Information about Medical Electronics Project at NIELIT Shillong
(Status as on 09th December 2016)

Brief about Medical Electronics Project

1. Medical electronics laboratory has been setup at NIELIT Shillong for testing, calibration, repairing and maintenance of Medical Electronics Equipments.
2. The project is mainly to solve the technical issues faced by the various Hospitals in Meghalaya, in regard to Electro medical Equipments Maintenance.
3. Project Duration: 3 (Three) Years (July 2014 to July 2017).

Scope of the Project

1. For testing, calibration, repairing and Maintenance of Medical Electronics Equipments of various Hospitals in Meghalaya.
2. To solve the problems faced by the Hospitals and patients due to non-operable defective hospital equipments.
3. To provide training to Para- medical & medical staff of various government as well as private hospitals of Meghalaya and the youth of the state (at least 75 nos).

Equipments & Items available in the Medical Electronics Laboratory:

1. ECG Acquisition Machine
2. ECG Simulator
3. Portable Suction Unit
4. Digital Blood Pressure Machine
5. Digital Storage Oscilloscope
6. Spectrum Analyzer
7. Logic Analyzer
8. Function Generator
9. Digital Multimeter
10. Computers
A "Certificate Course in Medical Electronics Equipments Maintenance" has been designed for 200 hours and this course has already started from Nov' 2015.

Detailed Syllabus as below:-
1. Course Name: "Certificate Course in Medical Electronics Equipment Maintenance"
2. Eligibility: 10th+ITI (Electronics/Electrical) or Diploma(Electrical/Electronics/Medical Electronics) or BSc Electronics
3. Course Duration: 4 months/200 Hours (100Th+100Pr), (Theory 1 hr per day, practical 2 hrs per day: Th=Theory, Pr=Practical)

Training Fees:-
1. 100 % free for SC and ST candidates
2. Rs.8000/- + Service Tax for General and OBC candidates

THEORY: - (100 hours)
   a. Basic Circuit Theory: (10T + 5P)
   b. Basic Circuit Theory: (10T + 5P)
   c. Basic Electrical Engineering: (25T + 30P)
   d. Basic Electronics Engineering: (25T + 30P)
   e. Biomedical Equipment and Medical Electronics (40T + 35 P)

PRACTICAL: - (100 hours)
1. Familiarization with components such as Resistors, Capacitors, Diodes, Transistors, FET’s, Op-Amps, DC Power supply, Multimeter, CRO etc.
2. Identification of resistor values by using color code and multimeter.
3. SMD replacement, soldering and desoldering of SMD's using SMD/SMT Rework Station.
4. To verify Ohms Law.
5. To design inverting, non-inverting, instrumentation amplifier using 741/LM358 (P).
6. To design & realization of basic logic gates: (Verification of truth tables of logic gates).
7. Digital IC testing.
8. To design and study on circuits using R, L and C.
9. To measuring the power in single phase A.C. Circuits.
10. To perform Open circuit and Short Circuit Tests on a single phase transformer.
11. To determine the Open Circuit Characteristic of D.C. Generator.
12. To measure and control the Speed of D.C. motors using Tachometer.
14. Analysis of ECG, EEG, and EMG signals: Acquisition, calibration, troubleshooting and to measure the amplitude, frequency.
15. Method of Blood Pressure Measurement. (Troubleshooting)
16. To determine the oxygen saturation level in the blood with Pulse Oxymeter. (Troubleshooting)
17. To study the operation of Defibrillators, Ventilators. (Troubleshooting)

- Training Details -

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Batch</th>
<th>Duration</th>
<th>Total candidates Trained</th>
<th>Training Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1st Batch</td>
<td>Oct’ 2015 to April’ 2016</td>
<td>15</td>
<td>Completed</td>
</tr>
<tr>
<td>2</td>
<td>2nd Batch</td>
<td>Dec’ 2015 to April’ 2016</td>
<td>15</td>
<td>Completed</td>
</tr>
<tr>
<td>3</td>
<td>3rd Batch</td>
<td>June’ 2016 to till date</td>
<td>19</td>
<td>Completed</td>
</tr>
</tbody>
</table>

N.B. For 4th batch, admission process is going on and likely to be start from Jan’17.
Photo Gallery
COURSE RATIFICATION MEETING

Medical Electronics Laboratory

1st PRSG Meeting held at NIELIT Shillong
Workshop Conducted “Medical Electronics & Technology” at NIELIT Shillong

Hospital Visit by the students

2nd PRSG Meeting held at NIELIT Shillong

Submitted By: Ng.Saritamala Devi, STA, Nodal Officer ME Project