

# iWorx TA (Teaching Assistant) Kits

SETTING THE STANDARD FOR EASE OF USE

- Human Physiology
- Animal Physiology
- Exercise Physiology
- Psychological Physiology
- General Biology
- Neurobiology

In keeping with our ongoing commitment to delivering the highest quality teaching experience, we embarked upon a process to make all aspects of the teaching lab as easy as possible. This process involved obtaining input from lab instructors and applying this input to the critical evaluation of all aspects of the teaching lab, from equipment setup through data collection and analysis. This process combined with 25 years of iWorx experience led to the development of the new iWorx TA, a revolutionary lab teaching solution.

## Simplified Set-up

We simplified lab set-up by incorporating several sensors, that are typically standalone, within the new TA Control Module. This greatly simplifies setup, reduces confusion and the possibility that components are lost or misplaced. Enclosing the sensors also makes them more stable, resulting in quieter signals and better results.



**iWorx Systems, Inc.**

[www.iworx.com](http://www.iworx.com)



## Streamlined Calibration

We incorporated the most advanced microcontroller technology that made automated, pre-calibration of many sensors possible, including the spirometer, grip force sensor, blood pressure sensor, and temperature sensor. We even included an on-board barometric pressure sensor to ensure the highest accuracy for your spirometry labs.

## Flexibility for the Future

At the same time, we kept an eye towards the future. To protect your investment going forward, iWorx developed a new proprietary interface, called iWire™, which allows the TA Control Module to interface with iWire-compatible digital sensors and simultaneously record from multiple sensors via a single iWire connection. As new labs are developed, simply plug in the new iWire-compatible sensors into the iWire ports and start recording. It's that easy.

## Student Friendly Courseware

Our lab manuals were revamped to simplify setup, without compromising the science. We simplified data analysis and report generation with the use of built-in functions and a Journal that students can use to write their report, without having to launch another program.

## All Inclusive Kits

The all-in-one TA kits are complemented by easy-to-use LabScribe software that is synced with more than 350 professionally developed lab exercises. iWorx TA teaching kits deliver a fun, hands-on lab learning experience that will keep your students engaged and you focused on teaching, rather than struggling with difficult to learn and confusing hardware and software.

# iWorx TA Control Module with LabScribe Software



## The Heart of the TA Teaching Kits

iWorx TA Control Module is the heart of iWorx TA teaching kits and is designed to remove many of the tedious set-up and calibration routines typically required to perform a lab. It's like having your own Teaching Assistant to set up the equipment for you. With iWorx TA, students simply plug in the iWire-compatible sensors and start recording and analyzing data. No other lab system is that simple. Here's why:

- **Easy-to-Use** – blood pressure, spirometer, and temperature sensors are pre-calibrated and plug and play operable.
- **Built-in Sensors** – built-in spirometer, blood pressure sensor, grip force sensor, temperature sensor and pressure sensor
- **Versatile** – record multiple signals simultaneously (i.e. heart rate, respiration and pulse oximetry)
- **Built-in Stimulator** – built-in, software controlled low and high voltage stimulators for both human and animal experiments
- **Reproducible Results** – consistent performance from lab to lab
- **Non-obsolence** – iWire digital design accommodates future lab technologies with plug and play ease

## Is Your Teaching System iWire Compatible?

Every now and then something extraordinary comes along that dramatically improves the way we do things - that's what iWire technology is doing for the physiology teaching lab. With iWire, no other teaching system is as easy, versatile and expandable than iWorx TA teaching kits.

iWire  
Icon

**Be sure your next teaching system is iWire compatible!**

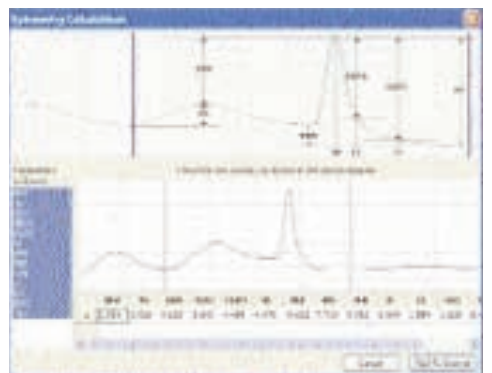
## LabScribe Software Makes Even Sophisticated Experiments “Click and Play” Easy

LabScribe software strikes an ideal balance between flexibility and simplicity. All lab parameters are pre-set in settings files.

For added convenience, professional-looking LabScribe reports can be prepared and edited, all within the program's own Journal. If desired, the pictures and text in the Journal can be easily exported to other programs.



*LabScribe is a comprehensive, data recording and analysis solution developed especially for ease-of-use in the classroom.*



*LabScribe's Analysis window lets you zoom in on specific areas of the recording and perform calculations on selected pieces of the data.*

# iWorx TA Courseware

## iWorx Courseware Developed by Educational Professionals

The iWorx TA teaching solution starts with dynamic, interactive courseware, developed and fine-tuned by university teaching professionals. The Web-ready course materials include more than 100 lab experiments and 350 learning exercises. You can easily put them on your own course home page, and customize the content to suit your own teaching requirements. Course materials are provided as .pdf and HTML files.

