



A Comprehensive, Self-Contained System for Understanding the Vital Link in Power Transmission

TII's instructor-developed curriculum is flexible and features 25 to 30 hours of instruction in mechanical devices, applications and principles. The modular format allows self-teach/self-paced or group instruction. The Physical Properties section combines science and technology as in programs like the Principles of Technology.

Each lesson includes an experiment that requires students to construct and operate a simple machine or device for transmission of power, followed by a quiz to reinforce concepts and measure competency.

Among the 30 mechanical components are a variety of gears, pulleys and assemblies. In the Application Laboratories section of the manual, students use the components to design their own solutions to meet common problems that occur in industrial and everyday situations. Students will understand and visualize the basic elements found in simple to complex machines.

The Principles of Mechanisms learning system is one building block in the TII Fundamentals of Technology system. Other modules address the principles of pneumatics, hydraulics, robotics, sensors, programmable controllers, computer interfacing and systems integration. All systems feature:

- Instructor and student versions of the curriculum; the instructor guide includes lesson preparation and presentation suggestions
- Easy-to-read curriculum with three levels of instruction: introduction to components, industrial applications and physical properties
- Student mountable components that maximize comprehension and manual dexterity
- Impact-resistant, lockable and portable case for use in different classrooms or buildings
- Clearly labeled storage panel for component identification and inventory
- Removable panels for mounting the system on a table or in a carrel to meet space requirements

SPECIFICATIONS

The entire learning system is enclosed in a portable and lockable impact-resistant polyethylene storage case. It consists of an experiment station, a component kit and a set of courseware that includes a student activity manual and an instructor's reference guide.

Experiment Station

The steel reinforced interior lower panel provides a flexible set-up apparatus and acceleration track assembly that facilitate the mounting of all mechanical components and assemblies for experiments. Construction is of anodized aluminum, and all connections are made with thumb screws so that no tools are necessary for use. The entire experiment station can easily be removed from the case for table-top use.

Component Kit

The kit includes 40 mechanical components and instruments to provide a solid understanding of mechanical power transmission methods and their use in the real world. All components are student mountable for versatility in building circuits and designing applications, as well as for promoting dexterity in the manipulation of mechanical devices. The component storage panel is color coded, clearly labeled and silhouetted for component identification and inventory. The components are securely mounted but can be released quickly, and the panel is removable for wall mount or table-top use.

CURRICULUM

The Principles of Mechanisms curriculum was designed and reviewed by a panel of experienced high school and community college teachers. Courseware includes an instructor's reference guide and a student manual with 27 units of activities and instructional support. The 8 to 10 hours of introductory instruction are ideally suited for exploratory Technology Education programs. Each of the three necessary levels of instruction includes background study of the topic, observational and hands-on experiments, application exercises, and mathematical formulas for proving results. Students will also develop skills in problem solving, data management, mechanical concepts and unit conversion.

A 10 activity modular format is also available.

Introduction to Mechanical Components

Trainer Familiarization
Introduction to Mechanical Systems
First Class Levers Second
Class Levers Third Class
Levers Inclined Planes Screws
Wheels and Axles
Pulleys
Gears

Application Laboratories

Gear Trains
Chain and Sprocket Drives Stepped
Pulleys and Belts Block and Tackle
Systems Cams
Linkages

Physical Properties*

Force in Mechanisms Work in
Mechanisms Power in
Mechanisms Mechanical
Advantage Friction
Kinetic and Potential Energy Drive
Train Speed Ratios Designing Cams
Linkage Motion
Glossary
Appendix

** The Physical Properties section of the curriculum has been designed to correlate to the objectives in Principles of Technology by the Center for Occupational Research and Development.*

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