

Making Technology Visible

BIOMEDICAL TECHNOLOGY



LABTECH – the International Technical Educational Company

LABTECH was formed over 30 years ago and is one of the largest Technical and Vocational educational systems designers and manufacturers in the world. Labtech's prime focus is to provide comprehensive 21st century skills infused technical and engineering learning solutions for Vocational Technical Schools, Polytechnics, Universities and Training Institutions. The development of LABTECH has been guided by professional educators from North America, Europe and Asia that have many years of experience in the field of international education.

Our Systems Approach design philosophy of "Making Technology Visible" is based on modular learning platforms and exposing key functional systems so as to clearly demonstrate the underlying technologies. We allow students to get close to technology by adopting a "hands-on" approach to training that combines theory as well as practical experiments. The result of this is that students have a clearer understanding of how technology works and its applications to industry and the work place. Many of our trainers have Fault Insertion systems that simulate common real-world faults with troubleshooting solutions facilitating real hands-on skills. Our Modular educational approach enables us to create systematic integrated solutions for varying syllabus levels, ranging from occupational skills standards and upwards to university degrees in engineering.

LABTECH has developed over 1.000 major training products which form a systematic educational program and we have exported these to over 90 countries worldwide. The technical training systems that LABTECH manufactures are made to International standards of quality and we are ISO 9001 certified in eight areas including educational research and development. LABTECH has a comprehensive R&D department and a sophisticated range of manufacturing equipment. LABTECH can assist training institution or projects by offering a complete service for equipping technology workshops or laboratories in our key technology areas including provision of training systems, educational aids, models, support tools and testing equipment.

Our training manuals are comprehensive teaching and learning guides which are student-centric and oriented for self-studies. The manuals include information on applied theory; related engineering information; set-up & operation; skills focused experiments; schematics & diagrams; along with troubleshooting solutions. We have active cooperative programs with leading educational and industrial institutions within our region who work together with us in our product research and development. Our trainers incorporate the latest technology so that education may keep pace with the changing economy.

Our manufacturing base is strategically located in a Free Trade Zone location on Batam Island nearby Singapore which allows us to easily ship all over the world. We also have marketing and distribution offices in Singapore, Malaysia, Jakarta, Australia, UK, and Jordan in order to facilitate communications, service support and financial transactions with our customer's world wide. We also have representatives in dozens of countries who act as our local partners on project implementation. Our unique international corporate structure allows us to globally market high quality products and services at reasonable costs.

Industry & Technology Partnerships and Memberships

Labtech has a network of industry and technology partners that enables us to widen our product offerings and better align our objectives with the end result of producing employable skills. Partnering with some of the most innovative technology companies in the world, including Microsoft and Intel. We are also members of ISTE (International Society of Technology in Education), CompTIA (Computing Technology Industry Association), IVETA (International Vocational Education & Training Association), Worlddidac. We also produce training systems for Toyota and for Schneider Electric This global network makes us uniquely aligned to meet the needs of educational institutions around the globe.



Labtech Biomedical Technology

Biomedical technology is one of the most rapidly advancing of technologies today. It is the backbone of the ICT and communications revolution which is affecting nearly all segments of industry and human activities. Biomedical now are major influencers on work and productivity in many segments and are even changing social convenience, behavior and comfort at home. The proliferation of these technologies is increasing to the point where they are becoming “ubiquitous” or available almost everywhere. For many it has become an indispensable part of their daily lives including work, productivity, social interaction and family life. As the importance of these devices and technologies grow it is an increasing vital necessity that we produce trained technicians and engineers that know how these devices function, how to integrate them into our activities, how to set them up, manage them, troubleshoot them, solve problems as they arise, fix and repair them. These talents are key to supporting our growing needs to sustainably and effectively use these technologies for our benefit as a society as a whole.

Labtech has developed a series of trainers to assist students in acquiring the skills needed for fulfilling these positions. These trainers have been designed in cooperation with several of the leading electronics manufacturers, together with teacher training experts. Our trainers start by giving the student a solid background in electronic fundamentals and the progress onwards to skill and job oriented training systems. The trainers thoroughly cover topics in mechanism operation, system diagnostics, troubleshooting and fault-finding, repair and routine servicing of these devices. All of our products include a manual which covers the theory as well as practical exercises. Many of our trainers in this product line feature a very useful and unique electronic fault insertion system for the teaching of troubleshooting and testing which aids in the development of Higher Order Thinking Skills (HOTS).

Labtech produces a comprehensive range of Biomedical training systems that feature hundreds of trainers and modules which can be arranged in many formats to meet any curriculum. This catalog highlights some of our most popular training systems and platforms which are organized into the categories below.

World Class Technical Training Systems designed for education with quality built-in

Labtech is one of the few companies in the world that has achieved ISO certification for designing, developing and producing educational training systems. This means that our training systems are designed for teaching and learning that match a variety of International settings. They also can be configured or customized for specific customer requirements. The functions of the trainers are designed with the teacher and the student in mind for achieving the desired educational objectives. Our training manuals guide the student through the theory and applied experiments which are formulated to match the learning objectives. We use both project based learning and problem based learning techniques in our experiments in order to deepen the knowledge acquired.

- Comprehensive manuals feature graphic and visual learning materials to aid in student comprehension which contain both theory and practical exercises. Assessments are also included.
- Biomedical Trainers have graphic circuit block diagrams which aid the student understanding and diagnostic activities.
- Special Electronic fault insertion system with test points embedded into the circuit diagram for troubleshooting and fault finding.
- Modular design enables trainers to be expanded or inter-connected to other units to form larger complex systems for enhanced training.
- Labtech products use only high quality industrial components and materials from top international brands.
- Ergonomic and attractive design for easy learning and operation.
- Built to last long in tropical and arid environments.
- All major metal parts are powder coated for corrosion protection and durability.
- High quality fiberglass circuit boards with socketed ICs for easy replacement.
- For maintenance purposes, a circuit diagram of the trainer is provided and internal system cables feature number tags.
- 2mm or 4mm safety sockets for student protection and quick assembly of experiments.

Digital TVET Content for Virtual Learning:

- Many items also have optional digital learning resources for computer aided instruction.
- Optional Data Acquisition Systems can facilitate higher level learning.
- 21st Century Learning Platform for blended learning.

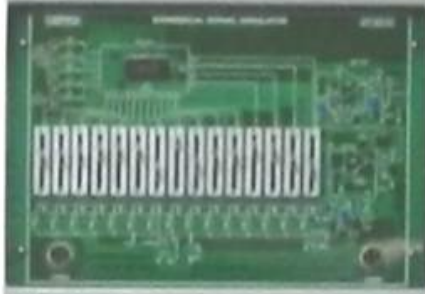
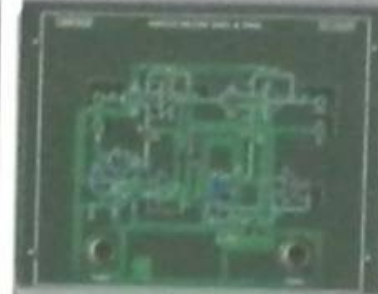
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LABTECH

BIOMEDICAL INSTRUMENTATION TRAINER

EFT-BIO-3



BIOMEDICAL ELECTRONICS
FUNDAMENTAL LAB

BIOMEDICAL ELECTRONICS & INSTRUMENTATION TRAINER

Model Number: EFT-BIO

Educational Objectives:

- A Study of Biomedical Instrumentation Circuits and Sensors : ECG, EEG, EMG, EOG, GSR, Pulse Rate, Temperature, and Oscillometric Blood Pressure measurements.
- Modular panels containing Basic Instrumentation and Monitoring Circuits. A Number of modules can be added optionally to expand the capabilities and functions of the trainer.
- Computer data acquisition for observing the biomedical signal waveforms
- Various biomedical transducers : ECG/EEG/EMG/EOG surface electrodes & leads, GSR electrodes, Infrared Photoplethysmograph finger electrode, differential pressure sensor, sphygmomanometer, Stethoscope, Electrode paste, 2mm leads & connectors
- DC Power supply : Patient isolated power and normal regulated power
- Course Manual Contains Laboratory Experiments, Covering Detailed Circuit Theory and Evaluation



BIOMEDICAL SIGNAL GENERATOR

Model Number: EFT-BIO-SG

Educational Objectives:

- The biomedical signals data acquisition and display unit is the instrument necessary for the execution of all experiments which require the display of signals type ECG / EEG / EMG on the monitor.
- The low frequency of this kind of signals would require a digital oscilloscope with memory for the execution of all the experiments with the modules.
- The unit consists of an equipment, interface able to the Personal Computer, which operates the A/D conversion of the signal under test.
- The interfacing to the Personal Computer is made with the interface module.

