Name:	Grading Quarter:	Week Beginning:
Robert Lefrandt	3	1/13/2025
School Year: 2024-25	Subject: Automation	& Robotics/Engineering

3	Notes:	Objective:	Academic
Monday	Robotic	Apply basic engineering principles and technical skills for artificial	Standards:
ау	Assemblies	intelligent managementthe principles of robotics, design, operational	A =======
	Mechtronic	testing, system maintenance, repair procedures, robot computer	Arizona
	Engineer:	systems, and control languages.	Department of
	ReEngineer Reverse	(AZ CTE Automation & Robotics-Program Description)	Education
	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  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		1/06/Progra
	Mechtronic	RemoteCotrol and building VEX V5Robots -Speedbot/Base Bot, Claw	mDescription
		Coding-Block/Python/C/C++	_Automation AndRobotics.
	Electrical (	Sensors :Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis	pdf
	Ohm's Law,	***Customizing Robots and Parts: After Completing 1st Semester Skills	
	Parallel/Seri al Circuits)	Level 2 Plus+ Students:	Az CTE Prof. Skills have 9
	Chemical	Login to VEX Certification Accounts: (Complete Certifications +	areas of
	e-chem	Arduino/PCEP)	measuremnt
	Physical	Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	Notes Conti:
	Magnetism	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	PhysComp
	Batteries Software	Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	Embedded
		Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	smart, IIOT
	Block	(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	AI ,Data
	PLC ladder	Manual/Traditional - Mill and Drill , CNC -ComputerNumeric Control -	Collect Data
	logic, CNC,	G/M Code	Analyze Data
	Python, C++	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	MachinLearn
	Sensors	CAD/CAM : 3D Printing	Collaborate
	touch, Dist		schools,
	Light,	Competitions: See FabLab/Engineering: Registered Teams: VEX	Industry
	Camera	V5_AlchesayHS. 1/11-5 teams, Bus Transportation	Community

	Other: Racing the Sun (RTS) *See FabLab	

Tuesday	Notes:	Objective:	Academic
sbs	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	Standards:
γE	Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
	TVICETICI 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 frame body Mechanical	PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D) DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR	Description/ Industry
	(Motion)	ELECTRICAL MOTORS  Explain the operation and use of DC motors in automation controls	Credentials/
	Gear: Box,	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 (		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	pai
	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 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		
	PhysComp	Competitions: See FabLab/Engineering: Registered Teams: VEX	
	Embedded	V5_AlchesayHS. 1/11-5 teams, Bus Transportation	
	smart, IIOT		

	Other: Racing the Sun (RTS) *See FabLab	

We	Notes:	Objective:	Academic
Wednesday	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	Standards:
esda	Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
у		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 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	Coherent
	train,	PERFORM MECHANICAL SYSTEMS LINKAGES TASKS	Sequence/
	parallel	APPLY SENSOR SOLUTIONS  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	-	ult/files/202
	speed	VEX V5 ,Block Programming, Python Programming, Workcell	1/06/Progra
	Flootrical /	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
	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		-
	PhysComp	Competitions: See FabLab/Engineering: Registered Teams: VEX	
	Embedded	V5_AlchesayHS. 1/11-5 teams, Bus Transportation	
	smart, IIOT		

Other: Racing the Sun (RTS) *See FabLab	

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井	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
	iviechtronic	testing, system maintenance, repair procedures, robot computer	Department
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	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	,
	(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
	-	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
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	Magnetism	Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado	measuremnt
	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
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	PLC ladder logic, CNC,	(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	MachinLearn
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	touch, Dist	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Industry
	Light,	CAD/CAM: 3D Printing	Community
	Camera	Competitions: See FabLab/Engineering: Registered Teams: <del>VEX</del>	
	PhysComp	V5 AlchesayHS. 1/11–5 teams, Bus Transportation	
	Embedded	vo_Alchesayns. 1/11 steams, bas transportation	
	smart, IIOT		

	Other: Racing the Sun (RTS) *See FabLab	

Objective: Notes: Friday Robotic Apply basic engineering principles and technical skills for... artificial Assemblies intelligent management ...the principles of robotics, design, operational Mechtronic testing, system maintenance, repair procedures, robot computer systems, and control languages. Engineer: ReEngineer (AZ CTE Automation & Robotics-Program Description) Reverse 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 DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR Mechanical **ELECTRICAL MOTORS** (Motion) Explain the operation and use of DC motors in automation controls Gear: Box, 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 Electrical ( Coding-Block/Python/C/C++ Ohm's Law. Sensors: Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis 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** Magnetism Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado Batteries 3D Modeling, Electric circuits, Arduino IDE – C/Python Code Software Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing Block/PLC Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker ladder (Print)\*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D logic, CNC, Manual/Traditional - Mill and Drill , CNC - Computer Numeric Control -Python, C++ G/M Code Sensors bump/touc Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining h DistLight, CAD/CAM: 3D Printing Camera Competitions: See FabLab/Engineering: Registered Teams: VEX

V5 AlchesayHS. 1/11-5 teams, Bus Transportation

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
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Community

	Other: Racing the Sun (RTS) *See FabLab	