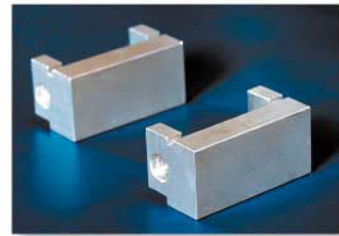


The Crash Tester features a "crash test" vehicle that is equipped with an on-board, high-g accelerometer to accurately measure the force of each impact. The vehicle's removable front end and interchangeable impact wall allows student researchers to design and test the impact absorbing characteristics of a variety of bumper materials and "fixed" guard rail systems.



#### Data Acquisition System

- A single axis high-g accelerometer measures and graphs acceleration forces during the impact.
- Speed is calculated before and after impact to determine impact forces.
- Data is streamed in real-time via RF telemetry for instant display.
- Computer software displays relevant data in a student friendly format for quick student analysis.

#### Crash Test Vehicle and Track

- Smooth, low friction track provides low loss to system
- Impact barrier with replaceable PVC plate can be adjusted for different crash conditions
- Modular front bumper system can be easily replaced to test the impact absorbing characteristics of a variety of materials. Four different bumpers supplied.
- Durable, high quality test vehicle and barrier are both designed for years of classroom/laboratory use.

#### Curriculum Features

- Comprehensive Classroom Instruction Modules that incorporate worksheets, mathematical modeling, desktop and "hands-on" experiments.

## Crash Tester (Impulse Momentum)



*GDJ's Crash Tester features a computer-based, data acquisition system that allows students to conduct many of the same impulse momentum experiments that highway safety experts and automotive design engineers do when developing safety systems for the nation's automobiles, roads, and highways.*

#### Other Classroom Aids from GDJ, Inc.

Flotek Wind Tunnel  
Engine Dynamometers  
Vehicle Dynamics  
Trainers

*For full details on this and other GDJ Products see us at [www.gdjinc.com](http://www.gdjinc.com)*

## Roller Coaster Specifications

#### I. Model Roller Coaster Track

- Steel tubing tig-welded together to provide a rigid structure for track and car.
- Modular track design for easy "in-class" layout changes and testing.
- Track base dimensions: 140" in length by 30" in width
- Total track length: 370"
- Standard Track sections include:
  - a) One (1) 35" hill
  - b) One (1) loop
  - c) One (1) whoop (has same radius as loop only inside-out)
  - d) Two (2) 55° bank turns.
- 28 steel tube supports mounted on a 36" by 30", 0.5" PVC plates.
- Ten (10) trackside markers "flags" to collect data from exact locations on the track and a "lap marker" to start/reset data collection for each lap.

#### II. Roller Coaster Car

- Axles on the car can either rotate or articulate at the same time.
- Each corner of the car has two upper and one lower wheel for a total of 12 wheels per car.
- Each wheel is made from machined nylon and contains two (2) precision roller bearings to minimize rolling resistance.

#### III. Data Acquisition System

- 3-component accelerometer and wheel speed sensor mounted directly on the coaster car.
- 100 Hz sampling rate for accurate, repeatable data.
- Streams real-time data via RF telemetry system to computer software.
- Displays data from trackside markers for easy student review.
- Logs complete run for advanced post-analysis.

#### IV. Software

- Written in LabVIEW™ executable running on the PC reads serial data from the rf receiver.

