Name:	Grading Quarter:	Week Beginning:
Robert Lefrandt	2	12/02/2024
School Year: 2024-25	Subject: Automation	& Robotics/Engineering

Z	Notes:	Objective:	
Monday	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	
₹	Mechtronic	intelligent managementthe principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer	
	Fusinger.	systems, and control languages.	
	Engineer: ReEngineer		
	Reverse	(AZ CTE Automation & Robotics-Program Description)	
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	
	Structural	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	
	Chassis	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	
	frame body Mechanical	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	
	(Motion)	ELECTRICAL MOTORS Events the expectation and use of DC motors in automation controls	
	Gear: Box,	Explain the operation and use of DC motors in automation controls PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	
	train,	APPLY SENSOR SOLUTIONS	
	parallel	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER	
	(linear)	LABORATORY EQUIPMENT, TOOLS, AND MATERIALS	
	stack	Lesson Overview: Workflow Process:	
	(vertical),	Level 1 Students:	
	ratio,	Login to VEX Certification Accounts:	
	torque	VEX V5 ,Block Programming, Python Programming, Workcell	
	speed	RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	
	Mechtronic	Coding-Block/Python/C/C++	
	Electrical (Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	
	Ohm's Law, Parallel/Seri al Circuits)	***Customizing Robots and Parts : After Completing 1st Semester Skills	
		Level 2 Plus+ Students:	
	Chemical	Login to VEX Certification Accounts: (Complete Certifications +	
	e-chem	Arduino/PCEP)	
	Physical	Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	
	Magnetism	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	
	Batteries Software	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	
		Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	
	Block	(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	
	PLC ladder	Manual/Traditional - Mill and Drill , CNC –ComputerNumeric Control –	
	logic, CNC,	G/M Code	
	Python, C++ Sensors touch, Dist	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	
		CAD/CAM: 3D Printing	
	Light,	Competitions Prep, etc. See FabLab/Engineering:	
	Camera	12/13/24: Robotics VEX IQ WM_Elem, 1/11/25- VEX V5_AlchesayHS	
			1

Academic Standards:

Arizona Department

Education Website:

Program
Description/
Industry
Credentials/
Coherent
Sequence/

www.azed.g ov/cte/ar/

www.azed.g ov/sites/defa ult/files/202 1/06/Progra mDescription _Automation AndRobotics.

Az CTE Prof. Skills have 9 areas of measuremnt

Notes Conti:
PhysComp
Embedded
smart, IIOT
AI ,Data
Collect Data
Analyze Data
MachinLearn
Collaborate
schools,

Industry Community

pdf

of

	Other: Racing the Sun (RTS) *See FabLab	

Tue	Notes:	Objective:	Academic
Tuesday	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	Standards:
VE.	Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
	TVICETIEI OTTIC	testing, system maintenance, repair procedures, robot computer	Department
	Engineer:	systems, and control languages.	of
	ReEngineer Reverse	(AZ CTE Automation & Robotics-Program Description)	Education Website:
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	website.
	Structural	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	Program
	Chassis	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	Description/
	frame body Mechanical	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	Industry
	(Motion)	ELECTRICAL MOTORS	Credentials/
	Gear: Box,	Explain the operation and use of DC motors in automation controls	Coherent
	train,	PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	Sequence/
	parallel	APPLY SENSOR SOLUTIONS	
	(linear)	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER	www.azed.g
	stack	LABORATORY EQUIPMENT, TOOLS, AND MATERIALS	ov/cte/ar/
	(vertical),	Lesson Overview: Workflow Process:	
	ratio,	Level 1 Students:	www.azed.g
	torque	Login to VEX Certification Accounts:	ov/sites/defa ult/files/202
	speed	VEX V5 ,Block Programming, Python Programming, Workcell	1/06/Progra
	эрсси	RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	mDescription
	Electrical (Coding-Block/Python/C/C++	_Automation
	Ohm's Law, Parallel/Seri	Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	AndRobotics.
	al Circuits)	***Customizing Robots and Parts: After Completing 1st Semester Skills	P
	Chemical	Level 2 Plus+ Students:	Az CTE Prof. Skills have 9
	e-chem	Login to VEX Certification Accounts: (Complete Certifications +	areas of
	Physical	Arduino/PCEP)	measuremnt
	Magnetism Batteries	Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	Notes Conti:
	Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Al ,Data
	Block	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Collect Data
	PLC ladder logic, CNC,	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	Analyze Data MachinLearn
	Python, C++	Manual/Traditional - Mill and Drill , CNC –ComputerNumeric Control –	Collaborate
	Sensors	G/M Code	schools,
	touch, Dist	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Industry
	Light,	CAD/CAM: 3D Printing	Community
	Camera	Competitions Bron etc See Fahlah/Fusineering	
	PhysComp	Competitions Prep, etc. See FabLab/Engineering:	
	Embedded	12/13/24: Robotics VEX IQ WM_Elem, 1/11/25- VEX V5_AlchesayHS	
	smart, IIOT		

