AFTERSCHOOL CLUB STEM PROJECTS

KINDERGARTEN TO 5TH GRADE

Summary of Activities to be Offered for the 2024-2025 Academic Year:

1. ROBOTICS ENGINEER: FOR 2ND TO 5TH GRADERS

In this engaging course, students will delve into the world of robotics,. throughout the program, they will learn about:

- Electrical circuit theory
- Various electrical components such as servo motors
- Photo-resistors
- Infrared sensors
- Transmitters

The projects will introduce them to graphical programming using both Blocky and MakeCode and line coding using Python. By the end of the course, students will have developed robots that can sense their environment and navigate using tactile, light-sensitive phototransistors, and infrared sensing.

2. ELECTRICAL COMPONENTS: FOR KINDERGARTEN TO 1ST GRADERS

Young learners in this program will be introduced to essential electrical components like resistors, capacitors, diodes, and more. Through hands-on activities, they will gain practical knowledge of how these components function within various systems. The course will be brought to life through exciting projects, including building FM radios, creating lie detectors, designing automated streetlamps, and having fun with flying saucers. Additionally, students will have the opportunity to construct circuits using a remote-controlled Rover, adding an element of excitement to their learning journey.

(8 WEEKS) SEPTEMBER TO DECEMBER ($210)
LOCATION: SCHOOL CLASSROOM -TBA

(10 WEEKS) FEBRUARY TO MAY ($240)
LOCATION: SCHOOL CLASSROOM -TBA

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To register, please contact us or visit https://www.stemafterschoolacademy.com/

STEM AFTERSCHOOL ACADEMY

8 WEEK SCHEDULE

FOR ROBOTICS **FALL SESSION**

Week 1-2:
Introduction to Robotics and Blocky

- Getting to know the Scribbler robot
- Basics of graphical programming with Blocky
- Simple movement commands and fun challenges (Maze)

Week 3-4:
Advanced Blocky Programming

- Sensors and inputs
- Programming robot reactions to different stimuli
- Collaborative group projects

Week 5-6:
Introduction to Cyberbots

- Understanding Cyberbots and their capabilities
- Transitioning from Scribbler to Cyberbot programming
- Basic Cyberbot tasks using Makecode

Week 7-8:
Transition to Python Programming

- Introduction to Python syntax and basics
- Simple Python programs for Cyberbots
- Combining graphical and text programming concepts

SEPTEMBER TO DECEMBER ($210)
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10 WEEK SCHEDULE

FOR ROBOTICS **WINTER SESSION**

Classes do not require previous knowledge.

Week 1-2:
Review & Reinforcement

- Quick review of Makecode and Python basics
- Reinforcing foundational programming concepts

Week 3-4:
Intermediate Python Programming

- Exploring more complex Python commands
- Programming Cyberbots to perform advanced tasks

Week 5-6:
Problem Solving with Python

- Solving real-world problems using Python
- Implementing logic and conditionals

Week 7-8:
Collaborative Projects

- Students work in teams to design and program a unique project
- Presentation and demonstration of projects

Week 9-10:
Advanced Challenges and Competitions

- Competing in friendly challenges to test skills

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