Republic of the Philippines
WESTERN MINDANAO STATE UNIVERSITY
Zamboanga City
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INVITATION TO BID

The Western Mindanao State University, through its Bids and Awards Committee (BAC), is inviting PhilGEPS registered suppliers to apply for eligibility and to submit bids for the item mentioned hereunder:

Name of Project: **Supply, Delivery and Installation of Industry 4.0 Tabletop Smart Factory with Aritculted Arm Servo and Industry Based Multi-Technology Interactive E-Learning Solution**
Approved Budget Cost: **Php 15,733,300.00**
Purchase Request No.: **22-04-223**
Closing Date: **October 10, 2022 @ 10AM**
Description:

1.) **One (1) lot of SUPPLY, DELIVERY, AND INSTALLATION OF INDUSTRY 4.0 TABLETOP SMART FACTORY with ARTICULATED ARM SERVO ROBOT LEARNING SYSTEM**

ABC: Php. 11,996,000.00

A. INVENTORY and FEEDING STATION
>This system teaches pick and place feeding and event sequencing.
Includes the following industrial-grade components:
. 24V DC power
. Pick and place feeding
. Electro-pneumatic actuators
. Magnetic sensor
. Reed sensor
. Vacuum sensor
. 3-axis pneumatic actuator system
. Vacuum pick-up
. Vaccinator
. Pushbuttons: Red, Green, Black
- Test Materials made of cylindrical parts: (2) Clear rubber,
(2) Black Rubber, (2) Aluminum.
> Supplied with multimedia curriculum; key learning areas includes:
. Powered parts feeder operation
. Pick and place pneumatic manipulation
. Electro-pneumatic valve adjustment
. Stop functions
. Multiple actuator sequencing

> Supplied with hardcopy and softcopy of the following:
. Installation manual
. Teacher's manual
. Student's manual
. Assessment/quizzes
. Answer keys
. Functional PLC programs on each activity

A.1. 1-unit Desktop Computer
Specifications:
.Processor: 16M Cache, up to 4.80 GHz (or higher)
.Motherboard: Truly rated compatible motherboard
.Memory: 8GB DDR4 or higher
.Storage: 1TB HDD +256 GB SSD

.Graphics: 2GB DDR5 or higher (with WebGL support)
.Display: at least 21.5-inch LED Monitor
.Optical Drive: DVD-RW
.Connectivity: LAN and Wi-Fi 802.11 b/g/n
.I/O Ports: at least 4 USB ports (2 front, 2 rear), Audio Jacks, HDMI and VGA
.Accessories: Combo USB keyboard and mouse with pad, speaker , UPS with built-in AVR 720 VA or higher
.With latest license OS (64 bit)
.With latest Office application installed

A.2. 1-unit Oilless Compressor: 1 Hp, Silent type
Specifications:
Input Voltage: 220 VAC / Single-Phase
Power: 1 Hp / 750 Watts
Frequency: 60 Hz
Speed: 1725 RPM
Tank Capacity: 30 Liters
Working Pressure: 85 to 115 psi
Noise Level: 67 to 70 dB
Auto Start/Stop

A.3 1-unit Mechatronics PLC Learning Station
Specifications:
.Includes a PLC control unit with suitable I/O sufficient for each station.
.Includes curriculum that consist of at least 10 interactive multimedia curriculum modules that teach PLC industrial skills. Key learning areas includes:
a)Control system concepts
b)Mechatronics safety
c)Programmable controllers
d)PLC programming language
e)PLC program analysis
f)Motor controls
g)Program development
h)PLC Timer and Counter instructions
i)Time-driven sequencing
j)Shift registers
k)Pick and place feeding
.Event sequencing, indexing, sorting, and parts storage
.Dual Function: Operator Station and I/O Simulator for PLC Training.
.Includes the following:
a)I/O training simulators with pushbuttons, selector switches, and output indicators so that learners can program and operate the PLC before moving actuators on the station.
b)License software and programming cable interface
c)Teacher and Student manual, hard copies, and soft copies. All activities shall be highly detailed with step-by-step instructions to facilitate a self-directed learning environment.
d)Soft copies of the functional PLC programs in every activity with respect to each station.
e)Quizzes/Assessments and Answer keys included per activities/curriculum.
f)Technology Transfer Trainer's Training

B. INSPECTION & INDEXING STATION
This system teaches inspecting and indexing on an automated line. Includes the following industrial-grade components:
. 24V DC power
. Multi-color stack light
. Turntable
. Photo-eye sensor
. Retro-reflective sensor
. Inductive sensor

. Fork sensor
. Stepper motor index table actuator
. Pushbuttons: Red, Green, Black
. Test Materials made of cylindrical parts: (2) Clear rubber, (2) Black Rubber, and (2) Aluminum.