### Human Physiology Experiments

- Human Circulation
- Human Exercise
- Human Heart
- Human Muscle
- Human Nerve
- Human Psychophysiology
- Human Kidney

### Animal Physiology Experiments

- Animal Fluid Balance
- Animal Metabolism
- Animal Muscle
- Animal Nerve

### Exercise Physiology Experiments

- Resting, Active, and Exercising Metabolic Rates
- Respiratory Exchange Ratio (RER)
- Resting metabolic Rate (RMR)
- Exercise, Blood Pressure, and Oxygen Saturation Levels
- Recovery from Exercise
- Metabolic and Thermal Response to Exercise

### General Biology Experiments

- Ecological Balance
- Acid Rain
- Biological Buffers
- Membrane Permeability
- Water Quality

### Psychological Physiology

- EEG
- GSR
- Skin Temperature
- Reflexes/Reaction Times
- Oculomotor Activities
- Breathing Techniques
- ECG and Blood Pressure

### Neurobiology Experiments

- LabScribe Tutorial – Neurobiology
- Compound Action Potential
- Neuromuscular Studies
- Membrane Potentials
- Nerve Action Potentials and Synaptic Potentials
- Physiological Identification of Neurons
- Morphological Identification of Neurons
- Crustacean Stretch Receptors

### Foundations of Human Physiology Experiments

13 exercises designed for use in non-majors Human Biology or Anatomy & Physiology courses. Lab exercises have been designed for completion within a shorter time period.

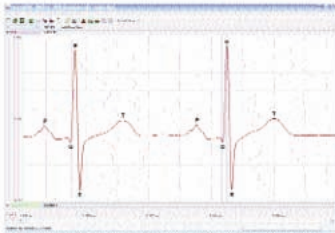
### Marieb Lab Activities

8 exercises designed for courses using Elaine Marieb's Human Anatomy & Physiology Laboratory Manual.

### Experiment HH-1: The Electrocardiogram and Peripheral Circulation

**Background**

The cardiac cycle involves the sequential contractions of the atria and the ventricles which are triggered by action potentials in the myocardial cells. The combined electrical activity of the myocardial cells produces electrical currents that spread through the body fluids. These currents are large and detectable by recording through electrodes placed on the skin. The regular pattern of signals produced by the heart is called the electrocardiogram or ECG (Figure HH-1-1 on page HH-1-1).



**Equipment Required**

- PC Computer
- iWX/214 data acquisition unit
- USB cable
- iWX/214 power supply
- C-AAMI-504 ECG cable and electrodes
- PT-104 Pulse plethysmograph
- Stethoscope
- Alcohol swabs
- Disposable ECG electrodes
- Ice, cold and hot water, plastic

**iWX/214 Setup**

- 1 Place the iWX/214 on the bench.
- 2 Check Figure 1-1-1 in the Tutorial for the location of the USB port and the power socket.
- 3 Check Figure T-1-2 in the Tutorial for the location of the iWX/214 power supply.
- 4 Use the USB cable to connect the iWX/214 to the PC.
- 5 Plug the power supply for the iWX/214 into the labeled socket on the rear panel of the iWX/214. Turn the power switch to turn on the unit.

**Start the Software**

- 1 Click on the **LabScribe** shortcut icon to open the program. If a shortcut icon is not on the **Windows Start menu**, move the mouse to the **Windows Start menu** and then to the listing for **iWorx**. Click on the **iWorx** submenu. The **LabScribe** program opens.
- 1 On the **Main window**, pull down the

**Figure HH-1-1. ECG recording displayed in the Main window with labels identifying the P, QRS, and T waves.**

The components of the ECG (Figure HH-1-1 on page HH-1-1) are correlated to electrical activity in the atria and ventricles such that:

- Atrial depolarization produces the P wave.
- Atrial repolarization and ventricular depolarization produce the QRS complex.

# iWorx TA Teaching Kits

## iWorx TA Preconfigured Teaching Kits

iWorx TA teaching kits contain all the necessary hardware and components, LabScribe software, and expertly written courseware to teach hundreds of lab exercises.

### HK-TA Advanced Human Physiology Teaching Kit

59 experiments and more than 175 exercises in cardiovascular, respiratory, and neuromuscular physiology.

The kit includes:

- TA Control Module with LabScribe Software
- Isolated (human safe) ECG and EMG Recording Module
- Non-Invasive Blood Pressure Sensor
- Heart Sounds Sensor
- Spirometer
- Grip Force Sensor
- Pulse Probe
- Event Marker
- Temperature Sensor
- 100 Pre-Gelled Ag/AgCl Electrodes
- Courseware and Cables

### AHK-TA Combination Animal/Human Physiology Teaching Kit

80 experiments and more than 250 exercises in animal fluid balance, animal metabolism, animal muscle and animal nerve physiology, as well as all of the human physiology labs.

The kit includes:

- TA Control Module with LabScribe Software
- Isolated (human safe) ECG and EMG Recording Module
- Non-Invasive Blood Pressure Sensor
- Heart Sounds Sensor
- Spirometer
- Grip Force Sensor
- Pulse Probe
- Event Marker
- Temperature Sensor
- Force Transducer
- Nerve Bath Chamber
- Dissolved Oxygen Sensor
- 100 Pre-Gelled Ag/AgCl Electrodes
- Dissection Kit
- Courseware and Cables

## Teach More Labs with Add-On Kits to iWorx Human and Animal Teaching Kits

- **ETS-TA** Add-On Exercise Physiology Teaching Kit
- **PS-TA** Add-on Psychological Physiology Teaching Kit
- **GBA/GBH-TA** Add-On General Biology Teaching Kits
- **NBS-TA** Add-On Neurobiology Physiology Teaching Kit

## Warranty and Upgrades

iWorx Physiology Teaching Kits come with a 3-year warranty\*. Software upgrades are free and can be easily downloaded from the iWorx users area. LabScribe software and courseware may be freely distributed to students.

*\*one year warranty on gas analyzers.*

## Contact Us for a Quote

Ask for a quote on any one of our TA teaching kits 800/234/1757 or sales@iworx.com.

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