Robotics 9: Course Outline 2018-19

Technological education contributes to learning in other areas of the curriculum by providing practical contexts and applications for the knowledge and skills acquired. For example, the technological education program relates to science in that students use scientific principles to design buildings and machines, and to history and social sciences and the humanities in that students assess the impact of the introduction of technologies on historical events.

The Grade 9 students will be using the VEX Robotics Module for the first time for the 2018-2109 school year. The course is design to follow the curriculum developed by the VEX Robotics team as well as other educators in the robotics field (Carnegie-Mellon University, UK and Australian School programs).

This curriculum leverages the “coolness” of robotics, and the excitement of head to head competition to inspire and engage students.

Students will walk through the design and build a mobile robot to play a sport-like game. During this process they will learn key STEM principles, and robotics concepts. At the culmination of this class, they will compete head-to-head against their peers in the classroom, or on the world stage in the VEX Robotics Competition, the largest and fastest growing international robotics competition for middle and high school students.

This modular and project-based curriculum teaches the design process in an engaging, hands-on manner to help teachers challenge, motivate, and inspire their students. By moving students through an actual engineering project, students quickly understand the relevance of what they are learning.

The curriculum is created to ensure that students with varying learning styles and levels can accomplish the lesson goals. No prior robotics experience is required; beginners are able to advance sequentially through the units to gradually increase their knowledge and skill level.

[The VEX Robotics Junior High Curriculum](https://www.vexrobotics.com/vexiq/education/iq-curriculum)

[The Vex Robotics High School Curriculum](http://curriculum.vexrobotics.com/curriculum.html)

The course will be divided into three components:

Level 1: Introduction

The students will build and test three different robots following the design schematics in the VEX Robotics handbook. These tasks will enable the students to familiarize themselves with the different components that make up a robot: motors, gears, wheels, assembly, sensors, and the remote-control unit.

Level 2: Integrating Design, Function , and Fun

There will be a Robot Games competition with students competing as a team and individually.

First up is Robot Soccer, where the aim is to score as many “goal” as possible in a 5-min interval.

Next, the students will be building a robot to take part in a “Scavenger Hunt” game. The aim is to retrieve 3 foam balls as fast as possible.

The purpose of Robot games is to encourage students to work collaboratively in designing a robot to suit the task.

Level 3: Integrating Speed with Control.

The final project is to design and build a robot to “run a slalom” course, where both speed and control is of the essence. Here the students will learn about gearing and transmission designs.

The last two weeks of the course will be devoted to exploring Robot C, the programming language used in the VEX Robotics program. This will give the students an insight as to what will be expected and learned at the Robotics 20 and 30 level.

Assessment Criteria (<http://www.learnalberta.ca/content/ctf/CTF_Assessment_tool.pdf>)

The final course mark in Robotics 9 will be based on the portfolio of the student’s semester work. All modules will contribute to the final mark and will have equal weighting. There is no final exam.

The following rubric will be used for determining the mark for each module.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria/Score | 9-10 | 7-8 | 5-6 | 0 |
| Completion | The project is completed on time or even ahead of schedule’ | Project required an extra class. | Project delayed by a week. |  |
| Success | Projects meets all stated expectations: games “work”, presentations at or above standards, etc. | Projects need some changes or adjustments. | Majors changes needed or project is unrelated to assignment. | Project does not “work” |
| Ergonomics | Choice of colour and layout leading to clear and precise understanding of the assignment. | Meets basic expectations. | Project needs corrections; does not meet basic standards. | High degree of difficulty in attempting to use final project |

NOTE: If no project is submitted, it is obvious that the “Success” and “Artistic” criteria cannot be assessed, hence student will be awarded a “Non-compliant” mark of “zero”. See next section for additional information.

Attendance, Missing or Incomplete Work

Regular attendance and punctuality is mandatory.  It is the student's responsibility to obtain and learn any materials missed when absent.  If a student is to absent him-/herself from class for any reason, such absence will be documented. If it is deemed that such absences become regular occurrences on the part of a particular student, there can be consequences especially if it leads to a deterioration of student work and progress.

Student Success Centre (SSC)

New, beginning this school year, is the establishment of the Student Success Centre. If the situation (where the student has repeatedly refused or will not complete any course work) is not resolved, students with missing and incomplete work will be sent to the Student Success Centre for additional opportunities to complete missing assessments.  The teacher will communicate with the SSC, who will expect the student to attend the SSC to complete the work.  The session at the SSC will run for 74 minutes, and the student must stay for the duration.  If the student misses the scheduled time in the SSC, they may be referred to administration to discuss the consequences of this choice moving forward.

The Student Success Centre will be held in the same space as E-Campus and will be available for students to complete school work/assessments/assignments.