

Human Physiology / Biomedical Electronics Lab Proposal

UTD Biomedical
Engineering Network
Group

www.biomedutd.com

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Typical ICU & Vitals (BioSignal) Monitoring



- EXPENSIVE
- PROPRIETARY
- BULKY
- NON-SCALABLE
- LIMITED ANALYSIS
- INTERNALIZED

The Vernier LabQuest Interface



- 100,000 samples per second
- 4 Analog 2 Digital Ports
- 40 MB onboard storage
- 12 Bit Resolution
- 416 MHz Processor
- Touchscreen
- LED Backlight
- Rechargeable Li-Ion Battery
- USB Ports
- Portable

Variety of Human Physiology Sensors

Blood Pressure

Spirometer

Heart Rate

EKG

Temperature

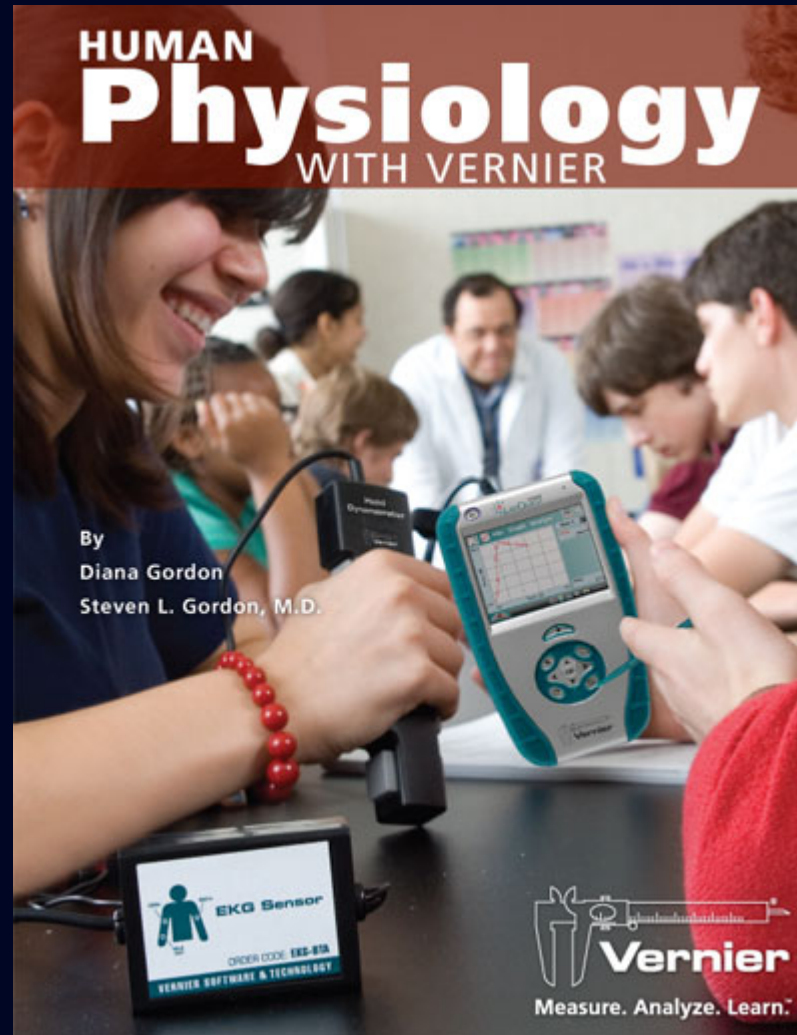


Oxygen & CO2 Sensors

Respiration Rate

Hand Dynamometer

24 Human Physiology Experiments



Hardware & Software Expandability

- Plug & Play Analog / Digital Sensors
- Additional custom sensors can be added through LabDaq by National Instruments
- Instrumentation Amplifier Available
- Labview Compatible
- Additional Analysis Software (Inspire & Fathom)

Benefits & Objectives of UTD Human Physiology Lab

- Core lab designed around bio-signal monitoring to encourage interaction and education of students in the Biomedical Engineering field.
- Scalable, expandable and adaptable to a variety of experiments.
- Senior Design Projects
- Complement to MSEE Biomedical Concentration Courses
- Create greater health awareness among the student population

Budget Outline

Vernier Physiology Lab Core	\$ 3135
Lab Supplies	\$ 3120
DMM, Scope, Sig Generator	\$ 5000 +
PC (if new)	<u>\$ 1500</u>
TOTAL	\$ 12755 +

Resources Required

- Lab Location
- Vernier Interface & Sensor Package
- Mid Grade PC with Logger Pro 3 Software – preferably with multiple monitors and a projector option
- Subject Recliner & Mobile Test Cart
- Various Supplies for Logging & Sanitation

Future Expansion Examples

- EEG Sensor
- Pulse Oximetry (Blood Oxygen Level)
- Non-Invasive Medical Imaging (Ultrasound)
- Wireless Monitoring of Data
- Biofeedback Activation of Environment

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