



**KARUNYA INSTITUTE OF TECHNOLOGY AND SCIENCES**  
(Declared as Deemed to be University under Sec. 3 of the UGC Act 1956)  
A CHRISTIAN MINORITY RESIDENTIAL INSTITUTION  
AICTE Approved & NAAC Accredited  
Karunya Nagar, Coimbatore - 641 114, Tamil Nadu, India

## **DEPARTMENT OF MECHANICAL ENGINEERING**

### **ERGONOMICS LABARATORY**

The purpose of this laboratory is to familiarize students with the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies ergonomics principles, data and methods to design in order to optimize human well-being and the overall system. Students working with this laboratory equipment would contribute to the planning, designing and evaluating of human tasks, jobs, products, organizations, environments and systems in order to make the working environment more comfortable and safer.

#### **COURSE OBJECTIVES:**

To impart knowledge on

1. The fundamental principles of ergonomics and human factors engineering.
2. The study and measurement of human anatomy and anthropometry by using anthropometers and calipers.
3. The usage of portable electro-goniometers, EMG system and force gauge.

#### **COURSE OUTCOMES:**

After completing the course, the students will be able to

1. Demonstrate static and dynamic anthropometry using anthropometer and stadiometer.
2. Calculate the percentiles and classify the sample population statistically.
3. Analyse the real time data obtained by using the data logger and goniometers.
4. Calculate and convert the acquired EMG raw data into percentage of muscle voluntary contractions.
5. Analyse and calculate the data obtained by using the force gauge and heart rate monitor statistically.
6. Suggest the design changes in the work station and work environment through the application of environmental assessment kit.

## Facilities available for regular class demonstration, project, research and consultancy

- ✓ Data Logger (Bluetooth enabled)
- ✓ Single and Twin axis Goniometers and Torsiometers
- ✓ Surface EMG sensors with Ground Strap
- ✓ Biometrics Analysis Software
- ✓ Force Gauge
- ✓ Temperature and Humidity Sensor
- ✓ Sound meter
- ✓ Lux meter
- ✓ Heart rate monitor
- ✓ Anthropometer and Stadiometer

Industry matching equipment's (if any)

Major equipment's



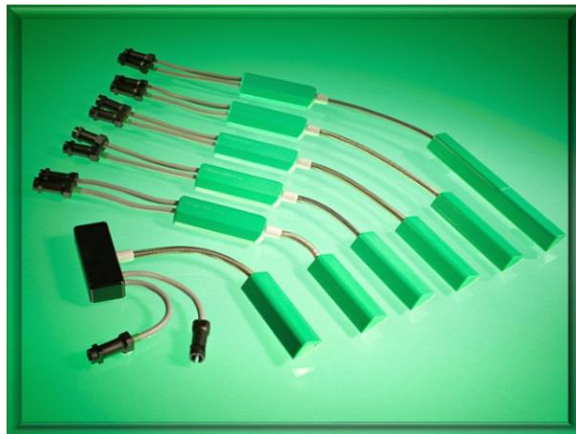
Figure 1. Portable Goniometer and EMG system PS 900



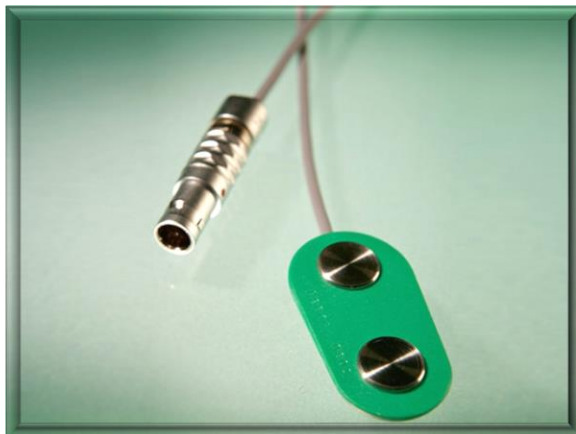
Figure 2. Bluetooth Enabled Data Logger (Eight Channel)



**Figure 3. Data Logger fixed on a human arm**



**Figure 4. Twin axis electro-goniometers**



**Figure 5. Surface Electromyography sensor**



**Figure 6 Industrial Ergonomics Assessment Kit**

Lab In-charge:

Dr. M.Wilson Kumar, M.E., Ph.D., Assistant Professor (SG)



Lab Technician:

Mr. Suresh Simon Masilamani, Engineering Technician

