

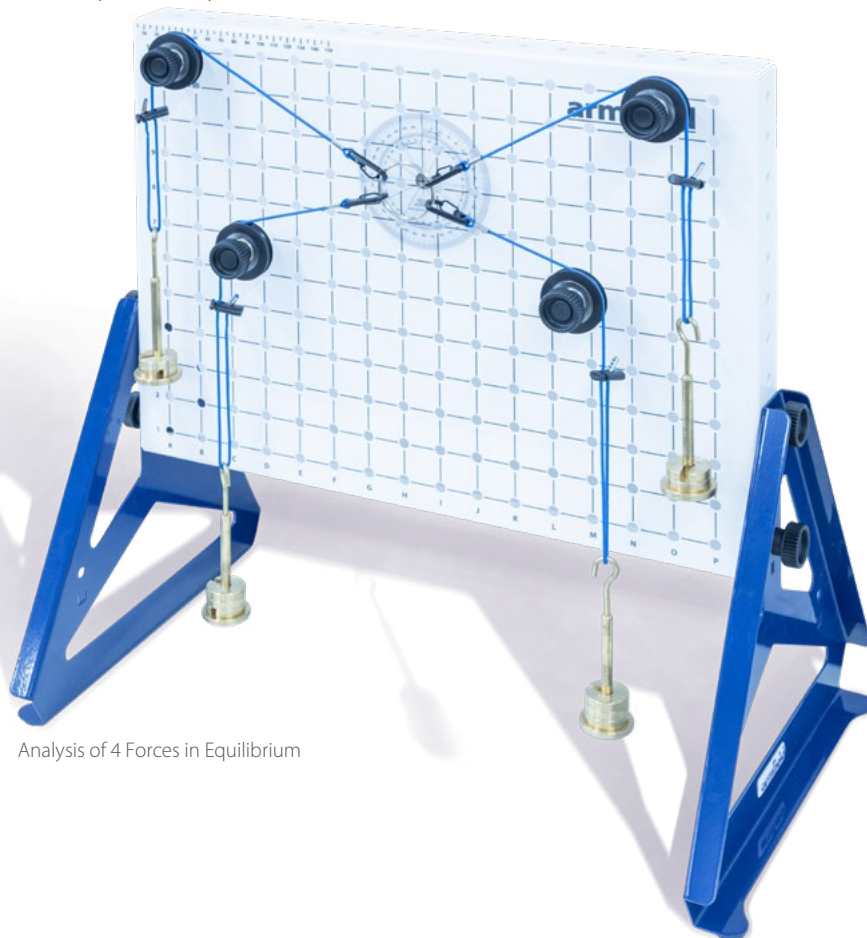
The Engineering Fundamentals range is designed to enable students to gain an understanding of the fundamentals of engineering by the process of learning via hands-on experimentation.

The modular hands-on tray based system is supplied in conjunction with a multifunctional Base Unit enabling the student to conduct their own experiments in subjects such as Statics, Dynamics, Mechanisms and Kinematics. Each kit is supplied with a highly visual user friendly operational guide, enabling the student to understand the theory of the subject by the application of practical experimentation.

**AN INNOVATIVE HANDS ON MODULAR SYSTEM DESIGNED TO ENABLE INVESTIGATION AND THE UNDERSTANDING OF ENGINEERING PRINCIPLES**

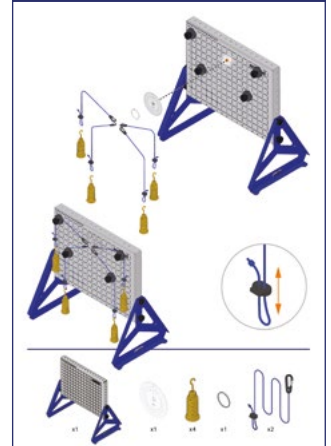
### Description

The EF-1.1 Forces experiment kit enables students to understand the centre of gravity of different shapes and analysis of forces in equilibrium for concurrent and non-concurrent force.