	Other: Racing the Sun (RTS) *See FabLab	

We	Notes:	Objective:	Academic
dne	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	Standards:
Wednesday	Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
γE		testing, system maintenance, repair procedures, robot computer	Department
	Engineer:	systems, and control languages.	of
	ReEngineer Reverse	(AZ CTE Automation & Robotics-Program Description)	Education Website:
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	Website.
	Structural	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	Program
	Chassis	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	Description/
	frame body Mechanical	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	Industry
	(Motion)	ELECTRICAL MOTORS	Credentials/
	Gear: Box,	Explain the operation and use of DC motors in automation controls	Coherent
	train,	PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	Sequence/
	parallel	APPLY SENSOR SOLUTIONS	•
	(linear)	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS	www.azed.g
	stack	Lesson Overview: Workflow Process:	ov/cte/ar/
	(vertical),	Level 1 Students:	
	ratio,		www.azed.g ov/sites/defa
	torque	Login to VEX Certification Accounts:	ult/files/202
	speed	VEX V5 ,Block Programming, Python Programming, Workcell	1/06/Progra
		RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	mDescription
	Electrical (Coding-Block/Python/C/C++	_Automation
	Ohm's Law,	Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	AndRobotics.
	Parallel/Seri al Circuits)	***Customizing Robots and Parts: After Completing 1st Semester Skills	pdf
	Chemical	Level 2 Plus+ Students:	Az CTE Prof.
	e-chem	Login to VEX Certification Accounts: (Complete Certifications +	Skills have 9
	Physical	Arduino/PCEP)	areas of
	Magnetism	·	measuremnt
	Batteries	Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	Notes Conti:
	Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	AI ,Data
	Block	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Collect Data
	PLC ladder	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	Analyze Data
	logic, CNC,	(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	MachinLearn
	Python, C++	Manual/Traditional - Mill and Drill , CNC –ComputerNumeric Control –	Collaborate
	Sensors	G/M Code	schools,
	touch, Dist	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Industry
	Light,	CAD/CAM: 3D Printing	Community
	Camera		- 1
	PhysComp	Competitions Prep, etc. See FabLab/Engineering:	
	Embedded	12/13/24: Robotics VEX IQ WM_Elem, 1/11/25- VEX V5_AlchesayHS	
	smart, IIOT		

