Unsymmetrical Bending and Shear Centre (EDC-UBSC-307)

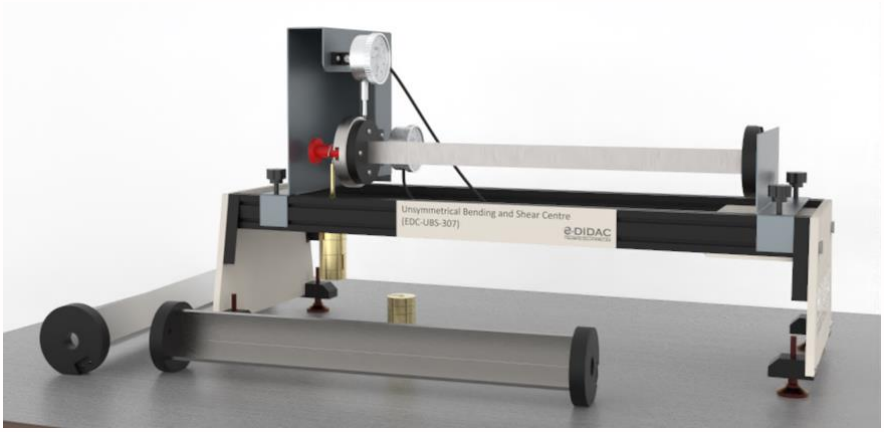
SPECIFICATIONS:

- Fits onto the Structures platform for ergonomic and stable use.
- Two study areas in one product: Shear centre and bending analysis.
- Specimen beams of three different cross-sectional shapes for a wider range of experiments.
- High-resolution deflection indicators for precise measurements.
- Includes Vernier caliper to allow measurement of cross-section
- Users can analyze symmetrical and non-symmetrical bending of three beam shapes:
    - Equal 'L' (Angle section).
    - 'U' (Channel section).
    - Rectangular section.
- USB interface hub for computer-based data acquisition.

DESCRIPTION:

This Shear Centre and Bending Experiment Unit allows users to explore the effects of shear and bending in beams with different cross-sectional shapes. The system includes three test beams (rectangular, equal-angle 'L', and 'U'-shaped channel), enabling a broad range of studies on symmetrical and non-symmetrical bending, deflection, and shear centre analysis. Users can apply various loads and measure resulting deflections using high-resolution indicators, which can be individually displayed or connected to a USB interface hub for digital data collection. The channel ('U') beam allows students to find the shear centre experimentally, demonstrating cases where it lies outside the beam boundaries.

The system is fully integrated with EDAQ software, allowing real-time data acquisition, analysis, and visualization. Users can investigate load-dependent horizontal and vertical deflections, apply Mohr's circle to determine principal axes, and compute the second moment of area for various beam shapes. The package includes three test beams, a plate holding two high-resolution deflection indicators, a clamped-end assembly, a measuring-end assembly, mass hangers, weights, a Vernier caliper, and a storage tray, making it an ideal tool for engineering students and researchers in structural mechanics.



TECHNICAL DATA:

- **Beam Specifications:**
  - Three test beams with different cross-sectional shapes:
    - Rectangular section.
    - Equal-angle ('L') section.
    - Channel ('U') section.
- **Measurement & Load Application:**
  - Two deflection indicators, each with a resolution of 0.01 mm.
  - Clamped-end assembly for secure beam positioning.
  - Measuring-end assembly for accurate deflection measurement.
  - Two mass hangers and a set of 25 x 20 g masses for controlled loading.
- **Software & Data Acquisition:**
  - Compatible with EDAQ software for real-time data logging and analysis.
  - USB interface hub for digital data collection.
- **Learning Objectives:**
  - Show that shear centre can be outside beam section boundaries.
  - Understanding shear centre location in symmetrical and unsymmetrical sections.
  - Studying horizontal and vertical deflections in symmetrical and unsymmetrical sections at different loads and angles.
  - Using Mohr's circle to find principal axes and second moments of area.
- **Accessories Included:**
  - Three test beams (rectangular, equal-angle, and channel section).
  - Plate holding two deflection indicators.
  - Clamped-end and measuring-end assemblies.
  - Two cables.
  - Two mass hangers.
  - Set of 25 x 20 g masses.
  - Vernier caliper for cross-section measurement.
  - Storage tray.
  - Comprehensive user guide.