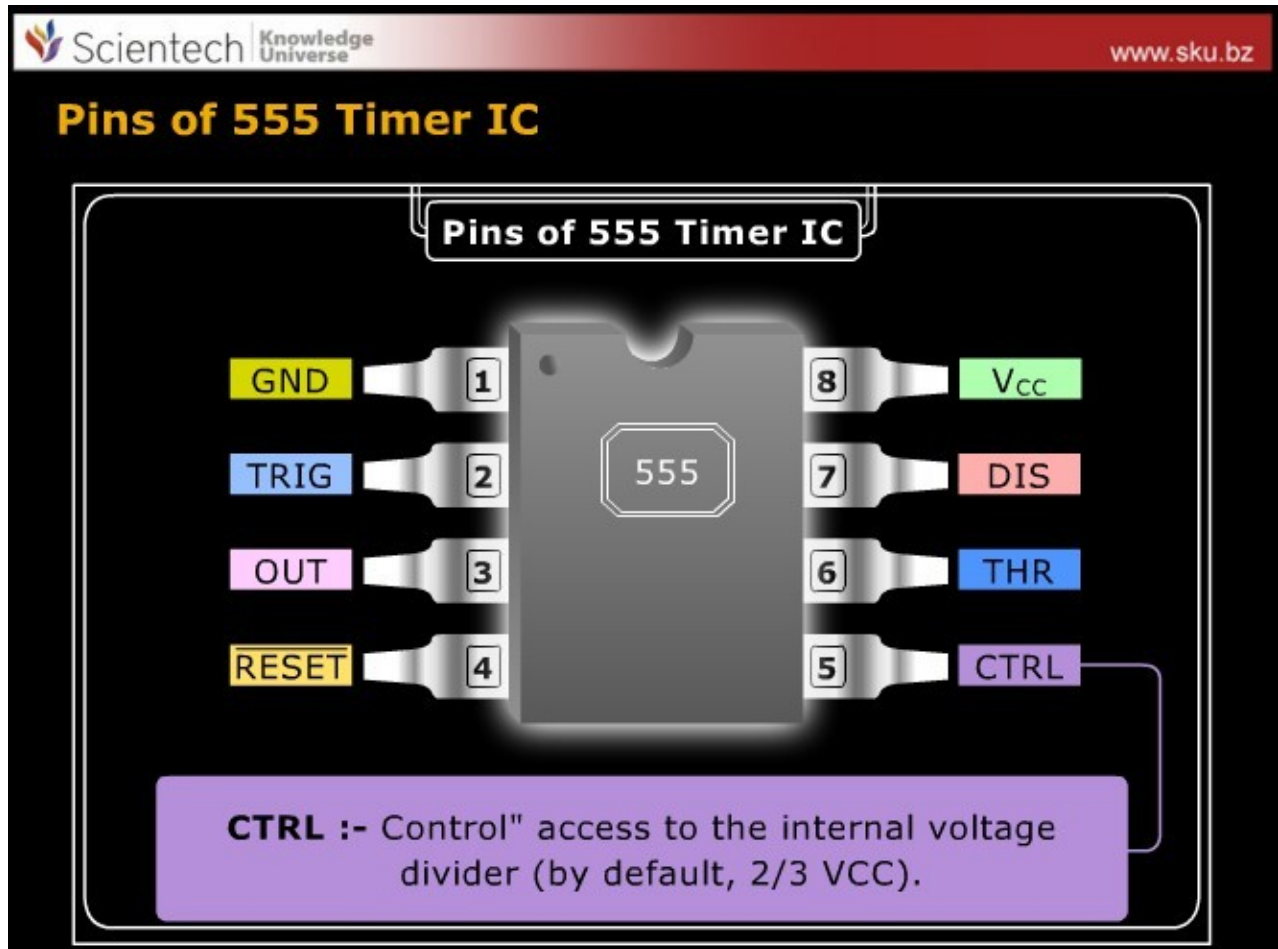### SKU-Electronics 2

The goal of Electronics 2 is to provide information about Electronics circuit and devices .It develops the concept for Transistor Circuit Techniques,amplifiers, Operational Amplifiers, Active Filters , Acoustics, Thyristor etc . The course is developed as a self-study package with easy-to-navigate interface, introduces the basic concepts of Electronics 2 by use of animations, simulation and examples.

