

Teacher VRS STEM Mini-Course Lesson Schedule

Advance Lessons

(Weeks can be sessions)

Background resources

- How to use the VRS [click here](#)
- The 10 lessons [Advance set](#)
- The game VRS Online/Chromebook <https://www.vrobotsim.online/homepage.html>
- PseudoCode ws [click here](#) Multiplayer set up directions [click here](#)
- Game pad [UG functions](#) The Engineering [Notebook master copy](#)
- Scoring Rules scoring rules ultimate goal [click here](#)

1-Intro and Game Reveal

Lesson #1	Week 1 intro to lesson Video Mission and Vision of First -Show video “What is FIRST” by Will.i.am https://bit.ly/3BT9hRh 4 min
Lesson #2	Week 1 intro to lesson Video 2 15 min Game Reveal Launch of the FIRST Tech Challenge and Engineering Notebook • People in Group • Name of your team • Answer the following: ○ What’s your mission ○ What excites you about this Unit • What are you wondering about this Unit
Extra Materials or Video	***Launch For teachers*** This isn’t a Robot https://bit.ly/3x8i0zD
Optional Hw	Reflect in Engineering Notebook :What is FIRST?

2-play the game teleop

Lesson #3	Week 2 intro to lesson 3 Video Intro to TELEOP and Play Show gamepad image
Lesson #4	(no intro video) Students play teleop game- written directions video directions click here Engineering Notebook

	What did you do? What did I learn? Did you include an image?
Extra Materials or Video	**Need video game remote controllers” xbox controllers
Optional HW	1. how to use the VRS video click here Getting Started VRS-ug 2. Locating the blocks for programming https://youtu.be/7PgNPSJnA3Q 3. How to use basic blocks https://youtu.be/39I5_7c1CYY
Reflection	Explain how you controlled the robot?

3-Start to Program

Lesson #5 Week 3 intro to lesson 5 Video 1	Show how to use video click here Or students open website -follow “text” directions Autonomous-Drive to the white line 2 motors 1. Write your pseudocode 2. Drive to the white line hint https://youtu.be/x7BokrnYRVQ a. Drive to white line https://youtu.be/ZgVQHswMonk b. the code up close- click here c. Telemetry explained https://youtu.be/ZgVQHswMonk or https://youtu.be/k8meMepfJPs optional	
Lesson #6 Week 3 intro to lesson 6 Video #2	Introduce-Multiple Solutions to every problem Autonomous-Drive to white line 4 motors 1. Driver to white line with four motors hint https://youtu.be/c4eEeLBST9A a. the code click alternative code click here Engineering Notebook -why do programmers use pseudocode?	
Extra Materials or Video	1. Locating the blocks for programming https://youtu.be/7PgNPSJnA3Q 2. How to use basic blocks https://youtu.be/39I5_7c1CYY	
Homework-Optional	Compare/Contrast	

- the Difference between driving a robot with 2 and 4 motors
- the Difference between TeleOp Vs Autonomous
- What does it mean-Multiple Solutions to every problem?

4-turning/strafing

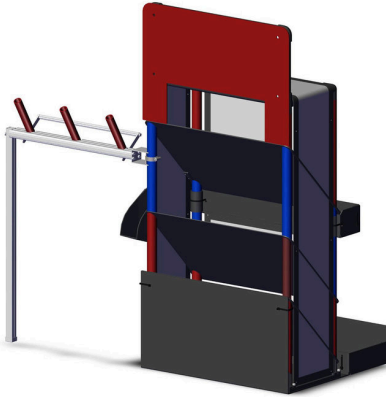
Lesson #7 Week 4 intro to lesson 7 Video #1	Autonomous-Drive to white line-Turn 90 right and then Make a square (remind about Multiple Solutions) 1. Driving make a 90 degree turn hint https://youtu.be/Mwt1i6DcoAw
Lesson #8 Week 4 intro to lesson 8 Video #2	Autonomous-What does it mean to strafe hint https://youtu.be/MXjoF2XXLAE Try Strafing to right to Strafing to left Try Strafing in a square Engineering Notebook Why would a programmer want to strafe
Extra Materials or Video	Turn 1. solution https://youtu.be/nx4PnIYA7ns or https://youtu.be/QInfUHjahq0 2. the code up close 3. alternative program #3 Drive to White Line Turn 90 degrees the code-Redstone 4. 90 degree turn option 2 motors click here or scroll down for 4 motors Strafe 1. the code click 2. solution https://youtu.be/IGs1DomVS3w 3. strafing or moving sideways, first to the right then to the left https://youtu.be/UWXSHuDVkuU 4. the strafing code (scroll to end for strafe with variables) click here Strafe in a square click here 5. Alternative code click here
Hw-optional	Compare/Contrast • Strafing VS 2 wheel drive • How would you turn to the left • When might you want to Stafe Review video: Programming the shooter https://youtu.be/0aAjqJnvU1E