Supplied with multimedia curriculum; key learning areas includes:
a) Inspection and indexing station operation
b) Adjustment of fork, homing, and proximity sensors
c) Stepper motor programming
d) Homing sensor adjustment
e) Stepper motor index table sequencing
f) Index station sequencing

Supplied with hardcopy and softcopy of the following:
a) Installation manual
b) Teacher's manual
c) Student's manual
d) Assessment/quizzes
e) Answer keys
f) Functional PLC programs on each activity.

B.1 1-unit Mechatronics PLC Learning Station
Specifications:
. Includes a PLC control unit with suitable I/O sufficient for each station.
. Includes curriculum that consist of at least 10 interactive multimedia curriculum modules that teach PLC industrial skills. Key learning areas includes:
a) Control system concepts
b) Mechatronics safety
c) Programmable controllers
d) PLC programming language
e) PLC program analysis
f) Motor controls
g) Program development
h) PLC Timer and Counter instructions
i) Time-driven sequencing
j) Shift registers
k) Pick and place feeding
. Event sequencing, indexing, sorting, and parts storage
. Dual Function: Operator Station and I/O Simulator for PLC Training.
. Includes the following:
a) I/O training simulators with pushbuttons, selector switches, and output indicators so that learners can program and operate the PLC before moving actuators on the station.
b) License software and programming cable interface
c) Teacher and Student manual, hard copies, and soft copies. All activities shall be highly detailed with step-by-step instructions to facilitate a self-directed learning environment.
d) Soft copies of the functional PLC programs in every activity with respect to each station.
e) Quizzes/Assessments and Answer keys included per activities/curriculum.
f) Technology Transfer Trainer's Training

C. SORTING & DISTRIBUTION STATION
- This system teaches sorting and distribution on an automated line. Includes the following industrial-grade components:
. 24V DC power
. Inductive sensor
. Thru-beam sensor
. Retro-reflective sensor
. Electric solenoid actuator

. Photo-eye sensor
. Flat belt conveyor
. DC motor
. Pushbuttons: Red, Green, Black
o Test Materials made of cylindrical parts: (2) Clear rubber, (2) Black Rubber, and (2) Aluminum

- Supplied with multimedia curriculum; key learning areas includes:
a) Sorting and distribution station operation
b) Sorting module operation
c) Parts storage operation
d) Flat belt conveyor adjustment
e) Sorting module sequencing
f) Multiple station operation

- Supplied with hardcopy and softcopy of the following:
a) Installation manual
b) Teacher's manual
c) Student's manual
d) Assessment/quizzes
e) Answer keys
f) Functional PLC programs on each activity.

C.1 1-unit Mechatronics PLC Learning Station
Specifications:
. Includes a PLC control unit with suitable I/O sufficient for each station.
. Includes curriculum that consist of at least 10 interactive multimedia curriculum modules that teach PLC industrial skills. Key learning areas includes:
l) Control system concepts
m) Mechatronics safety
n) Programmable controllers
o) PLC programming language
p) PLC program analysis
q) Motor controls
r) Program development
s) PLC Timer and Counter instructions
t) Time-driven sequencing
u) Shift registers
v) Pick and place feeding
. Event sequencing, indexing, sorting, and parts storage
. Dual Function: Operator Station and I/O Simulator for PLC Training.
. Includes the following:
a) I/O training simulators with pushbuttons, selector switches, and output indicators so that learners can program and operate the PLC before moving actuators on the station.
b) License software and programming cable interface
c) Teacher and Student manual, hard copies, and soft copies. All activities shall be highly detailed with step-by-step instructions to facilitate a self-directed learning environment.
d) Soft copies of the functional PLC programs in every activity with respect to each station.
e) Quizzes/Assessments and Answer keys included per activities/curriculum.
f) Technology Transfer Trainer's Training

