2010 Robotc Tetric CURRICULUM

Week	Lesson	Assignment	SD Technology Standards
1	Lesson 1: Intro to Robotics class		
	• Discuss goals of class & definition of a robot	SPA Handout	CCP 3.1
	• Define engineering, programming and system.	Video & handout	CCP 3.1
	• Define managing a project.	Video & handout	CPP3.1
	• Discuss Grading rubrics, lab procedures and keeping an Engineering journal.	Handouts	CPP1.3
	• Review safety standards.	Handouts/quiz	CCP .3
	• Build the REM/Tetrix testbed personal assistant robot.	Video/handout	CCP 3.3
	• Set up the NXT Programming software	Handout	CCP 3.3
	• Intro to NXT/Tetrix Hardware (controller, sensors, parts)	NXT/Tetrix Videos	CCP 3.2
	• Download firmware & first program.	Video, handout, quiz	CPP3.2
			CCP 3.2
	• Setup NXT/Tetrix software	Video, handout	
2,3,4, 5	Lesson 2: Running the robot		
	• Discover the relationship between distance and wheel size.	Worksheet	CCP 3.1
	• Write a program to move forward	Drive forward program	CCP 5.2

Week	Lesson	Assignments	SD Technology Standards
	• Investigate the relationship between robot geometry, motor degrees and robot turns.	Worksheet	CCP 3.1
	• Write a program to make the robot do left & right turns.	How fast program	CCP 5.2
	• Write a program to use the swing method and in-place method.	How many sides	CCP 5.2
	• Investigate the properties of a sound wave and properties the sound sensor can distinguish.	Worksheet	CCP3.2
	• Write a program using the Sound sensor	Help, I'm stuck program	CCP 5.2
	• Investigate the properties of line tracking behavior	Worksheet	CCP 3.1
	• Understand programming with switch blocks & loops	Worksheet	CCP 5.2
	• Write a program to use the line sensor to track a line	Help, I'm still stuck program	CCP 5.2
	• Use two different types of sensory stimuli	Obstacle Detection Activity	CCP 4.2
	• Explore the abilities of the Ultrasonic Sensor	Field of View investigation	CPP3.1
	• Write a program to respond to the touch sensor and the ultrasonic sensor	Stay away from the edge	CCP 5.2
	• Demonstrate the process of changing the gears.	Get in gear activity	CPP3.1
	• Demonstrate the relationship between gear ratio and robot speed	Gear & speed investigation	CPP3.1

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6,7,8	Lesson 3: Intro to RobotC programming		
	• Build new robot	Rem robot video	CCP 4.1
	• Understand Robot 2.0 software	Video	
	• Describe the role of a programmer	Video + handout	CCP 3.1
	• Demonstrate knowledge of behaviors & pseudopodia	handout	CCP4.2
	• Identify whitespace, comments and reserved words	handouts	CCP 5.1
	• Understand ROBOTC syntax	video, handout	CCP 5.1
9,10	Lesson 4: Movement		
	• Understand the Labyrinth challenge	Video	CPP5.1
	• Describe moving forward	Video & handout	CPP3.2
	• Define speed & direction	Video & handout	CPP3.2
	• Describe motor power & turning	Engineering Lab	CPP3.2
	• Explore PID	Video & handout	CPP3.2
	• Define synchronized motors	Video & handout	CPP3.2
	• Explore synchronized motors	Engineering lab	CPP3.2
	• Use NXT decoders	Video & handouts	CPP2.2
	• Program & run Labyrinth challenge	Labyrinth Program	CPP5.3

Week	Lesson	Assignment	SD Technology Standards
11,12	Lesson 5: Sensors • Understand the Obstacle Course programming challenge • Describe the while loop • Understand SPA capabilities • Describe Boolean logic • Demonstrate use of while loop/Boolean logic in a program • Demonstrate use of while loop/Boolean logic in a program • Demonstrate use of while loop/Boolean logic in a program • Describe ultrasonic sensors • Calculate thresholds & use random numbers • Demonstrate use of thresholds & random numbers • Write program for obstacle course	Video Video & handout Handout Cat Bot/Sentry Sin 2 challenge Robo 500 challenge RoboMower Video Handout Tablebot challenge Obstacle program	CPP2.1 CPP2.1 CPP2.1 CPP3.3 CPP3.3 CPP3.3 CPP2.1 CPP2.1 CPP2.1 CPP3.3 CPP5.2
13,14	Lesson 6: Encoders, Light & Sound Sensors • Describe encoders • Use reserve words for encoders • Use Boolean operators in conditional statements • Demonstrate use of encoders • Understand line tracking • Accumulate totals • Understand switch case statement	Video & handout Engineering Lab Video 1 &2 Encoder program Video Video Handout Robocci /Sentry	CCP 3.1 CCP 3.1 CCP 3.1 CPP5.1 CCP 5.3 CPP5.1 CCP 5.1 CCP 5.1 CPP3.1

	• Demonstrate line tracking		
Week	**Lesson**	**Assignment**	**SD Technology Standards**
	• Demonstrate use of sound sensor	Video & handout	CPP3.1
15,16, 17	Lesson 8: Using Variables and Functions		
	• Understand warehouse programming challenge	Video	CCP 5.1
	• Demonstrate automatic threshold	Videos	CCP 5.2
	• Use values & variables	Videos & handout	CCP 3.1
	• Use the debugger	Video & handout	CCP 5.3
	• Demonstrate text to display	Lab	CCP 5.3
	• Use line counting method	Video	CPP3.1
	• Write program using line counting	Tap program	CPP3.3
	• Describe variables & functions	Video & handout	CPP3.1
	• Describe functions reference	Handout	CPP3.1
	• Write a program using variables & functions	Functions Program	CPP3.3
	• Understand debugging	Video & handout	CPP3.1
	• Develop program	Warehouse/Tetrix challenge	CPP3.3
18	Finals Week	Final Program	CPP 5.3

Grading Scale: Brookings High School   **Classroom %: In-class work 20%**

A+: 98-100	**B+: 91-89**	**C+: 80-82**	**D+:71-73**	**Programs – 40%**
A: 95-97	**B: 86-88**	**C: 77-79**	**D: 68-70**	**Tests – 40%**
A-: 92-94	**B-: 83-85**	**C-: 74-76**	**D-: 65-67**	