Name:	Grading Quarter:	Week Beginning:
Robert Lefrandt	4	04/21/2025
School Year: 2024-25	Subject: Automation & Robotics/Engineering	

Monday	Notes: Robotic Assemblies Mechtronic Engineer: ReEngineer	Monday: Apply basic engineering principles and technical skills for artificial intelligent managementthe principles of robotics, design, operational testing, system maintenance, repair procedures, robot computer systems, and control languages. (AZ CTE Automation & Robotics-Program Description)
	Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train, parallel (linear) stack (vertical), ratio, torque speed Mechtronic	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++
	Electrical (Ohm's Law, Parallel/Seri al Circuits) Chemical e-chem Physical Magnetism Batteries Software Block PLC ladder logic, CNC, Python, C++ Sensors	Sensors: Bump/touch, Distance, Line Tracker, Camera, AI, Data Analysis ***Customizing Robots and Parts: After Completing 1st Semester Skills Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP) Testing TSA/RECF
		*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:
	touch, Dist Light, Camera	vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes

Other: Racing the Sun (RTS) *See FabLab

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

-			Academic
Tue	Notes:		
Tuesday	Robotic Assemblies	Apply basic engineering principles and technical skills for artificial	Standards:
¥	Mechtronic	intelligent managementthe principles of robotics, design, operational	Arizona
	Wiceria onic	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),	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	***Customizing Robots and Parts: After Completing 1st Semester Skills	pdf
	al Circuits)		Az CTE Prof.
	Chemical	Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP)-Testing TSA/RECF	Skills have 9
	e-chem		areas of
	Physical	* <u>Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</u>	measuremnt
	Magnetism Batteries Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Notes Conti:
		Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing	AI ,Data
	Block PLC ladder logic, CNC,	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	Collect Data
		(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	Analyze Data
		Manual/Traditional - Mill and Drill , CNC/G/M Code	MachinLearn Collaborate
	Python, C++	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	schools,
	Sensors	nsors CAD/CAM : 3D Printing	
	touch, Dist	Competitions: See Software App Design - FabLab/Engineering:	Industry
	Light,	vr.vex.com-coding top6 in AZ	Community
	Camera		
	PhysComp	vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes	
	Embedded	Other: Racing the Sun (RTS) *See FabLab	
	smart, IIOT		

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₩ _€	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
ау	Wiechtroffic	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 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 Automation
	Ohm's Law,		_Addomation
	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: Login to VEX Certification Accounts: (Complete	Az CTE Prof.
	e-chem	Certifications + Arduino/PCEP) Testing TSA/RECF	Skills have 9 areas of
	Physical	* <u>Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado</u>	measuremnt
	Magnetism Batteries Software	3D Modeling, Electric circuits, Arduino IDE – C/Python Code	Notes Conti:
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	Block PLC ladder logic, CNC,	Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker	Collect Data
		(Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D	Analyze Data
		Manual/Traditional - Mill and Drill , CNC/G/M Code	MachinLearn
	Python, C++	Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining	Collaborate
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	Light,	vr.vex.com-coding top6 in AZ	Community
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	Embedded	Other: Racing the Sun (RTS) *See FabLab	
	smart, IIOT		

Objective: Academic Notes: Thursday Robotic Apply basic engineering principles and technical skills for... artificial Standards: Assemblies intelligent management ...the principles of robotics, design, operational Mechtronic Arizona testing, system maintenance, repair procedures, robot computer Department systems, and control languages. Engineer: of ReEngineer (AZ CTE Automation & Robotics-Program Description) Education Reverse Website: Engineering PERFORM ELECTRICAL AND ELECTRONIC TASKS Structural ANALYZE PROGRAMMABLE LOGIC CONTROLLER (PLC) SYSTEMS Program Chassis PERFORM DRAFTING TASKS-Make dimensional CAD drawings (2D/3D) Description/ frame body DESCRIBE THE OPERATION AND USE OF VARIOUS FORMS OR Industry Mechanical **ELECTRICAL MOTORS** Credentials/ (Motion) Explain the operation and use of DC motors in automation controls Coherent Gear: Box, PERFORM MECHANICAL SYSTEMS LINKAGES TASKS Sequence/ train. APPLY SENSOR SOLUTIONS parallel DEMONSTRATE SAFE AND PROPER USE OF ELECTRONIC AND OTHER www.azed.g (linear) LABORATORY EQUIPMENT, TOOLS, AND MATERIALS ov/cte/ar/ stack **Lesson Overview:** Workflow Process: (vertical), Level 1 Students: www.azed.g ratio, ov/sites/defa Login to VEX Certification Accounts: torque ult/files/202 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. AndRobotics. Sensors: Bump/touch, Distance, Line Tracker, Camera, , AI, Data Analysis Parallel/Seri pdf ***Customizing Robots and Parts : After Completing 1st Semester Skills al Circuits) Az CTE Prof. Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete Chemical Skills have 9 Certifications + Arduino/PCEP) Testing TSA/RECF e-chem areas of **Physical** *Tinkercade(Autodesk)/PHET(Physics-Engineering-Tech) Univ-Colorado measuremnt Magnetism 3D Modeling, Electric circuits, Arduino IDE – C/Python Code **Batteries** Notes Conti: Protyping: 2D Sketch > 3D Modeling > 3D Settings > 3D Printing AI ,Data Software Collect Data Inkscape > Tinkercad > Ultimaker Cura (Settings) > Ultimaker Block (Print)*Autodesk Fusion 360/Solidworks: Combine 2d Sketch/3D Analyze Data PLC ladder MachinLearn Manual/Traditional - Mill and Drill , CNC/G/M Code logic, CNC, Collaborate Raspberry Pi – Pico Kit -Bluetooth/WiFi, Python Precision Machining Python, C++ schools, Sensors CAD/CAM: 3D Printing Industry touch, Dist Competitions: See Software App Design - FabLab/Engineering: Community Light, vr.vex.com-coding top6 in AZ Camera vr.vex.com: virtual Robotics-Coding: Block/Python Text-High Stakes PhysComp Embedded Other: Racing the Sun (RTS) *See FabLab

smart, IIOT

Friday

Notes: Robotic Assemblies Mechtronic

Engineer: ReEngineer Reverse Engineering Structural Chassis frame body Mechanical (Motion) Gear: Box, train. parallel (linear) stack (vertical), ratio, torque speed

Electrical (
Ohm's Law,
Parallel/Seri
al Circuits)
Chemical
e-chem
Physical
Magnetism
Batteries
Software

Block/PLC ladder logic, CNC, Python, C++ Sensors bump/touc h DistLight, Camera

Objective: No School

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(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
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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:

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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 Place Students: Login to VEX Cortification Associates (Complete)

Level 2 Plus+ Students: Login to VEX Certification Accounts: (Complete Certifications + Arduino/PCEP) Testing TSA/RECF

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

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

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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

Other: Racing the Sun (RTS) *See FabLab

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