D. SERVO ROBOT STATION: SMART FACTORY
This system provides the ability to program and interface a servo robot to the smart factory mechatronics system to create applications such as a robot-based inventory station. This system includes the following:
. 3 units - Chute Assembly with Limit Switch
. 1 unit - Feeder Assembly with Limit Switch
. 3 units - Foot Spacer Assembly
. 2 units - Mounting Feet and Hardware

Supplied with multimedia curriculum; Key learning areas includes:
a) Power up and shutdown
b) Manual operation
c) Homing
d) End effector operation
e) Teaching points
f) Robot programming
g) End-effector and speed commands
h) Material handling
i) I/O interfacing
j) CNC machine loading
k) Robot work cell envelope
l) Robot application development
m) Basic conveyor operation
n) Conditional commands
o) Flexible manufacturing cells
p) Subroutine commands
q) Servo conveyor operation
r) Cartesian coordinate programming
s) Go / no-go inspection
t) Robot operator interface
u) Parts measurement
v) Operator input interface
w) Relational and arithmetic operators
x) Loop commands
y) Discrete I/O objects.

D.1 1-unit Industrial Quality Servo Articulated Robot Arm Learning System
Includes servo robot arm, robot controller, handheld programming terminal, robot control software, robot simulation software.
Specifications:
. Articulated servo robot arm with electric servo gripper
. At least Six (6) servo electric drive
. At least 6-degrees of freedom
. Double-jointed arm that enables it to work on both sides of its work cell.
. Payload: approximately 2.2 lbs. or 1,000 grams
. Maximum reach: 24 inches
. Work envelope:
- Waist: 345 degrees
- Shoulder: 220 degrees
- Elbow: 270 degrees
- Pitch: 270 degrees
- Roll: unlimited
. Gripper opening: approximately 3 inches
. Gripper type: Servo with encoders
. Repeatability: approximately 0.18mm
. Supplied with a handheld programming terminal that enables users to enter and edit teach points.
. The programming terminal has LCD display, emergency stop button, jog capability, and soft keys which allows the robot to take on a variety of functions according to the menu shown on the teach pendant display.

D.2 1-unit Servo Robot Controller
. With robot control software (unlimited installations) that runs on a PC.
. Accepts commands from control software.
. Provides feedback to the user.
. Virtually unlimited storage on PC.
. With RS232, Ethernet, and USB communications
. Number of servo axes: 8 total (6 for the robot, 1 for the conveyor, and 1 for the traverse axis)
. I/O Interface: 16 inputs and 16 outputs with LED status indicator.
. Axis overcurrent protection (without using fuses or CB's)

. Programming Language: Compatible High level automation/robotic programming language.
. Coordinates system: Cartesian and Joint frame

D.3 1-unit Robot Linear Traverse Axis
Extends the work area and allows the robot to be multi-tasking.
Specifications:
. Lead screw driven mounting surface for the robot arm.
. DC servo motor drive with encoder feedback.
. Home position sensor
. Dual rail bearing slides
. Robot control interface cable

D.4 1-unit Robotics Simulation Learning System
. A one user license PC-based software package that provides a 3-D simulation of articulated arm robot offline on computer.
. Compatible with the programming code of the robot supplied with the Smart Factory.
. Windows based and used a 3-D solid model with collision detection ability.
. Capable of transferring simulation programs to run actual robot.
. Points taught in simulated environment can be transferred to actual robot
. Programming Language: High level automation/robotic programming language.
. With virtual graphic teach pendant to simulate all pendant based functions such jogging, teaching, programming, and I/O manipulation.

D.5 1-unit Desktop Computer
Specifications:
. Processor: 16M Cache, up to 4.80 GHz (or higher)
. Motherboard: Truly rated compatible motherboard
. Memory: 16GB DDR4 or higher
. Storage: 1TB HDD +256 GB SSD
. Graphics: 2GB DDR5 or higher (with WebGL support)
. Display: at least 24-inch LED Monitor
. Optical Drive: DVD-RW
. Connectivity: LAN and Wi-Fi 802.11 b/g/n
. I/O Ports: at least 4 USB ports (2 front, 2 rear), Audio Jacks, HDMI and VGA
. Accessories: Combo USB keyboard and mouse with pad, speaker , UPS with built-in AVR 720 VA or higher
. With latest license OS (64 bit)
. With latest Office application installed

E. SMART FACTORY ESSENTIALS
Includes:
E.1 1-unit Smart Factory Barcode Learning System:
Students will learn how to program a robot to use RS-232 serial communications to receive and interpret data from barcode readers and other serial devices.
Complete with multimedia curriculum, Installation guide, Teacher and Student manuals.