	Other: Racing the Sun (RTS) *See FabLab	

オ	Notes:	Objective:	Academic
Thursday	Robotic	Apply basic engineering principles and technical skills for artificial	Standards:
day	Assemblies	intelligent managementthe principles of robotics, design, operational	Arizona
	Mechtronic	testing, system maintenance, repair procedures, robot computer	
	Engineer:	systems, and control languages.	Department of
	ReEngineer	(AZ CTE Automation & Robotics-Program Description)	Education
	Reverse		Website:
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	Weboite.
	Structural Chassis	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	Program
	frame body	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	Description/
	Mechanical	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	Industry
	(Motion)	ELECTRICAL MOTORS	Credentials/
	Gear: Box,	Explain the operation and use of DC motors in automation controls PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	Coherent
	train,	APPLY SENSOR SOLUTIONS	Sequence/
	parallel	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER	
	(linear)	LABORATORY EQUIPMENT, TOOLS, AND MATERIALS	www.azed.g
	stack	Lesson Overview: Workflow Process:	ov/cte/ar/
	(vertical),	Level 1 Students:	www.azed.g
	ratio,	Login to VEX Certification Accounts:	ov/sites/defa
	torque	VEX V5 ,Block Programming, Python Programming, Workcell	ult/files/202
	speed	RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	1/06/Progra
	Electrical (Coding-Block/Python/C/C++	mDescription
	Ohm's Law,		_Automation AndRobotics.
	Parallel/Seri	Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	pdf
	al Circuits)	***Customizing Robots and Parts : After Completing 1st Semester Skills	P =
	Chemical	Level 2 Plus+ Students:	Az CTE Prof.
	e-chem	Login to VEX Certification Accounts: (Complete Certifications +	Skills have 9
	Physical	Arduino/PCEP)	areas of
	Magnetism		measuremnt
	Batteries	Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	Notes Conti:
	Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Al ,Data
	Block	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Collect Data
	PLC ladder	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	Analyze Data
	logic, CNC,	(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	MachinLearn
	Python, C++	Manual/Traditional - Mill and Drill , CNC –ComputerNumeric Control –	Collaborate
	Sensors	G/M Code	schools,
	touch, Dist	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Industry
	Light,	CAD/CAM: 3D Printing	Community
	Camera		
	PhysComp	Competitions Prep, etc. See FabLab/Engineering:	
	Embedded	12/13/24: Robotics VEX IQ WM_Elem, 1/11/25- VEX V5_AlchesayHS	
	smart, IIOT		
	•		ı

	Other: Racing the Sun (RTS) *See FabLab	

Friday	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial intelligent managementthe principles of robotics, design, operational	Standards:
	Mechtronic	testing, system maintenance, repair procedures, robot computer	Arizona
	Engineer:	systems, and control languages.	Department
	ReEngineer Reverse	(AZ CTE Automation & Robotics-Program Description)	of Education
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	Website:
	Structural	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	Program
	Chassis frame body Mechanical	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D) DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS	Description/ Industry
	(Motion) Gear: Box, train,	Explain the operation and use of DC motors in automation controls PERFORM MECHANICAL SYSTEMS LINKAGES TASKS APPLY SENSOR SOLUTIONS	Credentials/ Coherent Sequence/
	parallel (linear)	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS	www.azed.g ov/cte/ar/
	stack (vertical),	Lesson Overview: Workflow Process:	
	ratio,	Level 1 Students:	www.azed.g
	torque	Login to VEX Certification Accounts:	ov/sites/defa ult/files/202
	speed	VEX V5 ,Block Programming, Python Programming, Workcell	1/06/Progra
	Electrical (RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	mDescription
	Ohm's Law,	Coding-Block/Python/C/C++	_Automation AndRobotics.
	Parallel/Seri	Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	pdf
	al Circuits)	***Customizing Robots and Parts: After Completing 1st Semester Skills	
	Chemical	Level 2 Plus+ Students:	Az CTE Prof.
	e-chem Physical	Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)	Skills have 9 areas of measuremnt
	Magnetism	Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	
	Batteries Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Notes Conti: PhysComp
	Block/PLC	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Embedded
	ladder logic, CNC,	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	smart, IIOT AI ,Data Collect Data
	Python, C++ Sensors	Manual/Traditional - Mill and Drill , CNC –ComputerNumeric Control – G/M Code	Analyze Data MachinLearn
	bump/touc	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Collaborate
	h DistLight,	CAD/CAM: 3D Printing	schools,
	Camera	Competitions Prep, etc. See FabLab/Engineering:	Industry
		12/13/24: Robotics VEX IQ WM_Elem, 1/11/25- VEX V5_AlchesayHS	Community

	Other: Racing the Sun (RTS) *See FabLab	