GEAR BOTS
EDUCATIONAL RESOURCES

Your Educational Source for

Robotic Training and Challenge Mats

ENGINEERING FOR THE MIND

GearBots Proudly Promotes **STEM**

Science
Technology
Engineering
Math

gearbots.org

Inspiration

Imagination

Teamwork

Leadership

Creativity

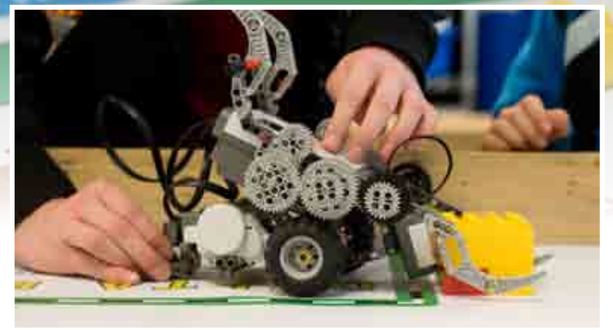
EDUCATORS BENEFIT FROM ROBOTIC CHALLENGE MATS

Robotics engineering resources are now an affordable, fun, highly engaging platform that reinforces core skills contained within our standard curriculum. While robotics integrates core science, technology, engineering and math skills (STEM), it also reinforces key employability skills such as the importance of effective teamwork, project management, problem solving, and decision making skills needed for successful life long learning in the 21st century.

Robotic programming teaches students how to engineer complex autonomous mechanical devices, while simultaneously learning how to program it to complete a number of tasks and challenges. In addition, students are introduced to the engineering process and learn how innovative and creative thinking are critical concepts needed to solve problems in the world of work. Students work collaboratively in engineering teams to solve tasks and challenges as well as compete against other teams in class and group competitions which helps keep them motivated and focused.

Robotic programs offer a number of advantages such as increasing student's engagement and academic motivation, offering career exploration opportunities, and promoting positive attitudes towards core subjects like science, technology, engineering and math.

It is a fact that our students today are immersed in technology. Therefore, it only stands to reason that as educators, we need to find effective ways to integrate technology into our curriculum to enhance learning and to better promote the core skills required for work in the 21st century. Words like innovation and imagination are offered up as key skills needed to address the issues and opportunities of tomorrow.



ABOUT GEARBOTS EDUCATIONAL RESOURCES:

Dereck Dirom currently teaches at Yale Secondary School in Abbotsford and has been teaching robotics courses for the past six years. He has seen first hand how promoting science, technology, engineering, and math (STEM) through the use of robotics can be used to engage and motivate a diverse community of learners. He has been awarded a Mitchell Odyssey Foundation Grant, which has assisted in the expansion of his robotics program. Dereck has teamed up with the School of Energy at BCIT and has created a robotics engineering program called GearBots to provide a number of programs to students ages 9-14 within the Upper Fraser Valley. GearBots currently offers (non-credit) after school courses, and a summer camp for students interested in learning more about robotics and the field of mechatronics.

FEATURES & BENEFITS

Of Our Durable Mats!

- High quality vinyl - very durable and will last for years
- Double sided designs - easy to store – no more bulky sheets to manage
- Easy to transport from site to site
- Easy to set-up, clean-up and store (role out or role up)
- Easy to clean and maintain - no more gummy electrical tape
- Enhances instructional opportunities and easy to manage larger class sizes
- Versatile and adaptable designs
- Can use the challenge mats to generate revenue for your program
- Can be used to build basic programming knowledge or training for robotic competitions
- Can be personalized with school logo or sponsorship recognition for that extra pizazz

DOUBLE SIDED DESIGNS Better Portability and Storage

All our mats are available in a two sided format. This enables quick transitions and less mats to sort through which keeps your class preparations to a minimum.