DATA ACQUISITION INTERFACE MODULE

Model Number: EFT-BIO-DQ

Educational Objectives:

- The biomedical signals data acquisition and display unit is the instrument necessary that enables the acquisition and display of any biomedical signal coming from the experiment units on a PC monitor (PC not supplied)



LABTECH

MEDICAL GAS NETWORK SYSTEM TRAINER

MIT-GSS-1



HOSPITAL FACILITY SYSTEM

MEDICAL GAS NETWORK SYSTEM TRAINER

Model Number: MIT-GSS-1

Educational Objectives:

- Familiarization with Medical Gas Network System Simulation Trainer.
- Understand the installation, construction and function of Medical Gas Network System Trainer.
- Understand the working of Automatic Gas Switching Device of Medical Gas Network System Trainer.
- Understand the working of Medical gas alarm system of Medical Gas Network System Trainer.
- Normal Medical Gas Network System Simulation Trainer Operation.
- Oxygen (O₂), Nitrous Oxide (N₂O), Air Pressure and Vacuum Alarm Indicator.
- Oxygen (O₂) Leakage Simulation.
- Automatic Gas Switching Device.
- Nitrous Oxide (N₂O) Leakage Simulation.
- Air Pressure Leakage Simulation.
- Vacuum Leakage Simulation.
- Normal Operation Trainer.
- Shut-Off Valve and Bed Head Unit.



ELECTRICAL INSTALLATION SAFETY SYSTEM

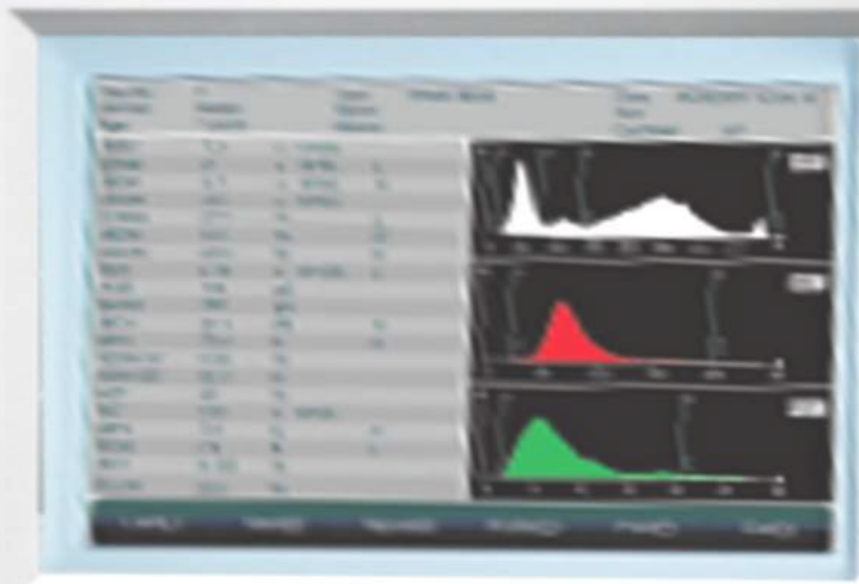
(For Hospital)

Model Number: LEW-EIS-3

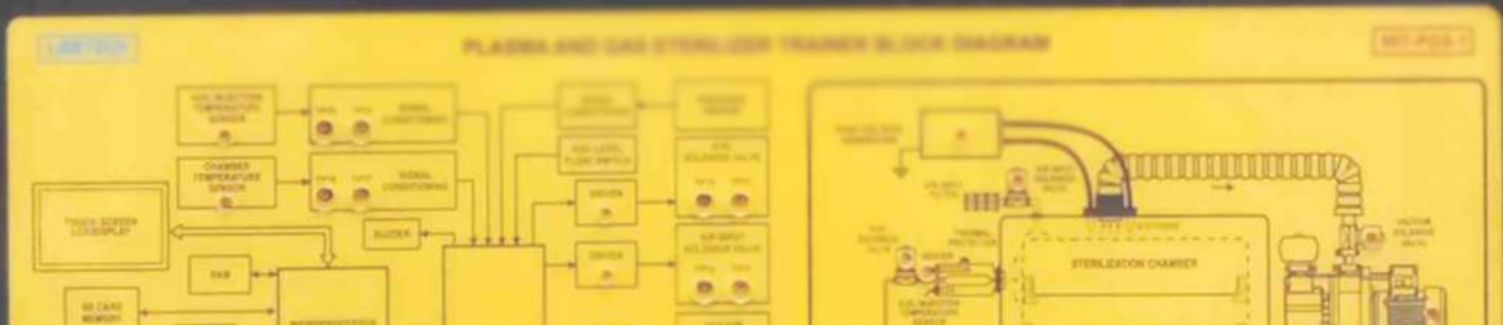
Educational Objectives:

- Understand the voltage level value in electrical installation system.
- Working Principle and Measurement of AC Voltage of Single Phase, Three Phase Three Wire and Three Phase Four Wire.
- Working Principle and Measurement of DC Voltage and Battery Voltage.
- Earth leakage Circuit Breaker Test and Leakage Current Measurement.
- R.S.T Phase Rotation Test.
- Live (HOT) Line.
- Wiring continuity.
- Four, Three and Two Earth Resistance Measurement.
- Earth Voltage Measurement and Earth Voltage Effect when Measuring Earth Resistance.
- Insulation Resistance Measurement.
- Load current Measurement.
- Troubleshooting Simulation in an electrical circuit.





CLINICAL AND ANALYTICAL LAB



ULTRASOUND SCANNER TRAINING UNIT

Model Number: MIT-USS-1

Educational Objectives:

- Operating Ultrasound Scanner Training Unit.
- Explanation of Ultrasound Scanner Training unit Block Diagram and Electrical measurement.
- The Switching mode Power Supply of Ultrasound Scanner Training Unit.
- Zooming an object on screen by Zoom Adjuster.
- Adjusting a specific object on screen by Gain Adjuster.
- Locating the cursor to the desired object by Track Ball.
- The High Voltage Isolation for isolating power from the instrument to the patient.
- The Microcontroller as sub controller on Ultrasound Scanner training unit.
- The Processor as main controller on Ultrasound Scanner training unit.
- Converting the digital data into video graphic by the VGA.
- Visualization an object by Monitor of Ultrasound Scanner training unit.



URINE ANALYZER TRAINER

Model Number: MIT-UNT-1

Educational Objectives:

- Understanding Urine Analyzer Training Unit.
- Adopt to import efficient luminous tubes with long life, stability performance.
- Test theory: Spherical integrator tests reflectivity.
- Urine analyzer with built-in printer, can test 11 parameters.
- Block Diagram Urine Analyzer Explanation.
- Operating The Urine Analyzer Training Unit.
- Fault simulation and Troubleshooting.



