



Republic of the Philippines  
**TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES**  
BIDS AND AWARDS COMMITTEE  
Ayala Blvd. Cor. San Marcelino St. Ermita, Manila 1000  
Fax: (02) 521-4086, Tel. Nos. (632) 301-3050,  
Trunkline: 301-3001 local 115, Website: <http://www.tup.edu.ph>

**INVITATION TO BID**  
**UPGRADING OF ENGINEERING, TECHNOLOGY, SCIENCE LABORATORIES EQUIPMENT & ROOM**  
**FACILITIES IMPROVEMENT**  
**(PROCUREMENT OF INDUSTRIAL ELECTRONICS LABORATORY EQUIPMENT)**  
TUPBAC-PB-03-LRB-F164-19-G

1. The *Technological University of the Philippines Manila Campus*, through the *Fund 164 CY 2018* intends to apply the sum of *Ten Million Three Hundred Sixty-Five Thousand Three Hundred Six Pesos (Php 10,365,306.00)* being the Approved Budget for the Contract (ABC) to payments under the contract *Upgrading of Engineering, Technology, Science Laboratories Equipment & Room Facilities Improvement (Procurement of Industrial Electronics Laboratory Equipment)*. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The *Technological University of the Philippines Manila Campus* now invites bids for the *Upgrading of Engineering, Technology, Science Laboratories Equipment & Room Facilities Improvement (Procurement of Industrial Electronics Laboratory Equipment)*. Delivery of the equipment is required *thirty (30) calendar days after the issuance of Notice to Proceed*. Bidders should have completed, within two (2) years from the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II. Instructions to Bidders.
3. Bidding will be conducted through open competitive bidding procedures using a non-discretionary "pass/fail" criterion as specified in the Implementing Rules and Regulations (IRR) of Republic Act (RA) 9184, otherwise known as the "Government Procurement Reform Act".

In addition, bidding is restricted to Filipino citizens/sole proprietorships, partnerships, or organizations with at least sixty percent (60%) interest or outstanding capital stock belonging to citizens of the Philippines, and to citizens or organizations of a country the laws or regulations of which grant similar rights or privileges to Filipino citizens, pursuant to RA 5183.

4. Interested bidders may obtain further information from *Technological University of the Philippines Manila Campus* and inspect the Bidding Documents at the address given below during *9:00a.m. to 5:00p.m from Monday to Friday (except on holidays)*.
5. A complete set of Bidding Documents may be purchased by interested Bidders on *January 23, 2019* from the address below and upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB., in the amount of *Ten Thousand Pesos (PhP 10,000.00)*.

It may also be downloaded free of charge from the website of the Philippine Government Electronic Procurement System (PhilGEPS) and the website of the Procuring Entity, provided that Bidders shall pay the applicable fee for the Bidding Documents not later than the submission of their bids.

6. The *Technological University of the Philippines* will hold a Pre-Bid Conference on **January 31, 2019 at 9:00AM** at BAC Office, 2<sup>nd</sup> Floor Admin Bldg., which shall be open prospective bidders.
7. Bids must be duly received by the BAC Secretariat at the address below on or before **February 12, 2019 at 9:00AM**. All Bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 18.  
  
Bid opening shall be on **February 12, 2019 at 9:00AM** at BAC Office, 2<sup>nd</sup> Floor Admin Bldg. Bids will be opened in the presence of the bidders' representatives who choose to attend at the address below. Late bids shall not be accepted.
8. Bidders must submit a Letter of Intent on or before the submission of their bids to signify their intention to participate in the bidding activity.
9. The *Technological University of the Philippines Manila Campus* reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Section 41 of RA 9184 and its IRR, without thereby incurring any liability to the affected bidder or bidders.
10. For further information, please refer to:

**MR. PERAGRINO B. AMADOR, JR.**

Chairperson, Secretariat  
Ayala Blvd. Ermita, Manila  
Tel. # 301 – 3001 local 115  
E – mail: bac@tup.edu.ph  
Fax #: 301 – 3050  
Website: <http://www.tup.edu.ph>

---

**Industrial Electronics Laboratory Equipment**

The equipment should be determined by the Project contractor based on the specifications and requirements. Indicative and functional specifications are provided below to serve as guide for the project contractors.

**Industrial Electronics Trainer (4 SETS)**

- Power supply unit and 16 replaceable modules.
- Various types of industrial electronic devices, such as UJT, PUT, SCR, SCS, DIAC, TRIAC, JFET, MOSFET, IGBT includes wired wireless modules for standard industry set up for integration.

**A. Technical data:**

**1. Power Supply Unit**

- (1) ACV output voltage : 18V-0V-18V, 0.5A
- (2) ACV output voltage : 12V-0V-12V, 0.5A
- (3) DCV output voltage : +12V, 0.5A
- (4) DCV output voltage : +5V, 0.5A

**Experiment Modules:**

- Plugs and sockets connected by standard test leads
-

- 
- Circuits, blocks and components symbols printed on the surface of each module
  - Aluminum profile base frames (Modular and Interchangeable)
  - Modules secured in mould case
  - Comprehensive experiment manuals