**are you reddy to get serious?**  
**about teaching Physics & Engineering**  
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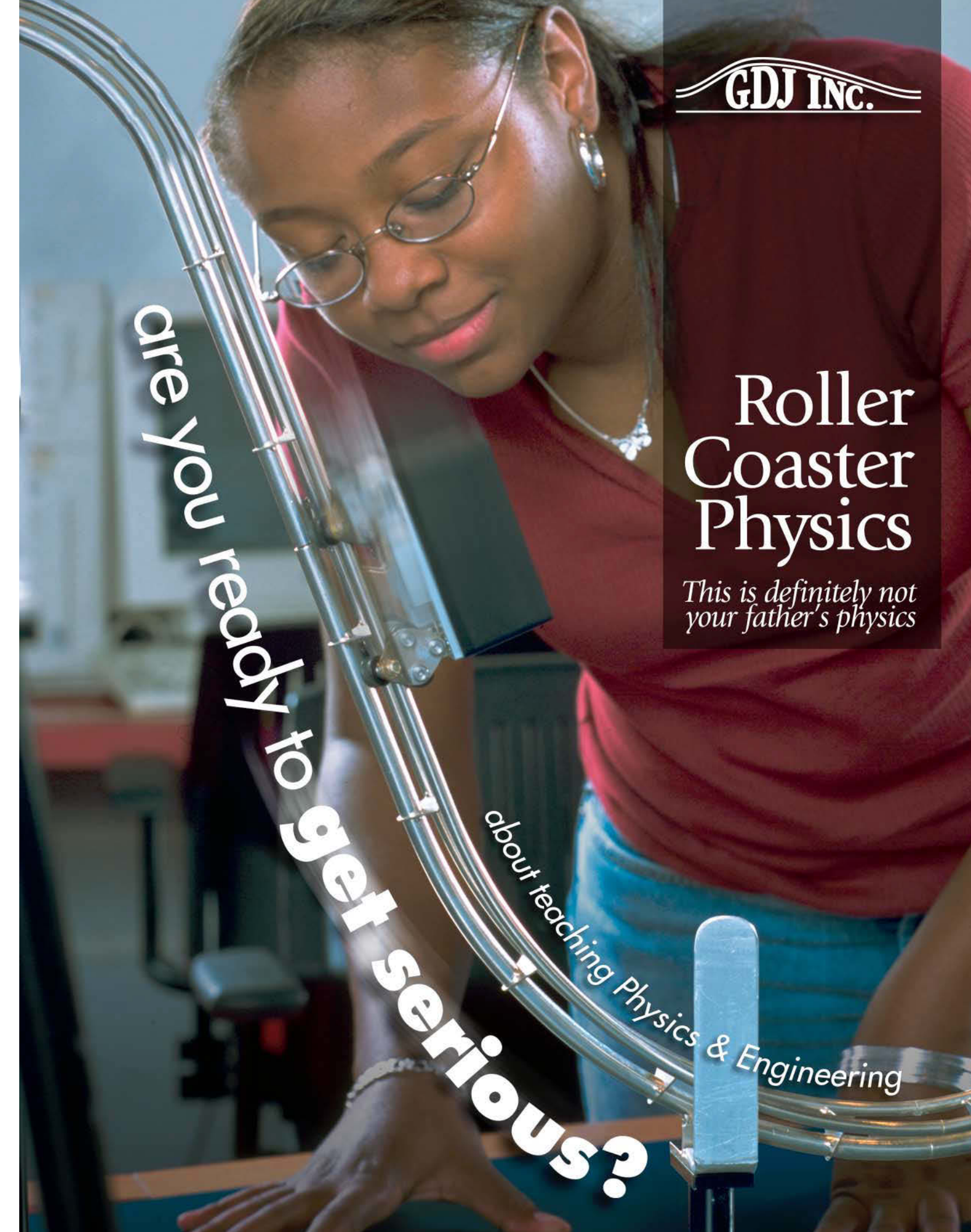
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**GDJ INC.**

## Roller Coaster Physics

*This is definitely not your father's physics*



*GDJ is ready, with a new, innovative teaching tool that will capture your student's imagination and make learning difficult physics, engineering, and mathematics concepts both fun and challenging.*

**Serious Data for Real World Applications**

GDJ's new Physics Roller Coaster is designed to accurately utilize both the physics and engineering behind some of the nation's most popular amusement park rides.