HEMATOLOGY ANALYZER TRAINER

Model Number: MIT-HMT-1

Educational Objectives:

- Understanding Hematology Analyzer Training Unit.
- Operating The Hematology Analyzer Training Unit.
- 7 Predetermined animal settings plus 4 user-defined animal settings.
- External AC adapter avoids electronic noises, enhancing accuracy.
- Built-in thermal printer, optional external printer.
- LCD display with Touch Screen and Mouse Operation.
- Low sample and reagent consumption.
- Block Diagram, Fault simulation and Troubleshooting.
- Operating The Hematology Analyzer Training Unit.



SPECTROPHOTOMETER TRAINING UNIT

Model Number: MIT-SPM-1A

Educational Objectives:

- Study The Operation Of Spectrophotometer Training Unit.
- Spectrophotometer Block Diagram Explanation.
- Power Supply System.
- Lamp Position Motor Familiarization.
- Diffraction Grating Motor Familiarization.
- Rotating Filter Motor Familiarization.
- Signal Conditioning Familiarization.
- ADC (A/D converter) Familiarization.
- Microcontroller Familiarization.
- LCD Module Familiarization.



PLASMA CENTRIFUGE MACHINE TRAINER

Model Number: MIT-PCM-1

Educational Objectives:

- Understanding Plasma Centrifuge Machine Training Unit.
- Operating The Plasma Centrifuge Machine Training Unit.
- Controlled by microcomputer, AC frequency variable motor drive, able to operate stable and quietly.
- Multi-color LED display, user-friendly, clearer and more direct display.
- User able to set RPM, timing, RCF and acceleration/deceleration mode according to experiment requirement.
- User able to program and call program freely.
- Fault simulation and Troubleshooting.

GAS CHROMATOGRAPH TRAINER

Model Number: MIT-GCT-1

Educational Objectives:

- Understanding Gas chromatograph Training Unit.
- Laboratory techniques for the separation of a mixture use gas techniques.
- PC control, user-friendly interface and easy to operate.
- Self-diagnosis, power protection, oven over-temperature protection and automatic ignition.
- Can accurately display the temperature control setting, actual value and FID amplifier sensitivity.
- Built-in heating wire structure.
- Block Diagram, Fault simulation and Troubleshooting.



ELECTROPHORESIS TRAINER

Model Number: MIT-EPT-1

Educational Objectives:

- Understanding Electrophoresis Training Unit.
- Operating The Electrophoresis Training Unit.
- Designed for DNA and RNA electrophoresis.
- Easy to operate are its features.
- Cosmid library restriction analysis, Microsatellite analysis PCR fragment analysis, DNA fingerprinting and High-Throughput analysis.
- Block Diagram Electrophoresis Explanation.
- Fault simulation and Troubleshooting.

LIQUID CHROMATOGRAPH TRAINER

Model Number: MIT-LCT-1

Educational Objectives:

- Understanding Liquid chromatography Training Unit.
- A laboratory technique for the separation of a mixture use liquid techniques.
- Specially designed column oven for GPC, which represents greater capacity of three columns.
- Adoption of advanced UDP communication protocol that is fast, stable and can be used for instrument remote control.
- The HPLC system being more integrated and intelligent
- Operating The Liquid chromatography Training Unit.
- Fault simulation and Troubleshooting.



LIST OF :

Hand with cable controlled, Elbow set
Hand, silicone glove. Elbow set

MIT-BI-CO

MIT-BI-FT

Hand with cable controlled
Hand, silicon glove

Hand with foot

Hand adapter (stainless steel),
Assembly (stainless steel), 4-bar
assembly (stainless steel).

MIT-BI-AR
Safely

Hand adapter (stainless steel),
Assembly (stainless steel), tube
(stainless steel), 4-bar
assembly, 3-prong socket adapter

MIT-BI-AR

MIT-BI-AR
Hand with cable controlled, elbow set

MIT-BI-AR
Passive hand, silicon glove, Elbow set

MIT-BI-HD

MIT-BI-FT
Hand Foot



ELECTROSURGICAL TRAINING UNIT

Model Number: MIT-ESG-1

Educational Objectives:

- Introducing The Electrosurgical Training Unit.
- Operating The Electrosurgical Training Unit.
- Explanation of Electrosurgical Training Unit Block Diagram.
- Controlling Voltage Level By Display.
- Setting Value by Using Keypad.
- Activating Cut Pen and Coag Forceps By Pedal Switch.
- Activating Monopolar Pen by Monopolar Pen Switch.
- Monopolar and Bipolar Output of Electrosurgical Training Unit.
- Neutral as Reference Measurement.
- Microcontroller as Main Control System of Electrosurgical Training Unit.
- Multiplying Voltage by RF Amplifier.
- Power Supply of Electrosurgical Training Unit.

PATIENT MONITOR TRAINING UNIT

Model Number: MIT-PMT-1

Educational Objectives:

- Study the operation Of Patient Monitor Training Unit.
- Understand the operation of electrocardiograph (ECG) Measurement, and operation of Blood Pressure Measurement
- Understand the function each button on control panel.
- Block diagram Explanation.
- Temperature Sensor.
- SPO2 Sensor Familiarization.
- Isolation Power Supply Familiarization.
- Battery Familiarization.
- Power Supply Familiarization.
- Microprocessor Familiarization.
- Air Pump Familiarization.
- Solenoid Familiarization.
- LCD module Familiarization.



OPERATION MICROSCOPE

Model Number: MIT-BI-OM

Educational Objectives:

- Understanding Operation Microscope.
- Understanding the concepts and principles of Operation Microscope.
- Understanding function and application of Operation Microscope.
- Study for various diagnosis, examination and general microscope operation.
- Digital CCD camera with instrument.
- Easy operation, the instrument can be widely used in ear-nose-throat, ophthalmology, gynecology and dentistry departments.

ARTIFICIAL BODY PART

Model Number: MIT-BI-Series

Educational Objectives:

- Artificial Body Part is an artificial device that replaces a missing body part, which may be lost through trauma, disease, or congenital conditions.
- Prosthetics are intended to restore the normal functions of the missing body part.
- Prosthetic amputee rehabilitation is primarily coordinated by a prosthetist and an inter-disciplinary team of health care professionals including psychiatrists, surgeons, physical therapists, and occupational therapists.
- Prostheses can be created by hand or with Computer-Aided Design (CAD), a software interface that helps creators design and analyze the creation with computer-generated 2-D and 3-D graphics as well as analysis and optimization tools. New advances in artificial limbs include additional levels of integration with the human body. Electrodes can be placed into nervous tissue, and the body can be trained to control the prosthesis. This technology has been used in both animals and humans.
- The prosthetic can be controlled by the brain using a direct implant or implant into various muscles.