**List of Modules:**

- UJT Experiments
- PUT Experiments
- PUT & SCR Experiments
- SCS Experiments
- UJT & PUT Trigger SCR Experiments
- SCR Control DC Motor & DIAC, TRIAC Characteristic Experiments
- Automatic Control Lamp and TRIAC Control Speed ExperimentsA
- Temperature Ratio, Photo-Couple and Touch Control Experiments
- Over/Under-Voltage Breaker and Flasher Control Experiments
- TRIAC Liquid Level & IC Timer Switch Experiments
- Digital Signal Driver & Zero-Voltage Switch Experiments
- Zero-Voltage Switch Experiments
- SCR Converter Experiments
- SCR Rectifier Circuit Experiments
- JFET/MOSFET Characteristic & MOSFET Electronics Speed Control (ESC) Experiments
- IGBT Characteristic & IGBT Speed Control Experiments
- Power Electronics Application Circuit Experiment

**B. Test Instruments, Calibration /Gain Testing and DC Power Supply**

**Test Instruments:**

**1. Digital Storage Oscilloscope (6)**

**Specifications:**

4 Channel  
Bandwidth: 100Mhz  
8 Inch LCD Display  
Multi communication interface USB, VGA, LAN VGA  
Labview supported  
AC Supply Voltage: 220volts

**2. Digital Multimeter (6)**

**Specifications**

Function as 3 in 1: datalogger + multimeter + temperature meter  
Multi-connection (more than one device) supported via mobile app  
The change trend analysis accessible via special chart mode  
Voice warning supported, which assures measurement safety  
Smart voice-reading accessible  
4000 / 6000 / 22000 – count full scale reading  
Larger display, easier data-reading; simulated bar chart  
Offline recording function  
True RMS value available

---

---

Bluetooth 4.0 version – supports mobile device with Android 4.3 or above / iOS 7.0 or above OS, and equipment with ble 4.0 module

### **3. Function Generator (6)**

**Specifications:**

Comprehensive waveform output (Dual Arbitrary)  
10Mhz output  
Comprehensive Modulation Functions  
5 Basic output waveform  
4 inch LCD Display  
Supply Voltage: 100-240volts AC

### **4. AF/RF Generator (6 units)**

**Specifications:**

Frequency Range Sinewave  
Frequency Range Squarewave  
Supply Voltage 100 → 240V AC  
Test Lead, Battery, English Manual,  
Point Contact Temperature Probe, Test Clip

### **Calibration/Gain Meter**

#### **5. LCR Meter (2 UNITS)**

Inductance Capacitance Resistance Meter  
**AC Supply Voltage: 220volts**

#### **6. Antenna Gain/Trainer Meter (1 SET)**

Applied to industry applications with the following requirements:

1. Transmit meter
2. Receive meter
3. With multi element applications testing
4. Manual and motorized testing for graph evaluation

### **DC Power Supply:**

#### **7. Programmable DC Variable Power Supply (6 units)**

**Specifications:**

Two (Dual) independent controllable channels and sense  
Over voltage over current  
Low ripples over Low noise  
Up to 100 group timers

Over-Voltage / Over Current protection  
Data- Logging Function: could record the output voltage, and current; and display recorded data in chart

4 inch high resolution (480x320 pixels) LCD

---

USB, RS232, and LAN  
 Auto-cooling system  
 SCPI, and LabVIEW supported

**C. Industrial Electronics Trainer Application Module (2 SETS) Full size**

**A. Industrial Automation System with the following applications:**

1. Wired and wireless communication protocol
2. Motion Control sequence with input and output access.
3. Counters sequence
4. Stepper Motor
5. Servo Motor
6. Pick and Place
7. Identification Transfer and using different sensors technology
8. PC Based Software supported operation with display(Licensed)
9. PLC and HMI Operation Control Process

**B. Complete Set of Desktop Computer with 24 inch monitor (2 Units)**

Intel Core i3, 1TB Hard drive, 4GB DRAM, CDRROM, Keyboard and Mouse,  
 AVR and Licensed OS and MS Office

**PACKAGE INCLUSIONS:**

**Warranty:**

- One year on Parts and Services

**Delivery:**

- 30 Calendar Days

**Other Terms and Conditions:**

- Equipment must be supplied with training manuals in English
- Bidder must conduct after sales training at the procuring entity after the completion of delivery
- Provided with Certification of Testing and Calibration for equipment and test instruments from the supplier.

| <b>Activity</b> | <b>Deliverables</b>              | <b>Involved Personnel / Office</b>   | <b>Duration (working days)</b> |
|-----------------|----------------------------------|--|--------------------------------|
| Delivery        | Equipment                        | <input type="checkbox"/> Project Contractor<br><input type="checkbox"/> Technical Evaluation Committee<br><input type="checkbox"/> CIT Faculty | 1                              |
| Installation    | Equipment<br>Software simulation | <input type="checkbox"/> Project Contractor<br><input type="checkbox"/> Technical Evaluation Committee<br><input type="checkbox"/> CIT Faculty | 4                              |
| Unit Testing    | Test Report                      | <input type="checkbox"/> Project Contractor  | 3                              |

|              |                         |   |           |
|--------------|-------------------------|---|-----------|
|              |                         | <input type="checkbox"/> Technical Evaluation Committee<br><input type="checkbox"/> CIT Faculty |           |
| Acceptance   | Final Evaluation Report | <input type="checkbox"/> Technical Evaluation Committee<br><input type="checkbox"/> CIT Faculty | 2         |
| <b>Total</b> |                         |   | <b>10</b> |

**(Sgd.) ENGR. LYNDON R. BAGUE**  
 BAC Chairperson