Topics covered in SKU- Electronics 2:

Transistor Circuit Techniques and amplifiers

Topics Covered: Linear integrated circuits introduction, Differential amplifiers, configuration, Analysis using h parameters, Differential gain, common mode gain CMRR. Constant current sources, current mirrors, level shifting circuits, cascaded amplifier stages, direct coupled amplifiers, problem of drift, chopper amplifiers.

Operational Amplifiers

Topics Covered: Specifications, imperfections in operational amplifiers. Slew Rate and its effect on full power bandwith, Input Offset voltage, Bias and offset currents, compensation, frequency

response effects, Lag Compensation, application of OP.AMP Inverting and non inverting mode, differential mode, instrumentation amplifiers, comparator, Schmitt trigger, precision rectifiers, logarithmic amplifiers, Analogue computation, Summer, Average integrators, differentiators, scaling multipliers.

Active Filters

Topics Covered: Basic transmission theory, Noise temperature, Calculation of system noise temperature, Noise figure, G/T ratio of earth stations, Design of down links and uplinks using C/N ratio, FM improvement factor for multi-channel signals, Link Design for FDM/FM, TV signals and Digital Signals.
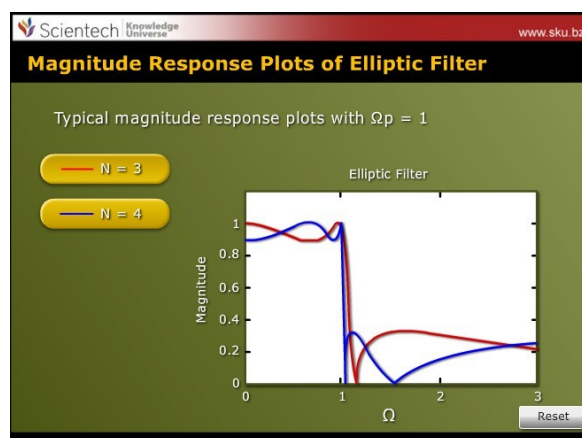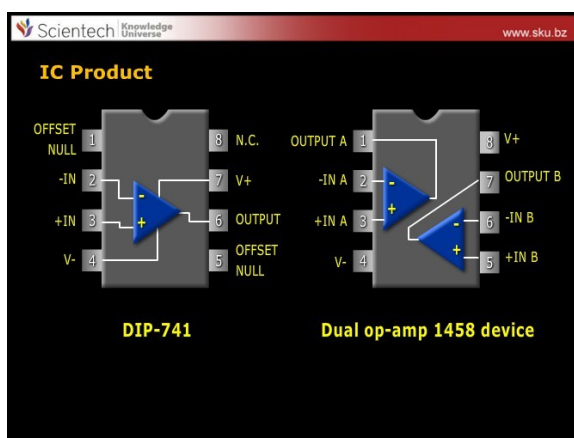
Acoustics

Topics Covered: Microphones-Carbon, moving coil, ribbon, crystals condenser, their working principal and characteristics, Noise figure and sensitivity and shielding,Load speakers-moving coil, electrodynamics Horn type, Multi-way speaker system, crossover network and their frequency characteristics.Various types of sound recording magnetic recording, disk and crystal recording. Reverberations, building and studio acoustics, High fidelity.

Thyristor

Topics Covered: Introduction to thyristor family, silicon controlled rectifier (SCR), V-I characteristics, transistors analogy turn ON and turn OFF mechanism, series and parallel connections of SCRs, single phase controlled rectifiers with resistive and inductive load, flywheel diode, circuits for gate triggering solid state firing circuits using UJTs and transistors, introduction to converters, inverters and chopper circuit. Introduction to GTO, Power MOSFETs and IGBT.

Print shots of SKU- Electronics 2:

Introduction to Real Filters

Different real filters are

- Butterworth filter
- Chebyshev filter
- Cauer (Elliptic) filter
- Bessel filter

Elliptic

- Pass-band and stop-band ripple
- Even sharper cut-off

Reset

Second-Order High-Pass Filter

Sallen-Key High-Pass Filter

The transfer function of Sallen-Key High-Pass Filter

$$A(s) = \cfrac{\alpha}{1 + \cfrac{R_2(C_1 + C_2) + R_1 C_2(1 - \alpha)}{\omega_c R_1 R_2 C_1 C_2} \cdot \cfrac{1}{s} + \cfrac{1}{\omega_c^2 R_1 R_2 C_1 C_2} \cdot \cfrac{1}{s^2}} \quad \text{with} \quad \alpha = 1 + \frac{R_4}{R_3}$$

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