Section 1

Training Mats

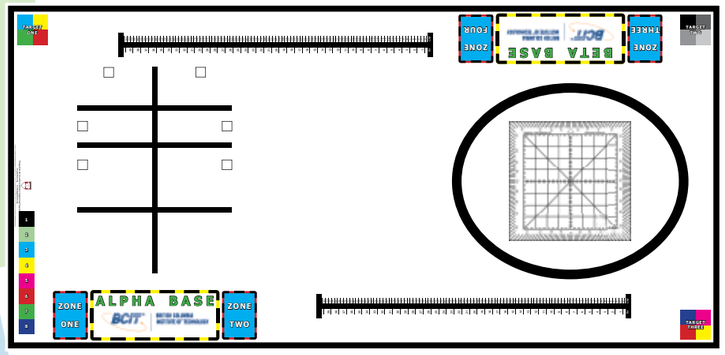
Introductory Training Mat

TM001

45”W x 93”L
Heavy weight vinyl

This mat is a great resource for teaching the basic programming and logistical aspects for a variety of robot formats. It contains the basic features needed for teaching students how to precisely navigate around an area and react to environmental conditions.

Highly Recommended



FEATURES:
Navigational protractor, 100 cm/39 inches measurement strip, line follower, colour differentiation, mission objective / target zones

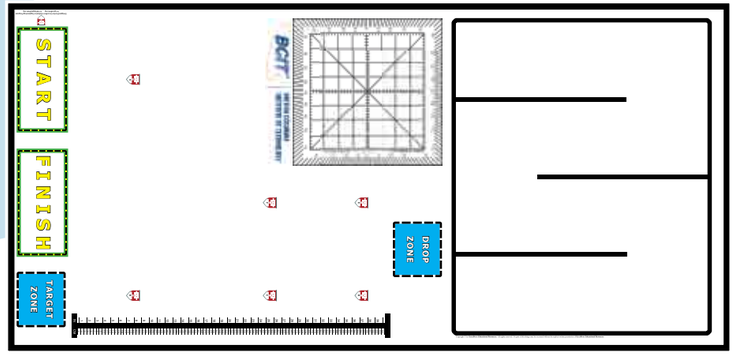
Digital Files Included:
Navigational protractor

Measured Distance / Degree Turns / Maze Mat

TM002

45”W x 93”L
Heavy weight vinyl

This mat is primarily used to assess an engineering team’s ability to successfully program their robotic device to travel a set distance and turn an exact degree. Teachers have the option to use two mini-challenges (waypoints and the maze) to assess their students’ abilities to successfully navigate around a testing field.
Suggested Time: Approximately one class per task



FEATURES:
Navigational protractor, 100 cm / 39 inches strip, maze and mission objective / target zones

Digital Files Included:
Challenge overview (missions)

Highly Recommended

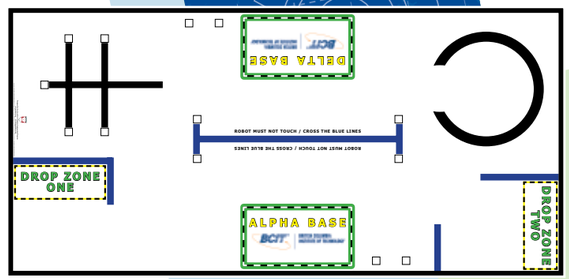
Section 2

Challenge Mats

FEATURES:
Line follower, measured distance, degree turns

Digital Files Included:
Challenge overview (missions) and assessment rubric

Highly Recommended



Introductory Challenge Mat

CM001

45”W x 93”L
Material: Heavy weight vinyl

Description: The purpose of this challenge is to train and teach the engineering teams the basic process and logistical aspects of completing a robotic challenge designed by the GearBots Program. This challenge consists of four missions that reinforces the key concepts needed to compete in more advanced challenges. Points are awarded for completion and accuracy of robotic programming and quality of engineering.

