Name:	Grading Quarter:	Week Beginning:
Robert Lefrandt	4	03/24/2025
School Year: 2024-25	Subject: Automation	& Robotics/Engineering

	Monday	Notes: Robotic Assemblies	Monday: Apply basic engineering principles and technical skills for artificial intelligent managementthe principles of robotics, design, operational
ıy	Y	Mechtronic	testing, system maintenance, repair procedures, robot computer
		Engineer: ReEngineer	systems, and control languages.
		Reverse	(AZ CTE Automation & Robotics-Program Description)
	Engineering Structural	PERFORM ELECTRICAL AND ELECTRONIC TASKS ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	
		Chassis frame body	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)
		Mechanical	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR ELECTRICAL MOTORS
		(Motion) Gear: Box,	Explain the operation and use of DC motors in automation controls PERFORM MECHANICAL SYSTEMS LINKAGES TASKS
		train,	APPLY SENSOR SOLUTIONS
		parallel (linear)	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER LABORATORY EQUIPMENT, TOOLS, AND MATERIALS
		stack	Lesson Overview: Workflow Process:
		(vertical), ratio,	Level 1 Students:
		torque speed	Login to VEX Certification Accounts: VEX V5 ,Block Programming, Python Programming, Workcell
			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	***Customizing Robots and Parts : After Completing 1st Semester Skills
		al Circuits)	Level 2 Plus+ Students:
		Chemical e-chem	Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)
		Physical	*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado
		Magnetism Batteries	3D Modeling, Electric circuits, Arduino IDE – C/Python Code
		Software	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing
		Block	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D
		PLC ladder logic, CNC,	Manual/Traditional - Mill and Drill , CNC/G/M Code
	Python, C++ Sensors	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining CAD/CAM: 3D Printing	
		touch, Dist	Competitions: See Software App Design - FabLab/Engineering:
		Light, Camera	vr.vex.com-coding top6 in AZ
		Carriera	vr.vex.com; virtual Robotics-Codina; Block/Python Text-High Stakes

vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes

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	

Tu	Notes:	Objective:	Academic
Tuesday	Robotic	Apply basic engineering principles and technical skills for artificial	Standards:
ay	Assemblies Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
	Mechanic	testing, system maintenance, repair procedures, robot computer	Department
	Engineer:	systems, and control languages.	of
	ReEngineer Reverse	(AZ CTE Automation & Robotics-Program Description)	Education
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	Website:
	Structural	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	Drogram
	Chassis	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	Program Description/
	frame body	DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	Industry
	Mechanical (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	5 5 qui 5 5 5,
	(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
	speed	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	pu.
	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	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/G/M Code	Collaborate schools,
	Sensors	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	30110013,
	touch, Dist	CAD/CAM: 3D Printing	Industry
	Light,	Compatitions, San Software Ann Design Fables / Francisco	Community
	Camera	Competitions: See Software App Design - FabLab/Engineering:	
	PhysComp	vr.vex.com-coding top6 in AZ	
	Embedded	vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes	
	smart, IIOT		

	Other: Racing the Sun (RTS) *See FabLab	

Wednesday	Notes:	Objective:	Academic
dne	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	Standards:
esda	Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
¥.	Wicelier of the	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 Lesson Overview: Workflow Process:	ov/cte/ar/
	(vertical),		
	ratio,	Level 1 Students:	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	***Customizing Robots and Parts: After Completing 1st Semester Skills	pdf
	al Circuits)		Az CTE Prof.
	Chemical	Level 2 Plus+ Students:	Skills have 9
	e-chem	Login to VEX Certification Accounts: (Complete Certifications +	areas of
	Physical	Arduino/PCEP)	measuremnt
	Magnetism	*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	N . 6
	Batteries Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Notes Conti: 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/G/M Code	Collaborate
	Sensors		schools,
	touch, Dist	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Industry
	Light,	CAD/CAM: 3D Printing	Community
	Camera	Competitions: See Software App Design - FabLab/Engineering:	,
	PhysComp	vr.vex.com-coding top6 in AZ	
	Embedded	vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes	
	smart, IIOT	The Medical Industrial Reported Country of the International States	
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Other: Racing the Sun (RTS) *See FabLab	

굮	Notes:	Objective:	Academic
Thursday	Robotic	Apply basic engineering principles and technical skills for artificial	Standards:
day	Assemblies Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
		testing, system maintenance, repair procedures, robot computer	Department
	Engineer:	systems, and control languages.	of
	ReEngineer Reverse	(AZ CTE Automation & Robotics-Program Description)	Education
	Engineering	PERFORM ELECTRICAL AND ELECTRONIC TASKS	Website:
	Structural	ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS	Dragram
	Chassis	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D)	Program 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 PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	Coherent
	train,	APPLY SENSOR SOLUTIONS	Sequence/
	parallel	DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER	1101111 270d G
	(linear)	LABORATORY EQUIPMENT, TOOLS, AND MATERIALS	www.azed.g ov/cte/ar/
	stack	Lesson Overview: Workflow Process:	0 1, 000, 001,
	(vertical),	Level 1 Students:	www.azed.g
	ratio, torque	Login to VEX Certification Accounts:	ov/sites/defa 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	pui
	Chemical	Level 2 Plus+ Students:	Az CTE Prof.
	e-chem	Login to VEX Certification Accounts: (Complete Certifications +	Skills have 9 areas of
	Physical	Arduino/PCEP)	measuremnt
	Magnetism	*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	
	Batteries	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Notes Conti: Al ,Data
	Software	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Collect Data
	Block	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	Analyze Data
	PLC ladder	(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	MachinLearn
	logic, CNC, Python, C++	Manual/Traditional - Mill and Drill , CNC/G/M Code	Collaborate
	Sensors		schools,
	touch, Dist	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining CAD/CAM: 3D Printing	Industry
	Light,		Community
	Camera	Competitions: See Software App Design - FabLab/Engineering:	
	PhysComp	vr.vex.com-coding top6 in AZ	
	Embedded	vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes	
	smart, IIOT		

	Other: Racing the Sun (RTS) *See FabLab	

Friday	Notes: Robotic Assembl Mechtro
	Engineer ReEngin Reverse Engineer Structur Chassis frame be Mechan (Motion Gear: Bottrain, parallel (linear) stack (vertical ratio, torque speed
	Electrica Ohm's L Parallel/ al Circui Chemica e-chem Physical Magneti Batterie

emblies chtronic ineer: ngineer erse ineering ıctural ıssis ne body chanical otion) ar: Box, n, allel ear) ck rtical), ο, que ed ctrical (n's Law, allel/Seri ircuits) emical nem sical gnetism teries Software Block/PLC ladder logic, CNC, Python, C++ Sensors bump/touc h DistLight, Camera

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 (2D/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: Workflow Process:

Level 1 Students:

Login to VEX Certification Accounts:

VEX V5 ,Block Programming, Python Programming, Workcell RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw Coding-Block/Python/C/C++

Sensors: Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis ***Customizing Robots and Parts: After Completing 1st Semester Skills

Level 2 Plus+ Students:

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*Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado

3D Modeling, Electric circuits, Arduino IDE – C/Python Code

Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing

Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D

Manual/Traditional - Mill and Drill , CNC/G/M Code

Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining

CAD/CAM: 3D Printing

Competitions: See Software App Design - FabLab/Engineering: vr.vex.com-coding top6 in AZ

vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes

Academic Standards:

Arizona Department of 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. pdf

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

	Other: Racing the Sun (RTS) *See FabLab	