E.2 1-unit Smart Factory RFID/Sensors Learning System
This system operated as a training system for teaching RFID, Smart Sensors, and I/O Link in conjunction with Mechatronics system.
Complete with multimedia curriculum, Installation guide, Teacher and Student manuals. This system shall include:
a) Tabletop Slotted Surface Workstation
b) RFID Read Station
c) Smart Photo-electric Sensor
d) Smart Analog Pressure Sensor
e) I/O Link Master
f) Conveyor

g) Motor Contactor
h) Cabling Set

E.3 1-unit Smart Factory Ethernet Learning System
This system shall teach Ethernet networking in conjunction with Smart Factory to provide Ethernet communications. Complete with multimedia curriculum, Installation guide, Teacher and Student manuals. This system shall include:
a) 24-port Unmanaged Ethernet Switch Assembly
b) 8-Port Managed Ethernet Switch Assembly
c) 20-ft. cat5e Ethernet Cabling Set
d) Ethernet Hardware Set
e) 8-ft. Power Cord

E.4 1-unit Portable PLC & HMI Learning System
This system teaches PLC programming, operation, and applications and serves as a PLC training device and Smart Factory Cell Controller. Complete with multimedia curriculum, Teacher and Student manuals.
Includes:
a) L16 Processor
b) Fault Controller
c) Human Machine Interface
d) Digital Inputs and Outputs
e) 24VDC Power Supply
f) Built-in Power Supply
g) I/O Simulator Console
h) Pneumatic Cylinders
i) Temperature Control Console with Fan
j) Motor Control Console Variable Speed Drive
k) Electro-Pneumatic Control Console with Direct Control Valves
l) Potentiometer
m) Emergency E-Stop Button
n) Mobile Carrying Case with Workstation Mounting Panel
o) USB and LAN Cable
p) License PLC programming software

E.5 1-unit Flexible Robotics Workstation

. Five (5) ft. Heavy-duty, mobile workstation capable of supporting industrial quality robots, feeders, fixtures, and other accessories.
. Constructed of heavy-duty welded tube steel and a perforated steel top.
. Includes a complete system of accessories to maximize the use of the workspace with off-table mounting of the computer, controllers, and utilities distribution module for mounting of compressed air and electrical utilities.

E.6 1-unit Mobile Technology Workstation
. White laminated work surface, 6 ft
. Welded tubular steel frame
. With four (4) heavy duty casters (2 locking type)
. Approximate dimensions: 30" H x 30" W x 72" L or (76 cm H x 76 cm W x 183 cm L)

2.) **One (1) lot of INDUSTRY BASED MULTI-TECHNOLOGY INTERACTIVE E-LEARNING SOLUTION FOR ENGINEERING AND TECHNOLOGY WITH THE USE OF DIFFERENT TEACHING TOOLS SUCH AS TEXT, 3D ANIMATION, VIDEO, AUDIO, AND VIRTUAL SIMULATION**

ABC: Php. 3,737,300

(Unlimited Users and Administrators)

. Industry-based interactive learning curriculum - The curriculum is always being updated with a weekly or monthly frequency whenever there are new trends in

technology in the industry.

. Virtual hardware simulators - Practice real-life technical skills in a virtual environment where the same instructions on a virtual environment can be directly applied on real hardware.

. Multiple teaching aids on every module - Modules use videos, animations, texts, charts, 3D models, narration, real-world examples, etc., to make the learner better understand the lesson as much as possible no matter the level of retention and strength of understanding.

. Custom course creation - Can create a custom set of modules from the main curriculum library and create a custom training system, for a given student or class, or even for a specific occupation.

. Seamless enrollment - Using a unique code that is assigned to the subscription license, the students can enroll themselves into the e-Learning system.

. Management - Monitor every individual's learning progress enrolled in the e-Learning system, and see all of the modules they have taken, when they have started a module, when they have last opened a module, and how many quizzes they have completed. You can also generate a tabulated report of the learning progress of each individual or of an entire class, be it in a spreadsheet format or PDF.