Suggested Time: 10 to 15 hours

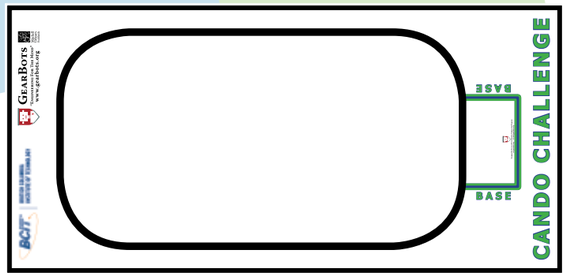
CANDO Challenge Mat

CM002

45”W x 93”L
Heavy weight vinyl

Description: This challenge is used to assess an engineering teams designing and programming proficiencies. An autonomous robotic device is engineered and programmed to enter the field and clear it of any object. Points are awarded for completion and accuracy of robotic programming / performance and quality of engineering / design.

Suggested Time: 12-15 hours

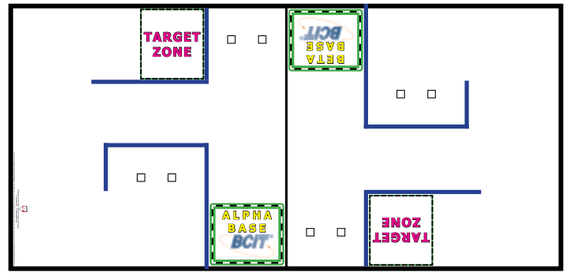


FEATURES:
Large oval field which can be converted into a maze for an additional challenge if needed.

Digital Files Included: Challenge overview (missions) and assessment rubric

FEATURES:
Can have two groups use the mat simultaneously

Digital Files Included:
Challenge overview (missions)



Maze Challenge Mat

VT001

45”W x 93”L
Material: Heavy weight vinyl

Description: Great introductory challenge that reinforces the basics: measured distance and degree turns. Can be adapted to include picking up objects and delivering them to the target zone.

Suggested Time: One 75 minute class

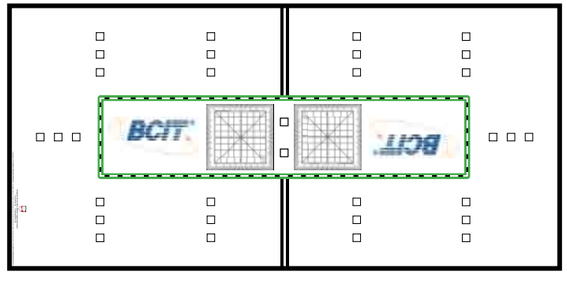
Track Challenge Mat

VT002

45”W x 93”L
Material: Heavy weight vinyl

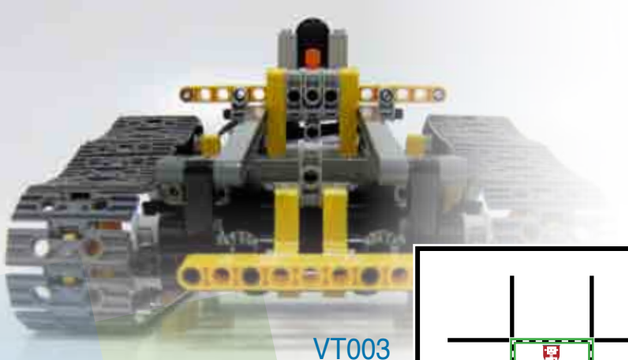
Description: This mat design has a large area with the option to add objects to avoid or collect. Can be used as a racecourse.

Suggested Time: One 75 minute class



FEATURES:
Navigational protractor, adaptable to a variety of activities

Digital Files Included:
Challenge overview (missions)

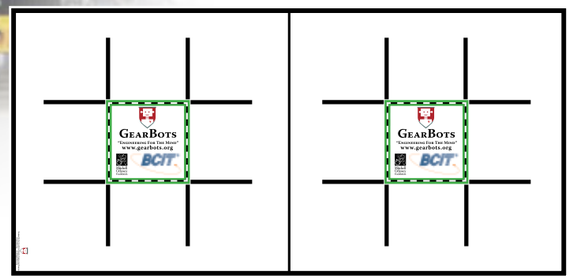


VT003

45”W x 93”L
Heavy weight vinyl

Description: This challenge provides an opportunity to use the light sensor to navigate around a square while stopping and reacting to designated lines on the mat.

