

Fundamentals of Electronics

Catalogue Number	3019-0000
Category	Electronics and Electrical Control
Duration	15 Hours

Activity 1: Introduction to Electronics

Overview of Electronics

Electrical Circuits

Task: Operation of a Circuit

Electronic Circuits

Activity 2: Semiconductors

Modern Electronics

Introduction to Semiconductors

Diodes

Task: Connecting a Battery to a Diode

Use of a Diode in a Computer

Task: Shifting the Power Source for a Computer Clock

Activity 3: Sources of Power

Sources of Power

Direct Current

Alternating Current

The Oscilloscope

Advantages and Limitations

Activity 4: Practical Application of the Diode

Using Network Current for Electronic Circuits

Transformers

Half-Wave Rectifiers

Task: Building a Half-Wave Rectifier

Task: Operating a Half-Wave Rectifier

Fundamentals of Electronics | Course Outline



Activity 5: Full Wave Rectifiers

Full-Wave Rectifiers

Task: Assembling and Operating a Full-Wave Rectifier

Diode Bridges

Task: Operating a Bridge Rectifier

Activity 6: Bipolar Junction Transistors

What is a Bipolar Junction Transistor?

Flow of Current Through a Transistor

Parts and Symbolic Notations of a Transistor

Use of a Transistor in a Circuit

Transistor Data

Uses of Transistors

Activity 7: Specialized Diodes

Introduction to LEDs

How Do LEDs Operate?

LED Bias

Use of the LED in Studying Electronic Systems

Task: Operating a Circuit with an LED and an NPN Transistor

Task: Operating a Circuit with an LED and a PNP Transistor

Zener Diodes

Activity 8: Field-Effect Transistors

FETs

MOSFETs

Structure of a MOSFET

Uses of FETs

Activity 9: Power Supplies - Part 1

Power Supplies

The Electrolytic Capacitor

The Inductor

Filtration



Activity 10: Power Supplies - Part 2

Regulating Voltage in Power Supplies

Regulator Circuits

Alternative Means of Regulation

Integrated Circuits

Summary - The Power Supply

Activity 11: Introduction to Logical Systems

Analog Systems

Digital Systems

Digital Electronic Systems

Logic Systems

Truth Tables

Activity 12: The Logical OR Function

Logical OR

Task: Building a Truth Table for a Circuit

Applying the OR Function

Task: Constructing and Operating a Two-Switch Circuit

Task: Completing a Truth Table with Multiple Input

Activity 13: The Logical AND and NOT Functions

Using the Logical AND Function Task: Operating a Circuit with Multiple Switches and One Transistor Using the Logical NOT Function

Activity 14: The NOR and NAND Functions

The NOR Function Task: Assembling and Operating a NOR Circuit Applying the NOR Function Task: Constructing a Truth Table for the NOR Function The NAND Function Task: Constructing a Truth Table for the NAND Function



Activity 15: Binary Numbers and Codes

Digital Logic

Base-60

The Binary System

Task: Representation of a Binary Number

Representing the Binary Number

Task: Converting a Decimal Number to a Binary Number

Hexadecimal Code

Binary Code

Comprehensive Post-Test