More than a simple child's toy, this is a working roller coaster. Built to last and designed to produce repeatable, quantitative data. The roller coaster features a 3-component accelerometer and wheel speed sensor mounted directly to the coaster car. Data is streamed in "real time" to a computer using an RF transmitter. The LabVIEW™ software package provides students an appealing and accurate representation of the various forces acting on the coaster car at any given moment. The captured data will allow students to accurately measure and investigate the vectoring forces, g-loads, and the acceleration of the coaster car as it travels around the track.



GDJ's new Physics Roller Coaster let your students move beyond demonstration, to true application.

The Physics Roller Coaster provides your students with access to the same professional level, hardware, software, and data acquisition systems, and procedures used throughout the industry. The Physics Roller Coaster gives your students the kinds of real-world experiences that will be useful far beyond the classroom.



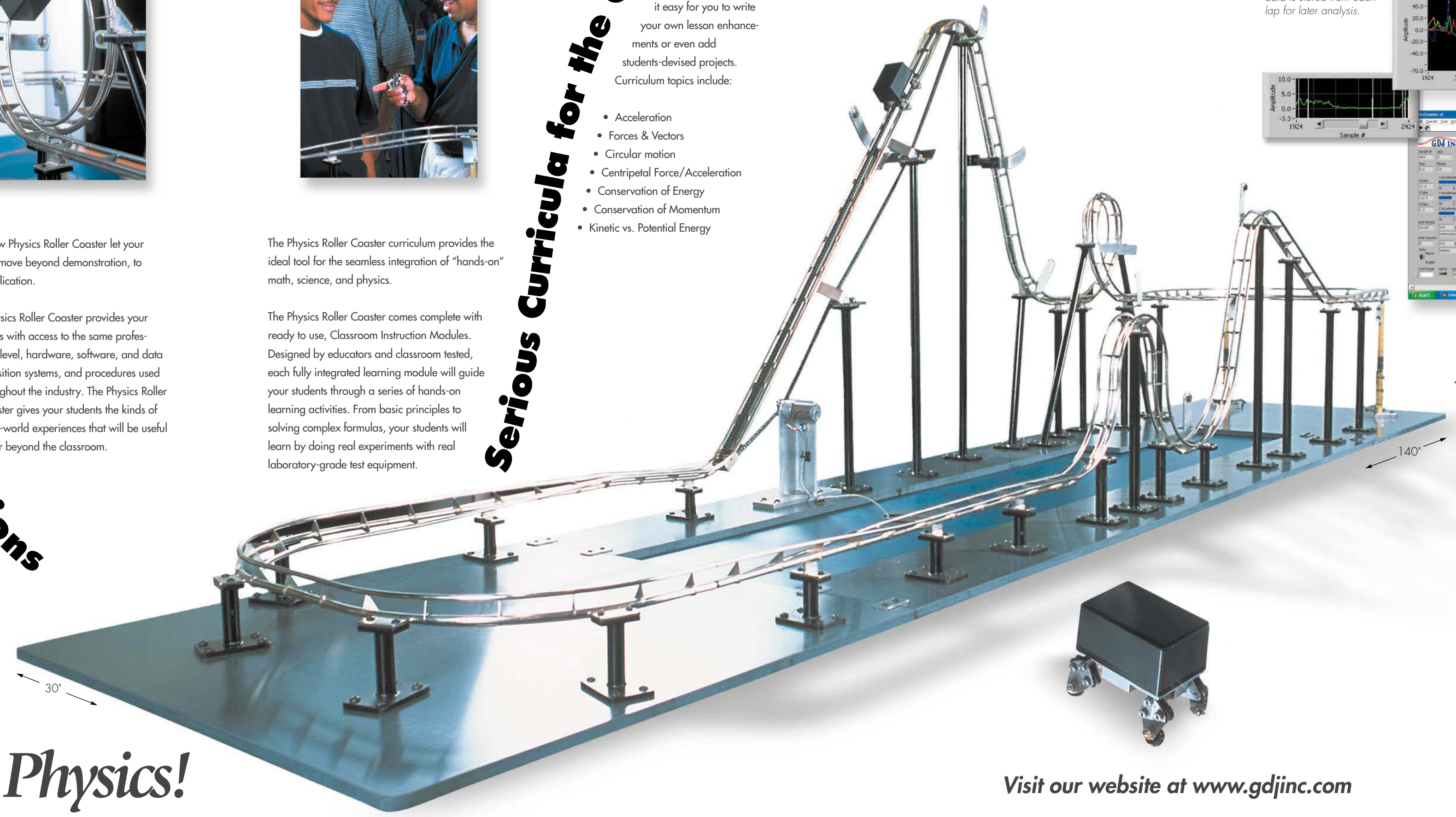
The Physics Roller Coaster curriculum provides the ideal tool for the seamless integration of "hands-on" math, science, and physics.