Suggested Time: One 75 minute class



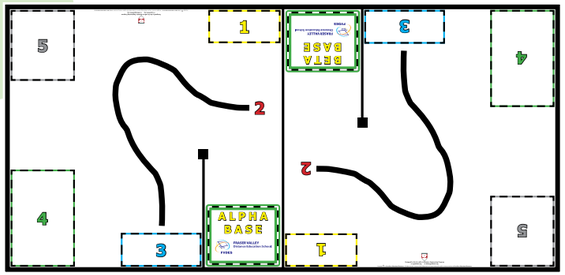
Intersection Challenge Mat

FEATURES:

Can have two groups use the mat simultaneously

Digital Files Included:
Challenge overview (missions)

Obstacle Course Challenge Mat



FEATURES:

Can have two groups use the mat simultaneously

Digital Files Included:
Challenge overview (missions)

VT004

45”W x 93”L
Material: Heavy weight vinyl

Description: This challenge combines the following programming features: measured distance, degree turns, light, ultra sonic and touch sensors. In addition, students have to use loops, switches and calculate thresholds.

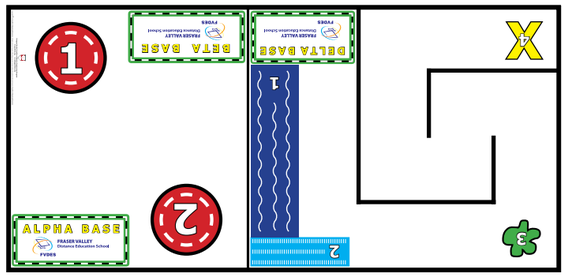
Suggested Time: Two 75 minute classes

Dizzy Drills and Buried Treasure Mat

VT005

45”W x 93”L
Heavy weight vinyl

Description: Two great challenges on one mat design. The Dizzy Challenge is ideal for reinforcing measured distance and swing/point turns. The Buried Treasure Challenge provides an opportunity for teams to demonstrate their knowledge of the programming language.



FEATURES:

Two great review activities on one mat

Digital Files Included:
Challenge overviews (missions)

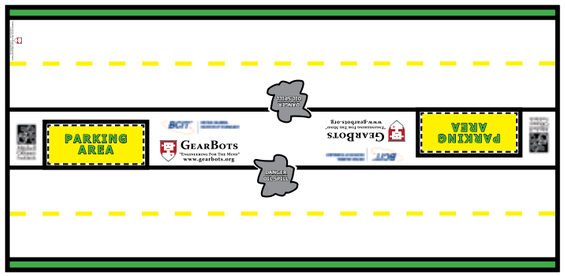
Suggested Time:
One to two 75 minutes classes for both activities

FEATURES:

Can have two groups use the mat simultaneously

Digital Files Included:
Challenge overview (missions)

Suggested Time:
One to two 75 minutes classes for both activities



Driving and Parking Challenge Mat

VT006

45”W x 93”L
Material: Heavy weight vinyl

This challenge allows students to program a robotic device to avoid objects and navigate through a course. The challenge successfully ends when they park their robot in the designated area.

THEMED CHALLENGE MATS

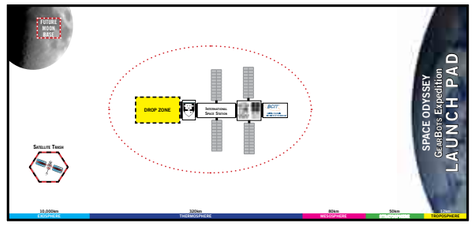
ENGINEERING CHALLENGE
GEAR BOTS

Description: All of these challenges provide an excellent opportunity for students to demonstrate their knowledge of effective engineering, programming and teamwork skills. All of the challenges are organized along a theme and consist of four or five fun missions that need to be accomplished within a set time period. Points are awarded for completion and accuracy of robotic programming and engineering quality. These mats are ideal for classroom, school or district challenges.