. SCORM Package Builder - You can make SCORM packages from the modules of the curriculum and integrate it into learning management systems like Electude, Moodle, Blackboard, Canvas, and other SCORM-compliant LMS.

E-Learning Categories consists of;
A. AUTOMATION COURSES
1. Ethernet for Mechatronics
2. Mechatronics HMI
Mechatronics
4. Mechatronics Profibus
5. Mechatronics Troubleshooting
6. Mechatronics Troubleshooting- AB L32
7. Mechatronics - AB CompactLogix/RSLogix 5000
8. Mechatronics - CompactLogix Ethernet/IP
9. PanelView Operator Interface - AB ControlLogix
10. Mechatronics Simulation (MechaSim)
11. Mechatronics Simulation
12. Pegasus Robotics Simulation
13. Robotics and Computer Programming
14. Robotics 1
15. Mechatronics CNC Mill
16. Machine Vision Inspection Systems
17. Machine Vision Inspection Systems
18. Mechatronics Troubleshooting System - AB CompactLogix L16
19. Mechatronics RF Identification System (AB CompactLogix L16)
20. Mechatronics AB MicroLogix
21. Mechatronics Barcode Identification (AB CompactLogix L32)
22. Mechatronics RF Identification System (AB CompactLogix L32)
23. Mechatronics RF Identification System (Siemens 300 Series)
24. Tabletop Mechatronics
25. Mechatronics HMI Siemens S7-1500
26. Mechatronics Barcode Identification (Siemens S7-300 Series)
27. Mechatronics Barcode Identification (AB CompactLogix L16)
28. Table-Top Mechatronics Servo Robot System
29. Tabletop Smart Factory RFID/Sensors
30. Mechatronics Barcode Product Identification (AB micro800)
31. Tabletop Smart Factory Ethernet - AB Micro820

32. Tabletop Smart Factory Manufacturing Execution System - AB
33. Smart Factory Barcode System - Siemens S7-1500
34. Mechatronics RFID S7-1500
35. Smart Factory Vision Inspection System - Siemens S7-1500
36. Smart Factory Visual Communication System - Siemens S7-1500
37. Mechatronics System (Siemens S7-1500)
38. Mechatronics - Siemens S7-1500 / Siemens STEP 7 Professional
39. Smart Factory Sensor System - Siemens S7-1500, Pneumatics/Vacuum
40. Smart Factory Sensor System - Siemens S7-1500, Ultrasonic
41. Smart Factory Sensor System - Siemens S7-1500, Photoeye
42. Smart Factory Device Learning System - Siemens S7-1500, Stack Light
43. Smart Factory Sensor System - Siemens S7- 1500, Electrical Current
44. Smart Factory Sensor System - Siemens S7-1500, Analog Position
45. Smart Factory Sensor System - Siemens S7-1500, Analog Pressure
46. Tabletop Smart Factory Visual Communications - Allen-Bradley
47. Smart Factory Barcode System - Allen-Bradley L16
48. Mechatronics RFID AB L16
49. Smart Factory Ethernet - AB CompactLogix L16
50. Smart Factory Network Security Learning System - AB CompactLogix L16
51. Smart Factory Manufacturing Execution System - AB CompactLogix L16
52. Smart Factory Visual Communications - Allen-Bradley
53. Smart Factory Sensor System - Allen-Bradley L16, Pneumatics/ Vacuum
54. Smart Factory Sensor System - Allen-Bradley L16, Ultrasonic
55. Smart Factory Sensor System - Allen-Bradley L16, Photoeye
56. Smart Factory Device Learning System - Allen-Bradley L16, Stack Light
57. Smart Factory Sensor System - Allen-Bradley L16, Electrical Current
58. Smart Factory Sensor System - Allen-Bradley L16, Analog Position
59. Smart Factory Sensor System - Allen-Bradley L16, Analog Pressure
60. Mechatronics AB CompactLogix L32
61. Computer Control 2 (Micro820)
62. Principles of Robotics
63. Principles of Factory Automation
64. Principles of Robotics

