

Grade 10: Robotics Design and Engineering



AIMS OF DESIGN

Source: IB MYP Design Subject Guide

- enjoy the design process, develop an appreciation of its elegance and power
- develop knowledge, understanding and skills from different disciplines to design and create solutions to problems using the design cycle
- use and apply technology effectively as a means to access, process and communicate information, model and create solutions, and to solve problems
- develop respect for others' viewpoints and appreciate alternative solutions to problems



Teacher Mr. Baker

Teacher for 13 years: 12 years in America, 2 year in BHA B.S. Electrical Engineering Degree Masters Technology Education

Taught engineering for 6 years, Computer science for 7 years, Math for 5.





Unit: Intro to Robotics



Goal: Learn the basics of robotics through creating different components of a robot in order to perform simple tasks.

Situation:

In order to design successful robots, it is necessary to understand different parts, electronics and tools in robotics and demonstrate workshop safety.

Role:

You will learn the basics of robotics through creating different components of a robot in order to perform simple tasks. You will need to think like an engineer, scientist, and designer.

Unit: First Tech Challenge



Goal: Apply design thinking strategies to develop a unique and meaningful solution

Situation:

The VEX V5 Robotics competition is a global robotics competition. You and your team will need to research the game and strategize game play in order to be successful. We will be a part of a robotics league and will be competing against other teams on the island in order to be ready for the national competition.



Role:

You will be a stategists through researching and developing strategies. You will need to apply your engineering skills to develop successful and durable components and designs for the robot; and you will need to be a team player in order to be successful in this challenge.

Unit: Iteration



Goal: Test and improve your robot in preparation for competition



Situation:

Students continue to test and improve their robot until through the regional competitions in the VEX league. After each competition there will be a reflection on how they did.

Role:

You will use your engineering and critical thinking skills to identify improvement on one aspect of planning process/strategy, actual robot and team performance.

Unit: Robot Skill Building



Goal: Develop deeper advanced skills in robotics design and engineering



Situation:

Successful roboticists need to develop their 3D modelling, CAD modelling, event driven programming skills, as well as have understanding of gear ratios, robots in automation, and sensors. Activities include designing parts in Fusion 360 CAD software, 3D printing robot pieces. Programming activities will include line following challenges, maze and obstacle challenges, object relocation challenges.

Role:

You will use your engineering and critical thinking skills to develop and refine your skills. It will be important to have an open, inquiring mindset..

Unit: Robot Mini Challenges



Goal: Apply your robotics skills to unique challenges

Situation:

Students will collaborate on a range of challenges that allow them to demonstrate their mastery of 3D modelling, programming and other robotics skills.

Role:

You use all your skills and knowledge to successfully complete the challenges. This will require you to collaborate with your teams, as well as use your knowledge and understanding of engineering, coding, and robotics.



G10 & DP Design Courses

MYP Product Design

Designing solutions to complex problems for users.

10 MYP Computer Science

Developing the foundations of computational thinking

10 MYP Entrepreneurship and Design

Integrating entrepreneurial principles with design thinking

> MYP Robotic Design and Engineering

Developing technical and critical thinking skills to create innovative, creative and competitive solutions.

> Digital Media Design

Using digital technologies to communicate and tell stories

DP Group 4



Develop design literacy through developing and applying technical skills in authentic contexts.



Explore and apply computational thinking in authentic contexts

DP Group 6



Experiment with diverse media and explore techniques for making art



Develop an artistic voice and learn how to express personal perspectives through film



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MYP Design

Current Units of Inquiry

Grade

6

BHA Design FAQ