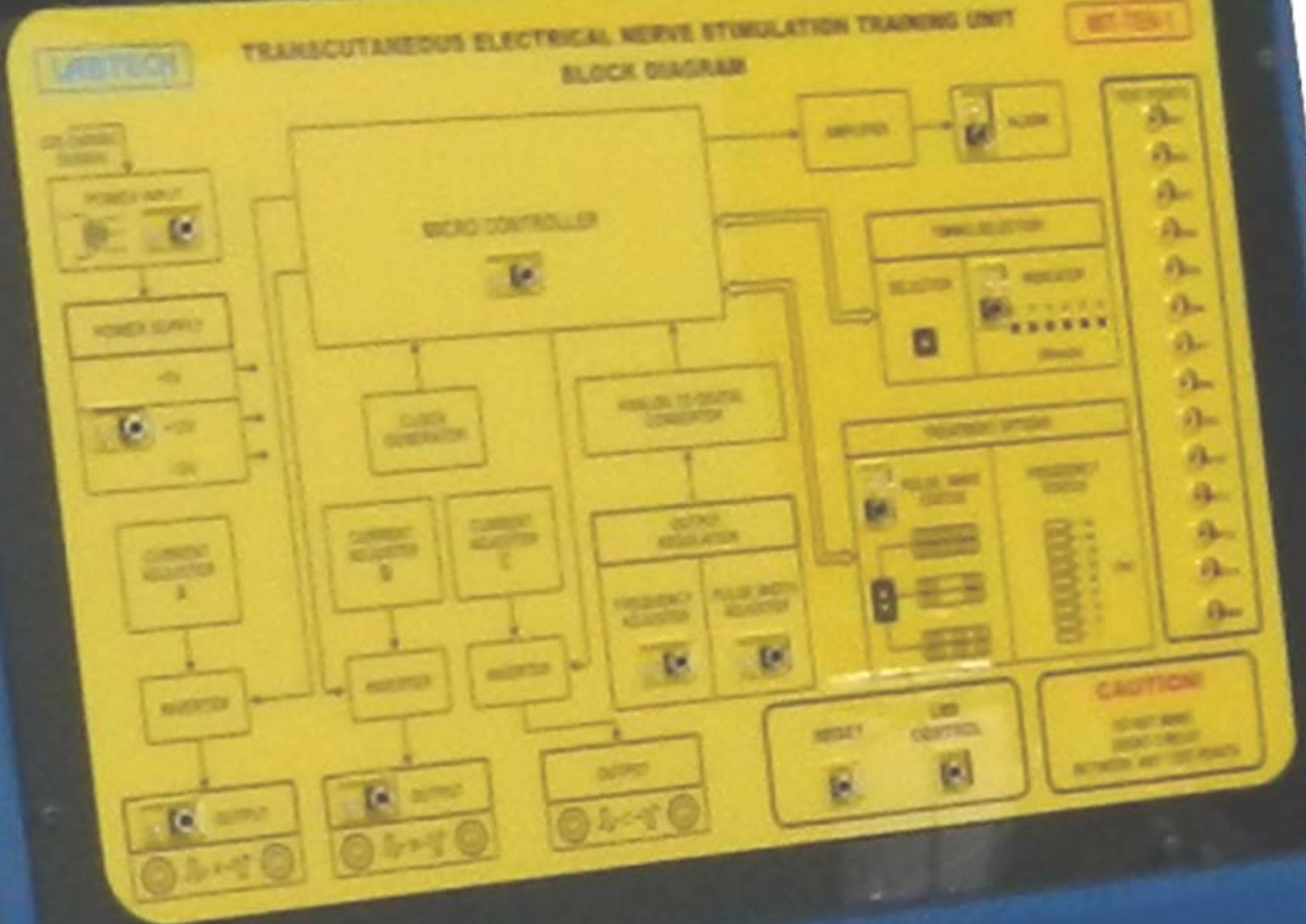
EDUCATION SAMPLES

Model Number: MIT-ESL-Series

Educational Objectives:

- This educational sample will give a students deeper understanding of the human anatomy part like heart valves, larynx, pancreas etc.
- This realistically detailed miniature plastic model includes a stand, fact guide, and photo-illustrated assembly instructions.





THERAPEUTIC AND
OPERATION LAB

TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION TRAINING UNIT

Model Number: MIT-TEN-1

Educational Objectives:

- Familiarization and Operation of TENS Training Unit.
- Voltages on TENS Test Points.
- Troubleshooting of TENS Alarm.
- Troubleshooting of Microcontroller.
- Troubleshooting of TENS Output B.
- Troubleshooting of TENS Output A.
- Troubleshooting of Output Regulations of Pulse Width Adjuster.
- Troubleshooting of Treatment Options of Pulse Wave Status.
- Troubleshooting of Output Regulation of Frequency Adjuster.
- Troubleshooting of Timing Selection of Indicator.
- Troubleshooting of Power Input.
- Troubleshooting of Power Supply +12V.



EXTRACORPOREAL SHOCK WAVE THERAPY (ESWT) MACHINE

Model Number: MIT- ESW-1

Educational Objectives:

- Understand the operation of Extracorporeal Shock Wave Therapy Training Unit.
- Understand the function and principle of Extracorporeal Shock Wave Therapy Training Unit.
- Technology Free Radial Shockwave Therapy-System with Electrom.
- The human engineering design provides setting and operates conveniently.
- Single or dual output is optional, and provides a various professional probe.
- Block Diagram Extracorporeal Shock Wave Therapy Explanation.
- Fault simulation and Troubleshooting.

INCUBATOR TRAINING UNIT

Model Number: MIT-ICB-1

Educational Objectives:

- Control Panel and Display Familiarization.
- Understanding Alarming and System Indication Information.
- Block Diagram Explanation.
- Troubleshooting of Battery.
- Troubleshooting of Regulator.
- Troubleshooting of Solid State Relay.
- Troubleshooting of Blower Motor.
- Troubleshooting of Microcontroller.
- Troubleshooting of Audio Amplifier.
- Troubleshooting of Air flow Temperature.
- Troubleshooting of Isolation Temperature.



LAB INCUBATOR

Model Number: MIT-BI-LI

Educational Objectives:

- This Training System is designed to aid the students in understanding the concepts and principles of Laboratory Incubator which is used to grow and maintain cell cultures and is available in a variety of sizes and types.
- The incubator market is divided into two main categories: the gassed incubators such as CO2 incubators, and the non gassed or microbiological incubators.
- It is ideal for gentle incubation of organisms, such as an agar plates, and also for conditioning of heat sensitive media.
- Lab Incubator is ideal for cultures, eggs, microbiology, and other biology in hospitals, industries, and laboratories.
- PID Temp. Control provides automatic compensation after load changes, setting changes or door opening for excellent accuracy. Natural convection heat distribution combines with the adjustable air vents to provide excellent uniformity.

ANESTHESIA MACHINE

Model Number: MIT-ANM-1

Educational Objectives:

- Study the Operation of Anesthesia Machine.
- Electrical Signal Measurement on Anesthesia Machine Test Points.
- The Oxygen Sensor.
- The Airway Pressure (PAW) Sensor.
- The PEEP Magnetic Valve Driver.
- The VT(Tidal Volume) Magnetic Valve Driver.
- The Adjustment Control Knob.
- The Battery.
- The Power Supply.
- The Audio Amplifier.
- The Microprocessor.
- The Bellows Control Switch.



HEMODIALYSIS MACHINE, X-RAY MAMMOGRAPHY TRAINER (ANALOG X-RAY MAMMOGRAPHY TRAINER)

Model Number: MIT-HDM-1

Educational Objectives:

- Understand the operation of Hemodialysis Machine Training unit.
- Understand the function and principle of Hemodialysis Machine Trainer.
- Circuit Block Diagram.
- Electrical Test Points.
- Fault buttons/keypad.
- Fault Display.
- Fault Reset and LED Control.
- Original Hemodialysis Machine Unit.
- Power Supply.



LITHOTRIPTER TRAINER

Model Number: MIT-LTT-1

Educational Objectives:

- Understand the operation of Lithotripter Training Unit.
- Understand the function and principle of Lithotripter Training Unit.
- Safe and effective.
- Non-invasive procedure for kidney stones.
- Block Diagram Lithotripter Explanation.
- Fault simulation and Troubleshooting.