B. ELECTRONICS COURSES
1. DC Electronic Drives
2. Portable Plc - Siemens S71200
3. Portable Plc Troubleshooting - Siemens S71200
4. PLC Analog Application - ControlLogix
5. PLC ControlNet - ControlLogix
6. Mastering Programmable Controllers
7. PLC Statement List
8. PLC Analog - Siemens S7300
9. PLC Profibus - Siemens S7
10. MPC (siemens Mp277)
11. PLC Graph Programming - S7300
12. MPC - Siemens S7-300/as-i Bus
13. MPC (SIEMENS ET200pro/STEP 7)
14. Mastering Programmable Controllers
15. PLC Troubleshooting - Siemens S7-300 Series
16. Programmable Controller, Siemens S7312
17. Mastering Programmable Controllers (A-B CompactLogix L16)
18. Power and Control Electronics
19. AC Motor Drives
20. AC Motor Drive Troubleshooting
21. Electrical Control Systems
22. Variable Frequency AC Drive
23. AC Electronic Drives
24. PLC Motor Control AB Micro820
25. PLC Motor Control AB Micro 810
26. Portable PLC Learning System - Allen Bradley CompactLogix L16
27. Portable PLC with Troubleshooting - Allen Bradley CompactLogix L16

28. PLC Troubleshooting -AB ControlLogix
29. PLC Troubleshooting -AB SLC500
30. Computer Control 1 (A-B Micro820)

C. ELECTRICAL COURSES
1. Electric Motor Control
2. AC/DC Electrical Systems
3. Electrical Control 1
4. Portable Electric Relay Control Troubleshooting
5. Electric Relay Control
6. AC/DC Electrical Systems
7. Electric Motor Control
8. Electric Motor Control Troubleshooting
9. Electrical Fabrication 1
10. Motor Braking
11. Reduced Voltage Starting
12. Electronic Sensors
13. Electronic Counter
14. SCR Speed Control
15. Electric Wiring System
16. PLC/VFD Wiring System
17. Industrial Soldering
18. Ethernet and Analog Wiring
19. Electrical Power Distribution
20. Electric Motor Control
21. Motor Troubleshooting System
22. Rotating Electric Machines
23. DC Generators
24. Wound Rotor Motor
25. Rotating Electrical Machines

D. FLUID POWER COURSES
1. Hydraulic Troubleshooting
2. Pneumatic Troubleshooting
3. Basic Pneumatics
4. Basic Hydraulics
5. Portable Pneumatics
6. Electronic Sensors
7. Basic Hydraulics Troubleshooting
8. Basic Pneumatics Troubleshooting
9. Portable Basic Hydraulics
10. Hydraulic Maintenance
11. Intermediate Hydraulics
12. Intermediate Pneumatics
13. Electronic Sensors
14. Advanced Pneumatics
15. Advanced Hydraulics
16. Electro-Fluid Power Systems
17. Pneumatic Fitting Construction
18. Principles of Hydraulics

E. GREEN ENERGY COURSES
1. Wind Concepts
2. Turbine Electric Hub Troubleshooting
3. Turbine Generator Control Troubleshooting
4. Turbine Nacelle Troubleshooting
5. Solar Concepts
6. Solar Site Analysis
7. Alternative Energy
8. Solar Thermal Troubleshooting - Open-Loop
9. Solar Thermal Troubleshooting - Closed-Loop
10. Solar Thermal Installation

11. Solar PV Troubleshooting
12. Solar Grid-Tie
13. Data Acquisition
14. Solar Photovoltaic Installation

F. LEAN MANUFACTURING COURSES
1. Lean Overview and Workplace Organization
2. Introduction to Lean
3. 5S
4. Total Productive Maintenance
5. Poka-Yoke
6. Lean Theory
7. Lean Process Flow
8. Visual Workplace
9. Standardized Work
10. Kaizen
11. Value Stream Mapping
12. Set-Up Reduction
13. Six Sigma

G. MACHINING COURSES
1. Machine Tools 1
2. Machine Tools 2
3. Machine Tools 3
4. Manual Machine Tools
5. CNC Machine Tools 1
6. CNC Machine Tools 2
7. CNC Machine Tools 3 (Denford Microturn)
8. Principles of CNC
9. CNC Control
10. Principles of Turning
11. Principles of Machining Centers
12. Principles of Grinding
13. Principles of Workholding
14. Principles of Coolants and Oils
15. Principles of Gear Manufacturing
16. Principles of Tooling
17. Tooling for Turning
18. Tooling for Machining Centers
19. Tooling for Grinding
20. Tooling for Tapping

