Fairfax Collegiate

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VEX IQ Robotics 7-9 Syllabus

Course Goals

1 VEX Robotics Platform
Students work extensively with the equipment and programming environment designed by the VEX Robotics organization.

2 Tackling the VEX Challenge
Students undertake the current year's VEX challenge in efforts to better their skills as engineers.

3 Engineering
Students thoroughly explore what it means to be a robotics engineer and develop the skills needed when working cooperatively on a joint project.

Course Topics

1 Robotics Basics
Students look into the basic mechanics in robotics and how they are implemented.

2 VEX IQ Challenge
Students plan and apply these basic mechanics skills as they construct a solution to the VEX IQ Challenge.

3 Analysis of Solutions
Students become experienced in the process of incrementally testing, revising, and implementing changes to their VEX IQ Challenge solutions.

4 Tournaments
Students have multiple opportunities to see how their solutions perform under simulated tournament conditions.

5 Opportunities Moving Forward
Students learn about opportunities to stay involved in robotics in high school and beyond.

Course Schedule

Day 1

Introduction
Students learn the rules to be followed when participating inside and outside of class.

Assessment of Robotics Knowledge
Students are assessed on prior robotics knowledge in order to give the instructor a better understanding of where the class is as a whole and how to best teach according to the students' strong suits.

VEX Challenge Formal Introduction
Students read the VEX IQ Challenge rules, and see how the field comes together.

Basic Concepts 1
Students look into basic mechanisms that appear in robots everywhere and how they apply to the VEX challenge.

Basic Concepts 2
Students continue to delve into the topics that are essential to robotics.

Day 2

Basic Concepts 2
Students continue to delve into the topics that are essential to robotics.

Team Building
Students form teams and interact as a group in order to get a grasp on the team chemistry.

Introduction to VEX Kits
Students build a standard robot using the VEX kit in order to get a better understanding of how to connect the software and hardware.

Day 3

Programming Basics
Students program their robots to a complete teamwork based challenge.

Day 4

Initial Planning
Students take the time to plan out their build and program according to the rules of the VEX IQ Challenge.

Building and Testing 1
Students begin to build and program their robots for the VEX IQ Challenge.

Day 5

Building and Testing 2
Students continue to refine and test their robots for the VEX IQ Challenge.

Day 6

Mock Tournament 1
Students take what they have and participate in a mock tournament with fellow classmates.

Revision and Rebuild 1
Students take their knowledge gained from the mock challenge and draw up new strategies to better their score.

Day 7

Revision and Rebuild 2
Students continue to strategize and implement changes to their robots in order to better their scores from the last mock tournament.

Mock Tournament 2

Students use their new robots to try the VEX IQ Challenge again.

Day 8

Learning from Reflection
Students learn from competition winners and discuss differences between their robots and others.

Revision and Rebuild 3
Students take what they gathered from winning competition builds and apply their knowledge to their robots.

Day 9

Final Tournament
Students have a final chance to compete in a mini tournament using the VEX IQ Challenge.

Day 10

Disassembly of Robots
Students disassemble their robots and organize their kits.

Analysis of Results
Students break down what they have learned as a class to better understand what it means to be an engineer.

Moving Forward
Students look at the next year's challenge and discuss what some solutions may look like.

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