Suggested Time: 20-25 hours (from introduction to completion)

Future themes to be developed: Terraforming GEARTOPIA, Smart Factory, Smart City

Digital Files Included: Challenge overview (missions) and assessment rubric

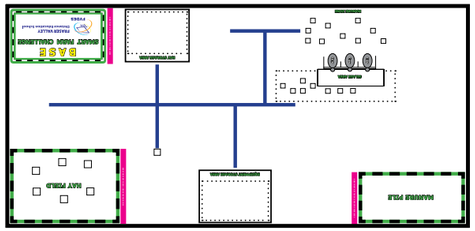


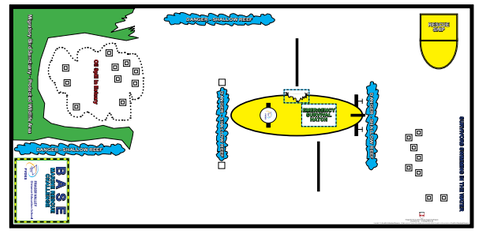
Space Odyssey Challenge Mat

TCM001

Smart Farm Challenge Mat

TCM002



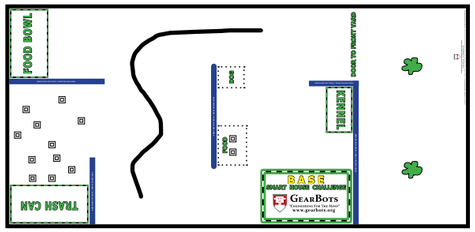


Marine Rescue Challenge Mat

TCM003

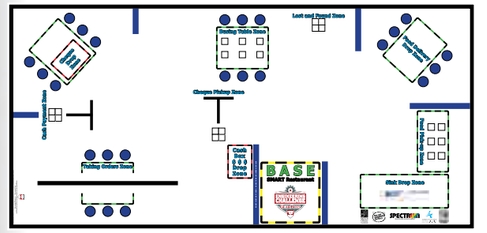
Smart House Challenge Mat

TCM004



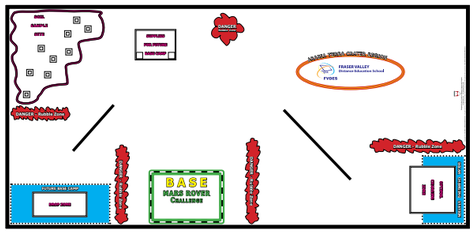
Smart Restaurant Challenge Mat

TCM005



Mars Rover Challenge Mat

TCM006



Costs and Guidelines

Costs (CDN):

1. $300.00 (CDN) per mat (double sided – includes two designs) plus shipping, handling and taxes if applicable.
2. Personalizing mats with school logo or sponsorship logo(s) is included. Artwork fee may apply if images are at a high enough resolution (see artwork guidelines below).
3. Depending on the design selected, some mats will include pdf files needed for instruction.
4. Contact us about our bulk order discounts.
5. Contact us about custom designs and measurements.

Artwork Guidelines:

In order to ensure that all artwork will be appropriate for the size of the mats, the following guidelines

MUST be followed:

1. All files must be Vector formatting (i.e. extensions ending with .cdr, .eps, or .ai).
2. Avoid raster files such as tiff, png, jpg under 200 dpi, bitmaps and giff files.

Email info@gearbots.org to inquire about logo design or artwork services.

Note: There will be an additional charge administered for artwork that is not a vector file.

Custom Design Service (special dimensions and/or special design requirements)

Need a smaller design or want to combine or change specific features of our current designs? We can accommodate and adjust our designs to meet your specific needs and space requirements. Contact us for a quote.

Limited Warranty:

There is a limited one year warranty on the vinyl material used to make the mats. The ink used to create the mats is durable but will mark and wear with daily use. However, the mats should last for many years with basic care and cleaning. Use only mild soap and water to clean the mats. Do not place heavy objects on the mat surface as it will mark the mats if they are moved. GEARBOTS will not be responsible for marks on the mats once they have been used.

Printing:

All mats are designed and printed in Canada.

Copyright Information:

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MADE IN CANADA

Scan this QR code with your smartphone to access our website

GEAR BOTS
EDUCATIONAL RESOURCES

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