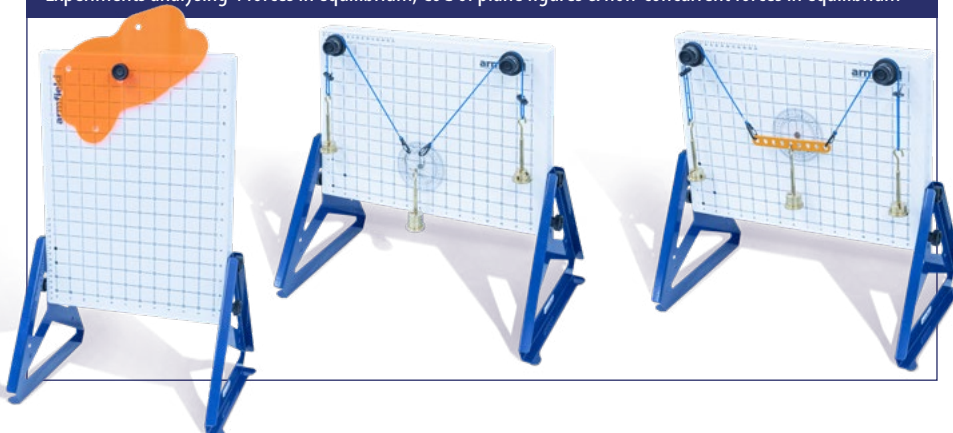
Analysis of 4 Forces in Equilibrium

### Easy to follow instructions



1 tray supplied with EF-1.1

### Experiments analysing 4 forces in equilibrium, CoG of plane figures & non-concurrent forces in equilibrium



### High quality materials



## Features / benefits

### Features

- ▶ Neatly presented in an easily identifiable and durable storage tray
- ▶ Trays have clear lids making it easy to see their contents
- ▶ Pictorial tray contents list to identify missing components easily
- ▶ Accompanied by a detailed manual with various practical exercises
- ▶ Clear and concise assembly instructions for each experiment
- ▶ Multiple experiments per kit
- ▶ Toolless assembly

### Benefits

- ▶ Hands-on understanding from lessons
- ▶ Improve the student's dexterity by self-assembly with the instructions provided

## Requirements

## Scale

EF-BU

Experiment tray scale



EF-BU scale



EF-WS scale



- ▶ EF-BU on which to build the experiment from the tray components
- ▶ Level and stable work surface to mount the EF-BU upon. The optional EF-WS is ideal for this if no suitable desk or bench is available.

## Experimental content

### ▶ Centre of gravity of plane figures

- Parallelogram
- Rectangle
- Semi-circle
- Triangle
- Irregular shape

### ▶ Analysis of 3 forces in equilibrium using

- Force triangles
- Vector addition
- Bow's notation
- Graphical method
- Mathematical solution

### ▶ Analysis of 4 forces in equilibrium using:

- Force triangles
- Vector addition
- Bow's notation
- Graphical method
- Mathematical solution

### ▶ Analysis of non-concurrent forces (Linked polygons)

## Overall dimensions

### Tray

Length	0.430m
Width	0.312m
Height	0.080m

### Packed and crated shipping specifications

Volume	0.02m <sup>3</sup>
Gross weight	5Kg

## Essential accessories / equipment

- ▶ EF-BU Base Unit

## Related products

- ▶ EF-BU Base Unit

### Statics Experiments

- ▶ EF-1.1 Forces
- ▶ EF-1.2 Moments
- ▶ EF-1.3a Beams
- ▶ EF-1.3b Trusses
- ▶ EF-1.4 Springs
- ▶ EF-1.5 Torsion

### Dynamics Experiments

- ▶ EF-2.1 Friction
- ▶ EF-2.2 Simple Harmonic Motion
- ▶ EF-2.3 Rotational Friction
- ▶ EF-2.4 Potential and Kinetic Energy
- ▶ EF-2.5 Centrifugal and Centripetal Force

### Mechanisms Experiments

- ▶ EF-3.1 Cam, Crank and Toggle
- ▶ EF-3.2 Simple Mechanisms
- ▶ EF-3.3 Additional Mechanisms
- ▶ EF-3.4 Bar Linkages

### Kinematics

- ▶ EF-4.1 Pulleys
- ▶ EF-4.2 Gears
- ▶ EF-4.3 Drive Systems

### Strength of Materials

- ▶ EF-5.1 Tensile Tester

### Options

- ▶ EF-WS Workstation

## Ordering specification

- ▶ 4 x 250g Weights set on hanger
- ▶ 4 x Roller
- ▶ 1 x Magnetic protractor assy
- ▶ 5 x Acrylic / perspex fluorescent lava orange colour (translucent)
- ▶ 3mm Irregular shape (142.5mm x 267.7mm)
- ▶ 3mm Triangular shape (149.3mm x 288.5mm)
- ▶ 3mm Rectangular shape (140mm x 240mm)
- ▶ 3mm Semi-circular shape (140mm with r120)
- ▶ 3mm Parallelogram shape (42.5mm x 140mm x 77.2mm)
- ▶ Black Rexel magnetic dry erase marker

## Ordering codes

- ▶ EF-1.1 - Forces
- ▶ EF-BU - Base Unit
- ▶ EF-WS - Workstation (optional)

Armfield standard warranty applies with this product

## Knowledge base

- > 28 years expertise in research & development technology
- > 50 years providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company



**armfield.co.uk**

## Aftercare

Installation  
Commissioning  
Training  
Service and maintenance  
Support: [armfieldassist.com](mailto:armfieldassist.com)