Name: Robert Lefrandt	Grading Quarter: 2	Week Beginning: 09/11/2023
School Year: 2023-24	Subject: Robotics	

| | Notes:
09/11/2023

Robotic Assemblies Mechtronics

Engineering: Structural Chassis frame body

Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed

Electrical Chemical electrochemical

Physical Magnetism Batteries

Software Block PLC ladder logic, CNC, Python, C++,

Sensors Bump/touchDistance Light Camera

Physical Computing

AI Data Collect DataAnalyze | **Objective:**
Apply basic engineering principles and technical skills for... artificial intelligent management ...the principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages.
(AZ CTE Automation & Robotics-Program Description)

PERFORM ELECTRICAL AND ELECTRONIC TASKS
ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS
PERFORM DRAFTING TASKS-Make dimensional CAD drawings (e.g., 2D and 3D)
DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS
Explain the operation and use of DC motors in automation controls
PERFORM MECHANICAL SYSTEMS LINKAGES TASKS
APPLY SENSOR SOLUTIONS
DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS
Lesson Overview:
11st Semester Students:
Login to VEX Certification Accounts:
VEX V5
Block Programming
Python Programming
Workcell
Continue building VEX V5 Robots
Speedbot/Base Bot
Coding-Block/Python/C/C++
Sensors
Bump/touch, Distance, Line Tracker, Camera
AI
Data Analysis
2nD Semester Plus+ Students:
Login to VEX Certification Accounts:
VEX V5
Block,Python Programming
Workcell
Customizing Robots and Parts
Tinkercade
3D Modeling, Electric circuits, Arduino IDE – C/Python Code
Workflow Process:
Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing
Inkscape > Tinkercad > Ultimaker Cura > Ultimaker
*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Modeling
Raspberry Pi – Pico Bluetooth/WiFi
Python
Precision Machining
Manual/Traditional - Mill and Drill CNC –ComputerNumeric Control –G/M Code | Academic Standards: |

(Row label, rotated, left column: Monday)

Tuesday	**Notes:** 09/12/2023
	
	Robotic Assemblies Mechtronics
	
	Engineering: Structural Chassis frame body
	
	Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed
	
	Electrical Chemical electrochemical
	
	Physical Magnetism Batteries
	
	Software Block PLC ladder logic, CNC, Python, C++,
	
	Sensors Bump/touchDistance Light Camera
	
	Physical Computing
	
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		Objective:
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		- APPLY SENSOR SOLUTIONS
		- DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS
		
		Lesson Overview:
		1st Semester Students:
		- Login to VEX Certification Accounts:
		- VEX V5
		- Block Programming
		- Python Programming
		- Workcell
		- Continue building VEX V5 Robots
		- Speedbot/Base Bot
		Coding-Block/Python/C/C++
		Sensors
		- Bump/touch, Distance, Line Tracker, Camera
		- AI
		- Data Analysis
		2nD Semester Plus+ Students:
		- Login to VEX Certification Accounts:
		- VEX V5
		- Block,Python Programming
		- Workcell
		Customizing Robots and Parts
		- Tinkercade
		    - 3D Modeling, Electric circuits, Arduino IDE – C/Python Code
		    - Workflow Process:
		    - Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing
		- Inkscape > Tinkercad > Ultimaker Cura > Ultimaker
		*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Modeling
		- Raspberry Pi – Pico Bluetooth/WiFi
		    - Python
		Precision Machining
		- Manual/Traditional - Mill and Drill
			Academic Standards:
			
			AZ_CTE
			
			Automation & Robotics Tech-Standards
			
			STANDARD 2.0 PERFORM ELECTRICAL AND ELECTRONIC TASKS
			
			STANDARD 4.0 ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS
			
			STANDARD 7.0 PERFORM DRAFTING TASKS
			7.5 Make dimensional CAD drawings (e.g., 2D and 3D)
			
			STANDARD 5.0 DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS
			
			5.2 Explain the operation and use of DC motors in automation controls
			
			STANDARD 6.0 PERFORM MECHANICAL SYSTEMS LINKAGES TASKS
			STANDARD 10.0 APPLY SENSOR SOLUTIONS
			
			STANDARD 13.0 DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS

		• CNC –ComputerNumeric Control –G/M Code	

	Notes: 09/13/2023	**Objective:**	Academic Standards:

Wednesday	obotic Assemblies Mechtronics
	
	Engineering: Structural Chassis frame body
	
	Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed
	
	Electrical Chemical electrochemical
	
	Physical Magnetism Batteries
	
	Software Block PLC ladder logic, CNC, Python, C++,
	
	Sensors Bump/touchDistance Light Camera
	
	Physical Computing
	
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		- Python Programming
		- Workcell
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		- Speedbot/Base Bot
		Coding-Block/Python/C/C++
		Sensors
		- Bump/touch, Distance, Line Tracker, Camera
		- AI
		- Data Analysis
		2nD Semester Plus+ Students:
		- Login to VEX Certification Accounts:
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		Precision Machining
		- Manual/Traditional - Mill and Drill
		CNC –ComputerNumeric Control –G/M Code
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			Automation & Robotics Tech-Standards
			
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			STANDARD 6.0 PERFORM MECHANICAL SYSTEMS LINKAGES TASKS
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			STANDARD 13.0 DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIAL

	Notes:	**Objective:**	Academic

Thursday	09/14/2023
	
	obotic
	Assemblies
	Mechtronics
	
	Engineering:
	Structural
	Chassis frame
	body
	
	Mechanical
	(Motion)
	Gear: Box,
	train, parallel
	(linear) stack
	(vertical), ratio,
	torque speed
	
	Electrical
	Chemical
	electrochemical
	
	Physical
	Magnetism
	Batteries
	
	Software
	Block
	PLC ladder
	logic, CNC,
	Python, C++,
	
	Sensors
	Bump/touchDis
	tance
	Light
	Camera
	
	Physical
	Computing
	
	AI
	Data Collect
	DataAnalyze
		Apply basic engineering principles and technical skills for... artificial intelligent management ...the principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages.
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			Standards:
			AZ_CTE
			
			Automation &
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			Tech-Standards
			
			STANDARD 2.0
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			MOTORS
			
			5.2 Explain the
			operation and use of
			DC motors in
			automation controls
			
			STANDARD 6.0
			PERFORM
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			DEMONSTRATE SAFE
			AND PROPER USE OF
			ELECTRONIC AND
			OTHER LABORATORY
			EQUIPMENT, TOOLS,
			AND MATERIAL

		• CNC –ComputerNumeric Control –G/M Code VEX V5 Parts (3D Print)	

| Friday | Notes:
09/15/2023
obotic Assemblies Mechtronics

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Structural Chassis frame body

Mechanical (Motion)
Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed

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Automation & Robotics Tech-Standards

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