The Physics Roller Coaster comes complete with ready to use, Classroom Instruction Modules. Designed by educators and classroom tested, each fully integrated learning module will guide your students through a series of hands-on learning activities. From basic principles to solving complex formulas, your students will learn by doing real experiments with real laboratory-grade test equipment.

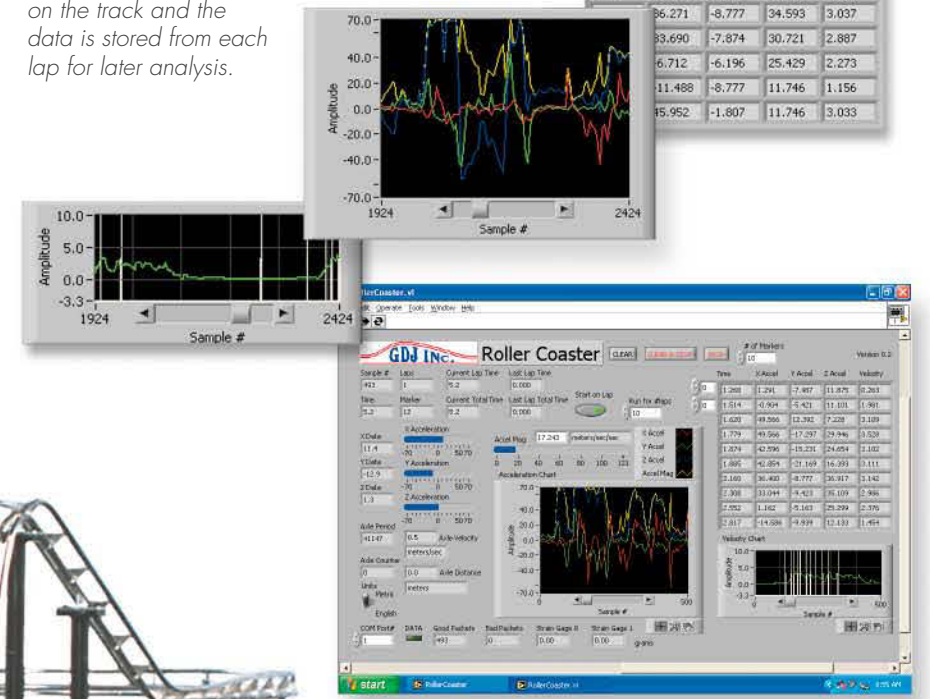
**Serious Curricula for the Classroom**

In fact, the versatility of the equipment makes it easy for you to write your own lesson enhancements or even add students-devised projects. Curriculum topics include:

- Acceleration
- Forces & Vectors
- Circular motion
- Centripetal Force/Acceleration
- Conservation of Energy
- Conservation of Momentum
- Kinetic vs. Potential Energy



Data screens use the flexibility and power of National Instruments LabVIEW software to display sophisticated data in an easy to read and understand format. Graphs display real time forces and speeds as the car runs on the track and the data is stored from each lap for later analysis.



**Roller Coaster Physics!**

Visit our website at [www.gdjinc.com](http://www.gdjinc.com)

*GDJ, we're serious about learning!*