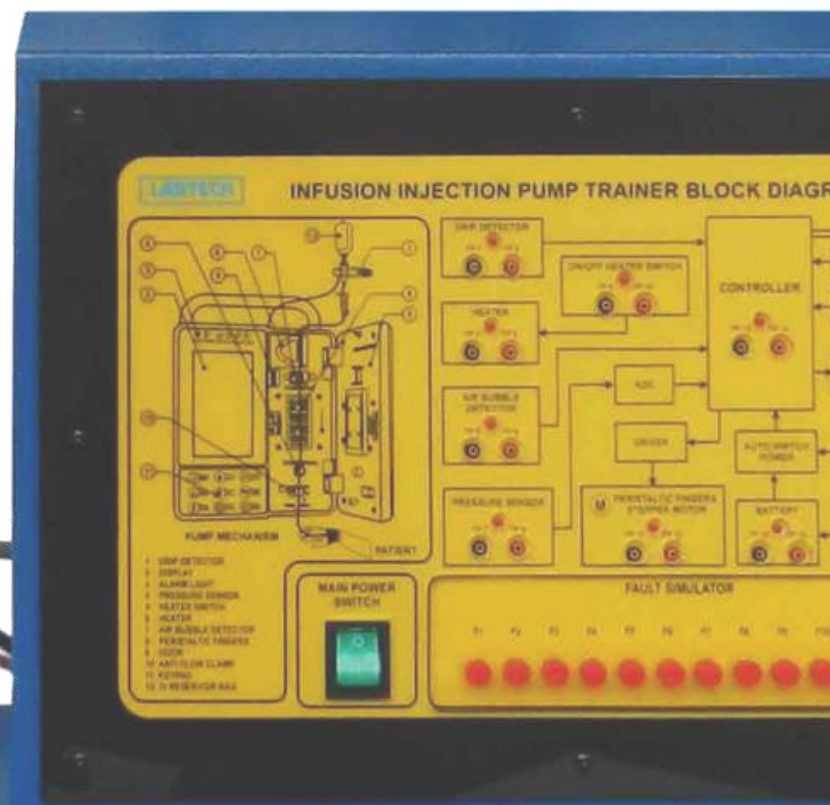
WATER BATH MACHINE

Model Number: MIT-BI-WB

Educational Objectives:

- study of Microprocessor control
- study of Digital display inner temperature
- study of Stainless steel interior

PULMONARY SYSTEM DEVICES LAB



NEBULIZER TRAINER

Model Number: MIT-NBZ-1

Educational Objectives:

- Understand the operation of Nebulizer Training Unit.
- Understand the function of Nebulizer Training Unit.
- Block Diagram of Nebulizer Training Unit.
- Fault simulation and Troubleshooting.



INFUSION INJECTION PUMP

Model Number: MIT-IPT-1

Educational Objectives:

- Background Theory.
- Study the operation of Infusion Injection Pump Trainer.
- Infusion Injection Pump Unit theory & usage.
- Typical Infusion Injection Pump Unit blocks & circuits.
- Infusion Injection Pump Unit applications.
- Troubleshooting of the Drip detector, Heater, Air bubble detector, Pressure sensor, On/off heater switch, Peristaltic finger stepper motor, Controller, Battery, Power supply and Audio amplifier.

SPIROMETER TRAINING UNIT

Model Number: MIT-SPM-1B

Educational Objectives:

- Familiarization of Spirometer Training Unit.
- Electrical Signals Measurement on Spirometer Test Points.
- Troubleshooting of Power Supply Systems and Rectifier, Microcontroller System, Transducer, Alarm,
- Control Panel, Peripheral Interface, Isolation Transformer, Transfer Switch and Backup Battery.



VENTILATOR TRAINING UNIT

Model Number: MIT-EVL-1

Educational Objectives:

- Control panel and display familiarization.
- Understanding alarm system.
- Block diagram explanation.
- Understanding Air flow system, Regulator power supply familiarization, Battery as emergency power familiarization, Inspiration solenoid valve familiarization, Expiration solenoid valve familiarization.
- Pressure sensor familiarization.
- Microcontroller familiarization.
- Intermittent positive pressure ventilation (IPPV) set familiarization.
- IPPV BPM display familiarization.
- Troubleshooting on total respiratory rate (FTOT) display.



HEART LUNG MACHINE TRAINER

Model Number: MIT-HLM-1

Educational Objectives:

- Understand the operation of Heart Lung Machine Training Unit.
- Flexible, high illumination and low energy consumption LED lamp.
- Arterial and cardioplegia monitors for temperature, pressures and timers.
- Battery module.
- Pulse module.
- Communications module for data acquisition.
- Block Diagram of Heart Lung Machine Explanation.
- Fault simulation and Troubleshooting.



ENT, DENTAL AND
OPHTHALMIC LAB



OPHTHALMOSCOPY TRAINER

Model Number: MIT-OPH-1

Educational Objectives:

- Understand the operation of Ophthalmoscopy Training Unit.
- With all the functions of a desktop slit lamp.
- Long time standby four kinds of spot time multigroup distance
- Block Diagram Ophthalmoscopy Explanation.
- Fault simulation and Troubleshooting.

MEDICAL OPERATION LIGHTING EQUIPMENT

Model Number: MIT-BI-ML

Educational Objectives:

- Understand the operation of Medical Operation Lighting Equipment.
- Introduction of Medical Operation Lighting Equipment.
- Choosing Surgical Lighting.
- Principle of Operation.



EYE NOSE THROAT (ENT) EXAMINATION MACHINE TRAINER

Model Number: MIT-ENT-1

Educational Objectives:

- Understand the operation of ENT Examination Machine Training Unit.
- Understand the function of ENT Examination Machine Training Unit.
- All parameters are set with power protection.
- Blow-off equipment system (with warning system).
- Spray gun, Suction gun, Blowing gun.
- Block Diagram ENT Examination Machine Explanation.
- Fault simulation and Troubleshooting.
- LED illuminating light.
- Laryngoscope pre-heater.
- Luxury thin film viewer.
- Vacuum pump.
- Compressor.



INTRA ORAL RADIOGRAPHY TRAINER

Model Number: MIT-IOR-1

Educational Objectives:

- Understand the operation of Intra Oral Radiography Trainer.
- Intra Oral Radiography Unit theory & usage.
- Typical Intra Oral Radiography Unit blocks & circuits.
- Intra Oral Radiography Mammography Unit applications.
- Dental X-Ray Film Processing.
- Fault simulation and Troubleshooting.



PANORAMIC DENTAL X-RAY MACHINE TRAINER

Model Number: MIT-PDX-1

Educational Objectives:

- Understand the operation of Panoramic Dental X-Ray Training Unit.
- Understand the function of main parts of Dental X-Ray Training Unit.
- Block Diagram Panoramic Dental X-Ray Explanation.
- X-Ray Film Processing with Solutions.
- Fault simulation and Troubleshooting.