H. MANUFACTURING PROCESS COURSES
1. Product Finishing
2. Production Assembly
3. Split Flange Coupling Assembly
4. Electric Torque Wrench Assembly
5. Print Reading 1
6. Welding Technology 1
7. Computer-Aided Design 1 SolidWorks 2019
8. Computer Aided Design 2 SolidWorks 2019
9. Wiring Harness Assembly
10. Contamination
11. Fasteners
12. Gaskets
13. Stall Bar Assembly
14. Instrumented DC-Electric Torque Wrench Assembly
15. Computer-Aided Manufacturing 1 (Mastercam X2)
16. Blueprint Reading
17. AWS Welding Symbols on Blueprints
18. General Dimensioning and Tolerances
19. Geometric Dimensioning and Tolerancing

I. MATERIALS COURSES
1. Plastic Mold Design
2. Manufacturing Processes 3
3. Structural Engineering 1
4. Structural Engineering 2
5. Surveying
6. Materials Engineering 1
7. Principles of Materials - Ferrous Metals
8. Principles of Materials - Non-Ferrous Metals
9. Principles of Heat Treating
10. Principles of Plastics
11. Principles of Composites
12. Principles of Ceramics

J. MECHANICAL COURSES
1. Vibration Analysis
2. Pump Systems
3. Multiple Pump
4. Turbine Pump
5. Diaphragm Pump
6. Peristaltic Tubing Pump
7. Piston Pump
8. Gear Pump
9. Magnetic Pump
10. Centrifugal Pump
11. Rigging 3
12. Mechanical Drives 4
13. Floor Standing Belt Conveyor
14. Predictive Maintenance Vibration Analysis
15. Roller Pack Machine Tool Axis
16. Plain Bearing Machine Tool Axis
17. Mechatronics Simulation
18. Pipings
19. Central Lubrication
20. Mechanical Systems 1
21. Mechanical Fabrication 2
22. Rigging Systems 1
23. Rigging Systems 2
24. Mechanical Fabrication 1
25. Mechanical Drives 1
26. Portable Mechanical Drives 2
27. Mechanical Drives 2
28. Mechanical Drives 3
29. Laser Shaft Alignment
30. Portable Laser Shaft Alignment
31. Mechanical Systems 2

K. PROCESS CONTROL COURSES
1. Temperature Process Control
2. Data Acquisition
3. Analytical Process Control
4. Data Acquisition Systems
5. ControlLogix Process Control
6.Process Control Systems: Ultrasonic Level Measurement and Control
7. Process Control Systems: Differential Pressure Flow Measurement and Control
8. Process Visualization Control 1
9. Pressure Process Control Systems
10. Foundation Fieldbus Process Control 1
11. HART Process Control 1
12. Mastering Programmable Controllers - AB CompactLogix L32

13. PLC Process Control - Siemens S7-1200
14. PLC Process Control - AB CompactLogix L16
15. Process Control Systems

L. QUALITY ASSURANCE COURSES
1. Metrology 1
2. Measurement Tools 1
3. Quality Assurance 1
4. Portable Precision Gauging 1
5. Portable Measurement Tools
6. Inspection Techniques 1
7. Surface Plates
8. Gauge Blocks
9. Test Indicators
10. Height Gauges
11. Bench Comparators
12. Optical Comparators
13. Bore Gauges
14. Air Gauges
15. Specialty Micrometers
16. Miscellaneous Inspection Instruments
17. ISO 9000 and TS 16949
18. Statistical Process Control 1
19. Statistical Process Control 2
20. Quality Control Concepts

M. SAFETY COURSES
1. Safety Practices and Regulations
2. Personal Protective Equipment
3. Hazardous Communication
4. Confined Spaces
5. Lockout/Tagout
6. Accident Response
7. Overhead Crane Safety

N. THERMAL COURSES
1. Air Conditioning / Heat Pump
2. Steam Systems
3. Thermal Systems 1
4. Environmental Applications
5. Geothermal
6. Geothermal Troubleshooting
7. Geothermal Desuperheater
8. Geothermal Troubleshooting with Desuperheater
9. Geothermal Flush Cart Learning System
10. Thermal Technology 1
11. Thermal Technology 2