5-shooting rings at the targets

Lesson #9 Week 5 intro to lesson 9 Video #1	Shooting rings Drive and Shoot Rings into the high goal hint https://youtu.be/t43pUXOM0Xk Programming the shooter https://youtu.be/0aAjqJnvU1E
Lesson #10 Week 5 intro to lesson 10 Video #1-Award Criteria Videos	Scoring Engineering Notebook-What target did you shoot at? why?
Extra Materials or Video	Shoot rings at tower - the code click - solution https://youtu.be/VwxFRgVVLGs - Alternate code click here
Hw-optional	- What happens if you hit the middle target. - How would you detect the number of rings at the start of Autonomous 0/2/4 rings.Why does this matter? - Review Scoring rules- make a plan for your Autonomous? Write out the Steps for your Autonomous
Extra Materials or Video Example https://youtu.be/HeDn63Jyms4	Make a Promote Video-Tik Tok style-The VRS is Make speech for 4th-grade students to look forward to for outreach Engineering Notebook

5a PowerShot Rings

Lesson #11 Week 6-intro to this week video All week	Shoot ring Powershots hint https://youtu.be/SEw5JmZKjJQ Or https://youtu.be/e9HhnPiYGC4 Learn to reload rings how to make your robot reload rings https://youtu.be/c89Kd2PHrrc or
---	--

	https://youtu.be/35_2vKtuvBQ the reload ring code one of many options
Lesson #12	Competition Engineering Notebook-why do you want to reload rings?
Extra Materials or Video	Drive and Shoot at the Powershots hint https://youtu.be/SEw5JmZKjIQ a. the code click b. solution (with go to position) https://youtu.be/THkZypgWRhg
HW-optional	Why do you think that the towers go red/blue/red? 

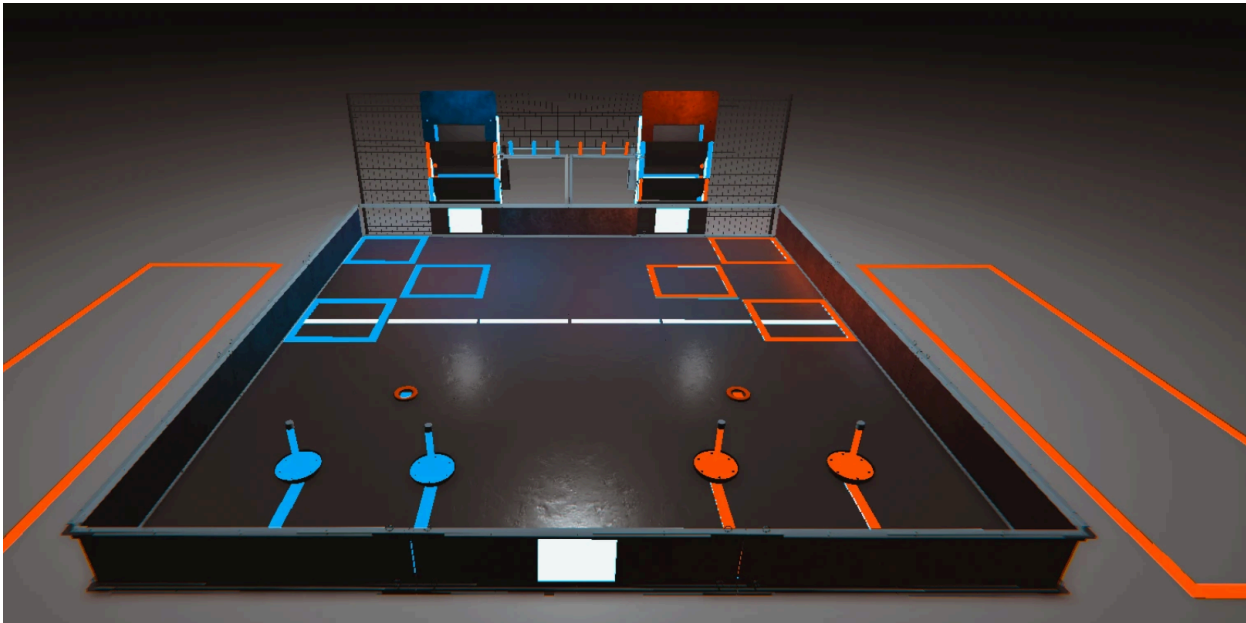
6-Wobble Goals

Lesson #9 Video on wobble	Lift the Wobble Goal
	- Wobble Goal-1st position hint https://youtu.be/9jmv3Qa42sQ - the code 3 alternative methods click - solution https://youtu.be/j7tnpOZ_xDw - How to move the wobble goal https://youtu.be/kf8yT6F7_5c - Wobble Goal 2nd Position with Encoders hint https://youtu.be/Bks7X4O9m84 - the code click - solution with encoders and run to position https://youtu.be/iCbP_eR3QAU - Wobble Goal 3rd position hint https://youtu.be/qqN5xwUKk3M - the code click - Solution https://youtu.be/qqN5xwUKk3M

7-Your Autonomous

Lesson #13	Finalize your autonomous-
Lesson #14	The Class competition- everyone get 2 runs
	Show Promote Videos

What the final event might look like <https://youtu.be/V9XyO6ZyN5c>



High-quality STEM learning and engagement opportunities can be a game-changer for young people in disenfranchised communities who might otherwise not have access to pathways to the fast-growing STEM economy.

Kids learn coding in an exciting, authentic system-[See the world record](#)

DPS 109 Students Set Record in Groundbreaking Robot Unit "The Beasts," composed of fifth-graders, scored a record-breaking 180 points. Posted Thu, Apr 14, 2022 at 12:57 pm CT <https://bit.ly/38jeec7>