DENTAL CHAIR TRAINING UNIT

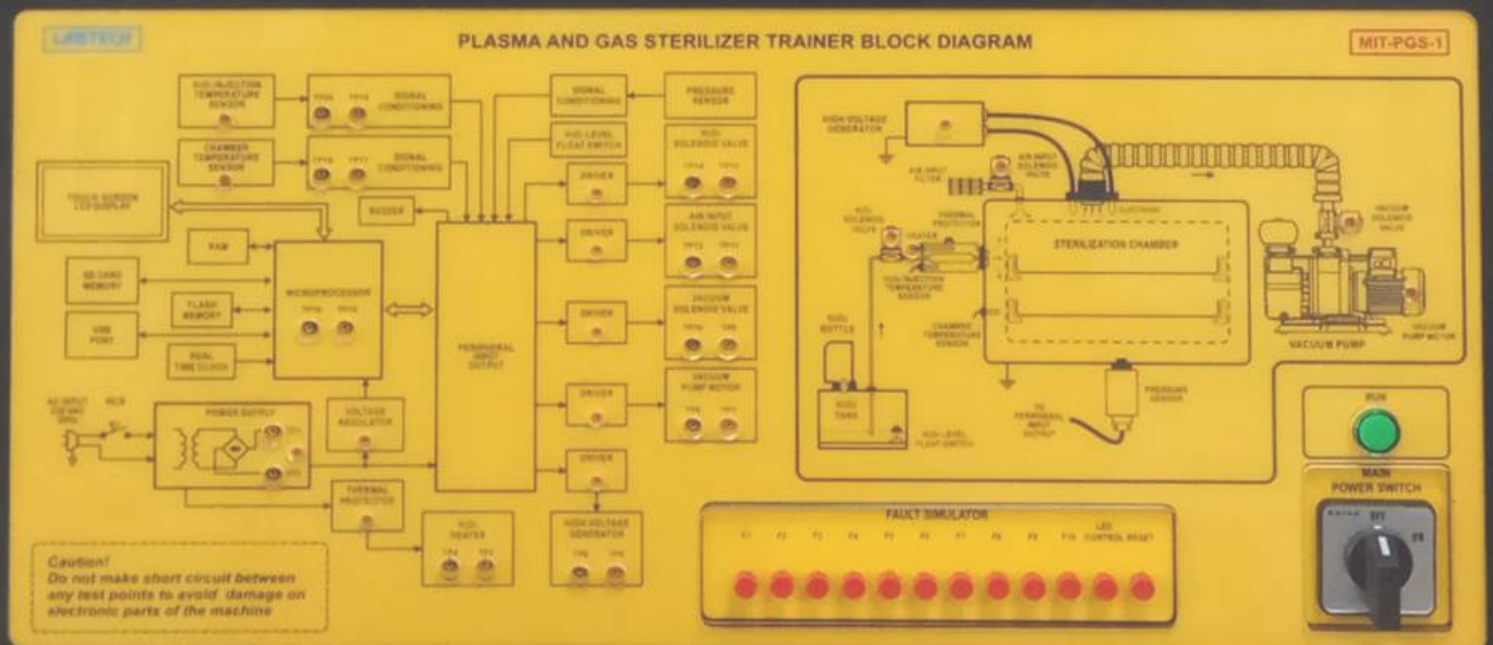
Model Number: MIT-DCH-1

Educational Objectives:

- Studying the operation of dental chair training unit.
- The step down transformer.
- The solenoid driver.
- The bowl flush solenoid.
- The Cup Filler Solenoid.
- The high light dimmer.
- The low light dimmer.
- The actuating controller.
- The actuator driver.
- The boiler water heater driver.
- The X-ray film viewer.
- Fault simulation.



STERILIZER AND LASER TECHNOLOGY LAB



STERILIZATION TRAINING UNIT

Model Number: MIT-STR-2

Educational Objectives:

- Understand the operation of Sterilization Training Unit.
- Familiar with Sterilization Part of Sterilization Training Unit.
- The power supply.
- The signal conditioning.
- The microcontroller.
- The heater driver.
- The water level switch.
- Block Diagram of Sterilization Training Unit.
- Fault Simulation.
- Test Point.



PLASMA AND GAS STERILIZER TRAINER

Model Number: MIT-PGS-1

Educational Objectives:

- Studying the Operation of Plasma and Gas Sterilizer Trainer.
- Laboratory plasma and gas sterilizer unit theory & usage.
- Typical laboratory plasma and gas sterilizer unit blocks & circuits.
- Laboratory plasma and gas sterilizer unit applications.
- Hydrogen Peroxide Plasma in the Sterilizer.
- Fault Simulation.
- Test Point.

DRY STERILIZER TRAINING UNIT

Model Number: MIT-DST-2

Educational Objectives:

- Studying the operation of dry sterilizer training unit.
- Familiar with Sterilization Part of dry sterilizer training unit.
- The Pattern of Microbial Death.
- The Use of Physical Methods in Control.
- The signal conditioning.
- The microcontroller.
- The fan motor driver.
- The heater driver.
- The power supply.
- Fault Simulation.
- Test Point.



EXCIMER LASER DEVICE TRAINER

Model Number: MIT-EZL-1

Educational Objectives:

- Background theory.
- Laboratory Excimer Laser training unit theory & usage.
- Typical laboratory Excimer Laser training unit blocks & circuits.
- Laboratory Excimer Laser training unit applications.
- Studying the operation of excimer laser device trainer.
- The water level sensor.
- The water flow sensor.
- The radiator cooling fan.
- The water temperature sensor.
- The pedal switch.
- The low voltage power supply.
- The keylock switch.
- Block Diagram of Excimer Laser training unit.
- Fault Simulation.
- Test Point.



ND-YAG LASER TRAINING UNIT

Model Number: MIT-NDL-1

Educational Objectives:

- Understanding ND-YAG Laser Training Unit.
- Block Diagram ND-YAG Laser Explanation.
- Operating The ND-YAG Laser Training Unit.
- Working of ND-YAG Laser.
- Advantage of ND-YAG Laser.
- Application of ND-YAG Laser.
- Fault Simulation.
- Test Point.



CARDIOVASCULAR SYSTEM
DEVICES LAB

ELECTROCARDIOGRAPHY MAINTENANCE TRAINING

UNIT (ECG)

Model Number: MIT-ECG-1

Educational Objectives:

- Electrocardiography Unit Familiarization.
- Electrocardiography Configuration.
- Electrocardiography Operation.
- Block Diagram Explanation.
- Bio Potential Amplifier Familiarization, Power Supply Familiarization, Battery Familiarization, Main Controller Familiarization, LCD (Liquid Crystal Display) Familiarization, External Storage Devices and Printer (Recorder) Familiarization.



BLOOD PRESSURE MEASUREMENT TRAINING UNIT

Model Number: MIT-BPS-1

Educational Objectives:

- Understanding Blood Pressure Tester Unit.
- Block Diagram And Blood Pressure Control Button Explanation.
- Operating The Blood Pressure Training Unit.
- Power Button Familiarization, Air Pump, Solenoid Valve Familiarization, Pressure Sensor Familiarization, Signal Conditioning Familiarization, Microcontroller Familiarization, LCD And Led Backlight Familiarization, Audio Power Amplifier Familiarization and Battery Familiarization.

DEFIBRILLATOR TRAINING UNIT

Model Number: MIT-DFB-1

Educational Objectives:

- Studying the operation of defibrillator training unit.
- The power supply 1.
- The power supply 2.
- Familiarization The battery, The defibrillator on-off switch, The isolation power supply, The microcontroller, The microprocessor, The sternum, The apex and The thermal printer.



TREAD MILL TEST MACHINE TRAINER

Model Number: MIT-TMT-1

Educational Objectives:

- Understand the operation of Tread Mill Test Machine Training Unit.
- Dual working of Acquisition box - Stress ECG & Resting ECG.
- User friendly software with-Editable protocols, Online/PDF printing, RR analysis, PVC detection, online Arrhythmia.
- Block Diagram Tread Mill Test Machine Explanation.
- Fault simulation and Troubleshooting.