O. WORKPLACE EFFECTIVENESS COURSES
1. Enterprise Systems 1
2. Principles of Advanced Manufacturing
3. Mathematics 1
4. Trigonometry 1
5. Communication Skills
6. Conflict Resolution
7. Working in Groups

NOTE: (FOR ITEMS 1 & 2)

Minimum Computer Requirements:

. Windows devices (including Surface tablets):

-Windows 10 64-bit (may function under previous versions/different operating systems, but testing & support limited to Windows 10)
-8GB RAM
-Sound card (or onboard sound)
-Video card (or onboard video) with WebGL support
-64-bit Browser with WebGL 2.0 support
-Broadband Internet access (DSL/Cable/T1/etc.) capable of 1 Mbps
. Mac devices (does NOT include iPads):
-macOS 64-bit (may function under different operating systems, but testing & support limited to 64-bit macOS)
-8GB RAM
-Sound card (or onboard sound)
-Video card (or onboard video) with WebGL support
-64-bit Browser with WebGL 2.0 support

Other Terms and Conditions:
. Equipment must be supplied with training manuals in English.
. Bidder must submit brochure/catalogue indicating the brand name and model of bid item/s as additional technical requirements.
. Bidder must conduct after sales training at WMSU after completion of delivery and installation.
. Bidder must be an authorized distributor/reseller of the Bid item/s and authorized to provide technical support and must attach documents to support such claim
. Bidder must submit certification from the manufacturer that the trainor is duly authorized and certified by the manufacturer to provide technical support and training.
. Must be compatible with existing PLC Learning Trainer (SIEMENS CPU226PLC TRAINER)

The criteria to be used for the eligibility check of the prospective bidders, examination and evaluation of bids, post-qualification and all matters relevant to this procurement shall be in accordance with Republic Act. No. 9184 (The Government Procurement Reform Act) and its Implementing Rules and Regulations.

Interested bidders may obtain further information from WMSU BAC Secretariat regarding the checklist of eligibility and technical requirements.

IMPORTANT NOTICE FOR BIDDERS:

1. Bidding papers may be acquired starting September 9 until October 10, 2022 from the BAC Office or download from PhilGeps website or Agency Website (www.wmsu.edu.ph). The WESTERN MINDANAO STATE UNIVERSITY shall allow the bidder to present its proof of payment for the Bidding Documents fees before the submission of their bids, pursuant to the latest Guidelines issued by the GPPB, in the amount of Twenty Five Thousand Pesos (Php.25,000.00). (Please attached the machine copy of the Official Receipt)

2. All bidders' are required to post a Bid Security, at least Two (2%) Percent of the ABC in the form of Cash, Cashier's Check or Manager's Check or may submit Bid Securing Declaration. Bids without Bid Security will not be considered.

3. The Bidder shall prepare an original of the Eligibility Documents & Technical Components and original of Financial Proposal and clearly mark each "ORIGINAL – ELIGIBILITY DOCUMENTS and TECHNICAL COMPONENTS", and "ORIGINAL – FINANCIAL PROPOSAL", respectively. Bidders shall submit one (1) set of the first and second components of its bid. State the unit price of each item and the total bid price and also state the shortest time of delivery and submit your quotation duly signed by your representative in a sealed envelope.

4. Pre-Bid Conference will be on September 26, 2022 at 10:00AM at BAC Office, Ground Floor Executive Building, WMSU, Zamboanga City, Philippines, 7000

5. Bid Submission will be on or before October 10, 2022 at 10:00 A.M. through Manual Submission.

6. Bid opening shall be on October 10, 2022 at 10:00 A.M. at BAC Office, Ground Floor Executive Building, WMSU, Zamboanga City, Philippines, 7000. Bids will be opened in the presence of the Bidders representatives who choose to attend at the address above. Late bids shall not be accepted.

7. Price validity shall be for a period of 120 calendar days.

8. Bidders shall submit original brochures showing certifications of the product being offered.

9. Warranty shall be for a period of Six (6) months for supplies and materials. One (1) year for equipment, from date of acceptance by WESTERN MINDANAO STATE UNIVERSITY.

10. Bids received in excess of the ABC shall be automatically rejected at Bid Opening.

The WESTERN MINDANAO STATE UNIVERSITY reserves the right to reject any or all Bids and to accept the bid most advantageous to the government, and to award the contract by lot, if warranted.