Course Syllabus

**Grade Level:** 9-12

**Course Duration:** One semester, meeting daily with opportunities to expand course

**Course Content Access:** http://curriculum.vexrobotics.com

**Course Resources Provided:**
- Curriculum Lesson Content - thirteen units and associated resources
- Teacher Materials – lesson plans, assessment tools, and standards matching
- Appendices – help with troubleshooting and more

**Course Description, Goals, & Options:**
Autodesk's VEX Robotics Curriculum is divided up into twelve primary units and one optional unit. In a flexible format, students learn about engineering and engineering problem solving. They will be given introductions to the VEX Robotics Design System and Autodesk® Inventor® while learning key STEM principles through a process that captures the excitement and engagement of robotics competition. The curriculum is heavily focused on mechatronic principles; as such, programming is NOT required. However this course is structured in such a way that teachers and students who want to include a more Computer Science heavy layer with the course can do so. For information on the programming options available, consult http://www.vexrobotics.com/programming

**Course Materials (see individual units for details):**
- Unit Guides
- Paper
- Pencils
- Rulers
- Internet Access
- VEX Robotics Kit
- Computers with Autodesk Inventor

- Storage Containers
- Online Resources
- Large Container
- Empty Plastic Bottles or Aluminum Cans
- Engineering Notebooks
- Protractor
- Compass

**Course Outline:**

- Unit 1: Introduction to Engineering
- Unit 2: Introduction to Robotics
- Unit 3: Introduction to VEXnet
- Unit 4: Introduction to Autodesk Inventor
- Unit 5: THE GAME!
- Unit 6: Object Manipulation
- Unit 7: Speed, Power, Torque & DC Motors
- Unit 8: Mechanical Power Transmission
- Unit 9: Drivetrain Design
- Unit 10: Lifting Mechanisms
- Unit 11: Systems Integration
- Unit 12: Testing and the Iteration Process
- Unit 13: Design your Own Part (optional unit)