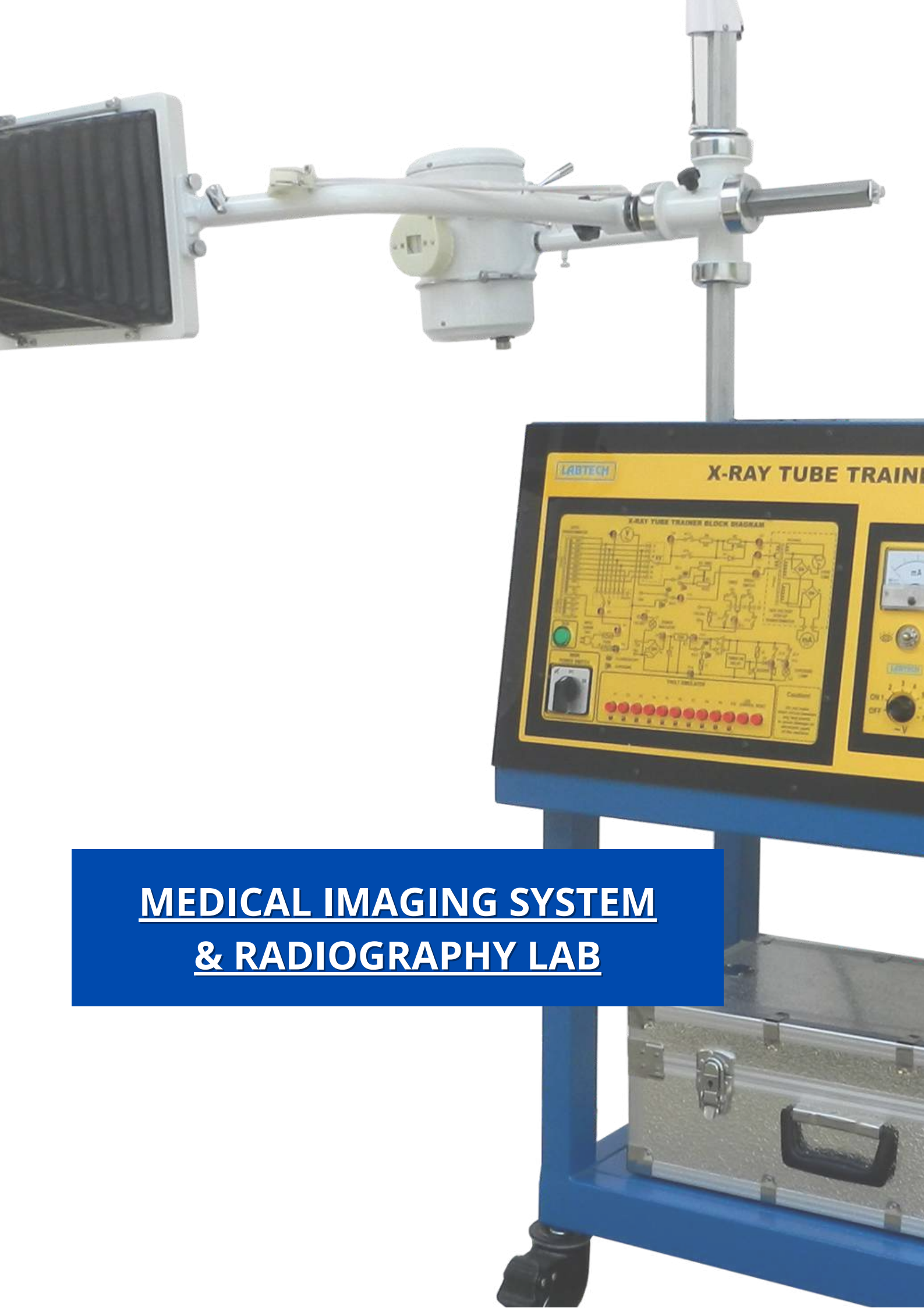


ANGIOGRAPHY TRAINER

Model Number: MIT-ANG-1

Educational Objectives:

- Understanding Angiography Training Unit.
- Block Diagram Angiography Explanation.
- Operating The Angiography Training Unit.
- Fault simulation and Troubleshooting.



MEDICAL IMAGING SYSTEM
& RADIOGRAPHY LAB



FLUOROSCOPY TRAINER

Model Number: MIT-FLS-1

Educational Objectives:

- Understanding Fluoroscopy Training Unit.
- Block Diagram Fluoroscopy Explanation.
- Operating The Fluoroscopy Training Unit.
- Understanding of X-Ray Generator.
- Working Principle Fluoroscopy Training Unit.
- Understand the function all parts of Fluoroscopy Training Unit.
- Processing Solution of Fluoroscopy Training Unit.
- Power Supply.
- Fault Simulation.
- Test Point.

X-RAY TRAINING UNIT

Model Number: MIT-XRT-1

Educational Objectives:

- Background theory.
- Laboratory X-Ray training unit theory & usage.
- Typical laboratory X-Ray training unit blocks & circuits.
- Laboratory X-Ray training unit applications.
- Working Principle and Types of Medical X-Ray Tubes.
- Understand the function all parts of Medical X-Ray Tubes.
- Processing Solution of Medical X-Ray Tubes.
- A Sample Rotating Anode X-Ray.
- Tube Current.
- Power Supply.
- Fault Simulation.
- Test Point.



X-RAY TUBE TRAINER

Model Number: MIT-XRT-4

Educational Objectives:

- Background Theory.
- X-RAY tube Unit theory & usage.
- Typical X-RAY Unit blocks & circuits.
- X-RAY Unit applications.
- Understand the function all parts of X-Ray training unit.
- Processing Solution of X-Ray training unit.
- Fault Simulation.
- Test Point.

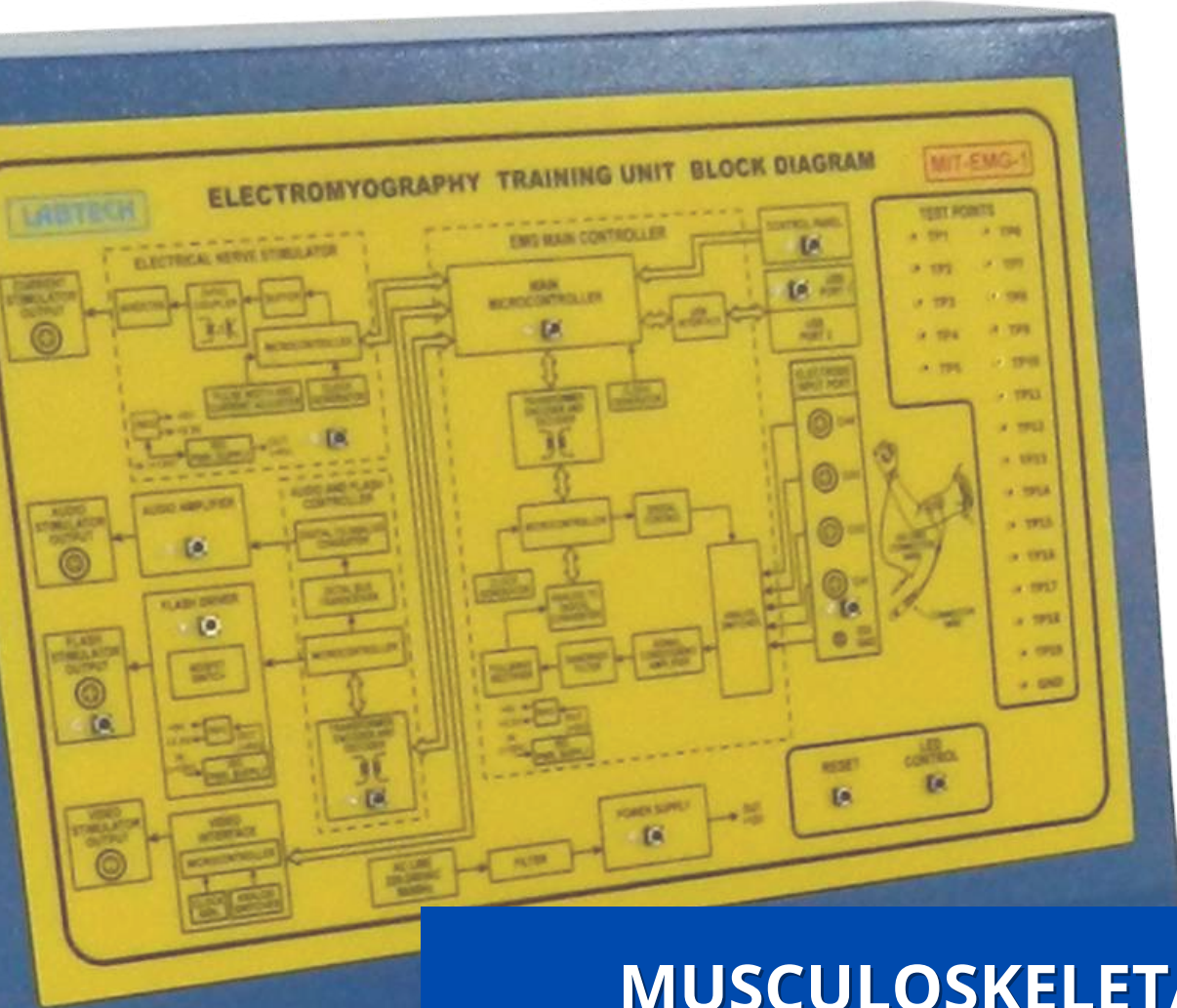
X-RAY MAMMOGRAPHY TRAINER

Model Number: MIT-XRT-3

Educational Objectives:

- Background Theory.
- X-RAY Mammography Unit theory & usage.
- Typical X-RAY Mammography Unit blocks & circuits.
- X-RAY Mammography Unit applications.
- Understand the function all parts of X-RAY Mammography Unit.
- Processing Solution of X-Ray training unit.
- Fault Simulation.
- Test Point.





