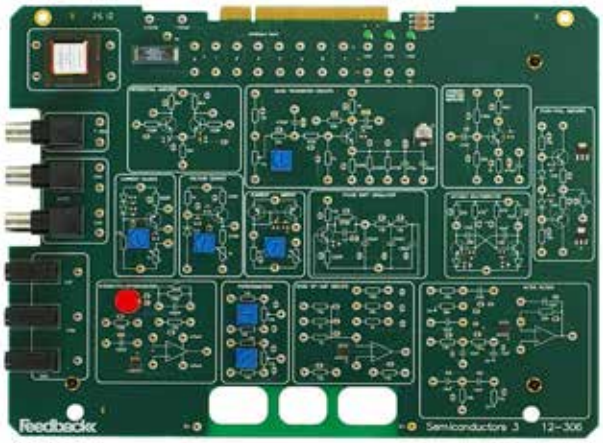
Basic Electronics Series - 12-306 Semiconductors 3

Introduction



With over 50 years of experience in the design, manufacture and supply of high quality educational products, Feedback's 12-300 series of innovative workboards and ESPIAL software set new standards in the teaching of basic electronics.

The 12-306 board features comprehensive courseware on operational amplifiers, active filter s and more advanced transistor applications. Operational amplifiers are introduced so that the student can appreciate the ideal versus non-ideal behaviour and how basic circuits are constructed.

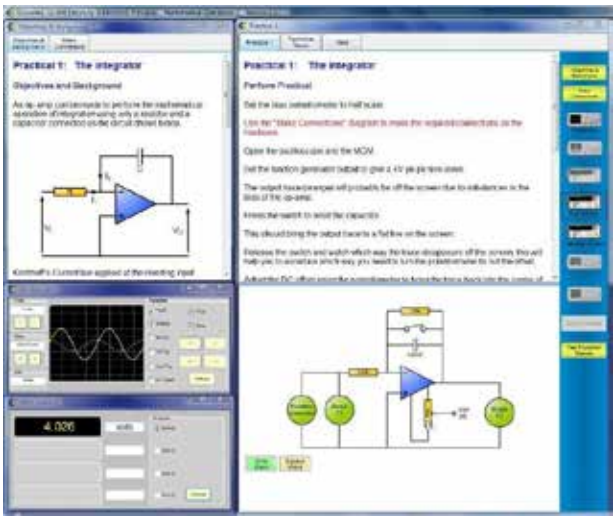
The use of the operational amplifier to perform mat hematical operations and its use as an oscillator are also covered. The on-screen oscilloscope and fu nction generator are used extensively throughout the experiments.

The board enables students to learn by means of han ds-on experimentation using pre-constructed circuit elements that may be connected in different ways to perform a series of assignments.

Teaching material and pc based instrumentation teac h the student the necessary theory in order to complete the practical experiments. On-screen instr uctions guide the student through the set-up of the boards and the use of the on-screen instrumenta tion enables students to observe parameters in real time and to record their results.

Semiconductors 3

The 12-306 semiconductors board enables students to explore how the transistor is used to perform amplification in multiple configurations. The princ iples of biasing, gain and feedback are introduced such that transistor circuits can be designed using parameters to accurately define performance.



Screen showing the Feedback interactive ESPIAL soft ware, enabling the student to learn the principles of the subject and then implement practical experiments using on-scree n instruments.

The most common operational amplifier circuits - such as the inverting amplifier, non-inverting amplifier and voltage follower - are able to be constructed and tested by the student.

A comprehensive introduction to active filters highlight the benefits over passive filters and thi s is illustrated by testing examples of first and second order high and low pass filters.

The student is able to refer to the "Concepts" section of the ESPIAL software to reinforce their understanding of the fundamentals of the subject before conducting the practical experiments.