebook with a webcam as well as an Internet connection with access to Zoom and tinkercad.com.

Entrepreneurship

Business Fundamentals • Marketing Innovation • Budgeting





Young Entrepreneur Business Bootcamp

Grades: 6 to 8 Prerequisite: None Tools: Zoom Skill Level: Beginner Availability: in-person and virtual

Working from home and being your own boss is becoming the new norm! Let's help your child get started early, and we're not talking about lemonade stands or selling cookies door-to-door. In this class, we'll be speaking real business!

In this program, the young entrepreneurs will learn the fundamentals of business and develop an entrepreneurial mindset. They'll work on innovating, developing new products and even new inventions, as well as dive into marketing, financing, and budgeting.

Virtual Class Requirements

To take part in the program, you must have a laptop or Chromebook with Webcam. Internet connection with access to Zoom.