MUSCULOSKELETAL & NERVOUS SYSTEM DEVICE LAB



ELECTROENCEPHALOGRAPH TRAINING UNIT (EEG)

Model Number: MIT-EEG-1

Educational Objectives:

- Part Identification Of Electroencephalography Training Unit.
- Installing EEG Software.
- Block Diagram Explanation.
- Study The Operation Of EEG Training Unit.
- Low Pass Filter Familiarization.
- Signal Conditioning Familiarization.
- LPF and Buffer Familiarization.
- Analog Multiplex Familiarization.
- Microcontroller Familiarization.
- USB to Serial Converter Familiarization.
- Isolation DCD to DC Converter Familiarization.
- Driver Lamp Familiarization.
- Power Supply Familiarization.



ELECTROMYOGRAPHY TRAINING UNIT (EMG)

Model Number: MIT-EMG-1

Educational Objectives:

- Familiarization EMG Training Unit in normal condition.
- Electrical Signal Measurement on EMG Test Points.
- Troubleshooting of Power Supply.
- Troubleshooting of Flash Stimulator Output.
- Troubleshooting of Audio Amplifier.
- Troubleshooting of Flash Driver.
- Familiarization EMG Training Unit in normal condition.
- Electrical Signal Measurement on EMG Test Points.
- Troubleshooting of Power Supply.
- Troubleshooting of Flash Stimulator Output.
- Troubleshooting of Audio Amplifier.
- Troubleshooting of Flash Driver.

POLYSOMNOGRAPH TRAINER

Model Number: MIT-PSM-1

Educational Objectives:

- Understanding Polysomnograph Training Unit
- Operating The Polysomnograph Training Unit
- Understand the function of Polysomnograph Training Unit.
- Block Diagram of Polysomnograph Training Unit.
- Safe and flexible operation.
- Channels: 22 channels
- Wireless real-time monitoring and data card storage monitoring.
- Energy saving, built-in battery.
- Pressure sensor and EEG sensor.
- Real-Time Image Display.
- Fault simulation and Troubleshooting.



MEASUREMENT DEVICE LAB



FLAME PHOTO METER

Model Number: MIT-FPM-1

Educational Objectives:

- Understanding Flame Photo Meter
- Block Diagram Flame Photo Meter Explanation
- Operating Flame Photo Meter Training Unit



DISSOLVED OXYGEN METER TRAINER

Model Number: MIT-DOM-1

Educational Objectives:

- Understanding Dissolved Oxygen Meter Unit
- Block Diagram Dissolved Oxygen Meter Explanation
- Operating Dissolved Oxygen Meter Training Unit

REFRACTOMETER

Model Number: MIT-RFM-1

Educational Objectives:

- Understanding Refractometer
- Block Diagram Refractometer Explanation
- Operating Refractometer Training Unit



Blending Virtual Learning with the Practical World

Labtech has two main Digital learning Systems which are available for use in the classroom and workshop. Both are designed to enhance the students learning experience and keep track of their progress and assessments. They can be used to extend the learning space into virtual learning for either the Labtech training systems or even generic subject content.

1. Computer Aided Instructional Modules (CAI) Labtech Training Systems - CAI modules are available for all major Automotive training systems. They present all the elements of the student manuals into a media rich e-learning format which incorporates many color photos, illustrations, videos and simulations. The student is led through the courseware on the training system, is given assessments of the theory then proceeds onto the experiments which detail the steps often including videos showing key procedures being performed. It also facilitates the student to enter in his results for review by the teacher. The CAI offers a comprehensive step-by-step program to guide the student through the use of the training system.

2. Flexible Micro Learning Modules to match all curriculums - Labtech's digital micro learning modules are designed as generic topical learning elements which are modular so as to integrate with most school or national curriculums. Each module deals with a distinct single learning topic which is common to most curriculums and provides enhanced learning materials for the student to explore and learn about these topics. They are provided in such a way that they can be used as supplemental learning materials to enhance the learning process or they can be incorporated into the main classroom activities. The content is organized in a systematic way and is easily accessed by the teacher and the students. Each module can be utilized according to the presentation schedule of the teacher so the materials are available when and where they need them.

Contents of the Modules: The modules contain realistic graphic animations and simulations of the topic selected for study. They also have information about the associated theory and science of about the topic, construction of the component, identification exercise for constituent components, illustrations of the operational processes, examples of real industry parts and videos of real systems. An assessment quiz is included which challenges the student about what he has learned. The assessment can guide the student to reflect further on parts of the topic which he may not have mastered. Students can work at their own pace and complete each module in about 20 to 45 minutes.

Subjects Listing:

Packages are available for Basic Automotive, Advanced Automotive, Basic Electronics, Basic Electrical, Electrical Motors, Basic Refrigeration and Air Conditioning, Computer Technology, Network Technology, Basic Mechanical Mechanisms, Renewable Energy (Green Tech) and Biomedical.

Classroom Deployment:

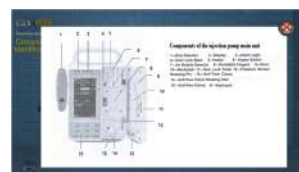
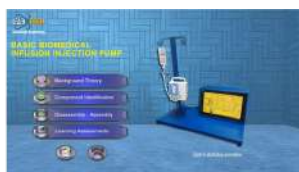
Networked PC Multimedia Lab: It is deployed on a classroom or school server and can be accessed by any PC. The modules are able to be accessed with the Labtech LMS system. The Labtech LMS is designed especially for Vocational and Technical Schools. The LMS content is displayed in a browser and the students and the teachers can log in. Licenses are provided for the whole school for access for the learning materials. The system also works best when the Classroom 21 CMS system is used which helps the teacher to monitor the students and to interact with them during learning.

Tablet Cart Deployment: The system is able to be deployed in a classroom cart configuration. This is a mobile tablet cart equipped with either 20 or 40 Android or Windows tablets, a server, a teacher laptop, the LMS, the CMS and with the software preloaded onto the system. This can solution can turn any classroom into a e-learning or blended learning environment.

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Labtech Training Systems are used in over 75 countries world wide and indicated in blue on this map.
We also have 6 regional operational locations marked with a flag .

Labtech Product Areas :

- Air Conditioning and Refrigeration Technology
- Automotive and Transportation Technology
- Biomedical Technology
- Computer & Networks Technology
- Digital TVET Content for Virtual Learning
- Electrical Technology
- Electronics Technology
- Learning Management Systems / Classroom21 CMS
- Renewable Energy and Green Tech
- TVET Learning Management System

Labtech has obtained major Quality Certifications from TÜV Rheinland, Germany:
ISO 9001:2015 Quality Management System



Management System
ISO 9001:2015
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9001 Certification Categories: Research, Assessment, Design and Development of Educational Training Systems, Programs and Products. Manufacturing of Educational Training Systems and Products to International Standards which includes the processes of: Production, Manufacturing Resource Planning (MRP), Quality Control and Assurance (QC/QA), International Sales & Marketing, Project Implementation and Consulting Services, Training Programs and Customer Services.

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