

**NAVJIVAN SCIENCE COLLEGE ,DAHOD**  
**DEPARTMENT OF PHYSICS**  
**CERTIFICATE COURSE 2023-24**  
**BASIC CONCEPT OF ELECTRONICS**

**Course background:**

A course in basic electronics typically covers fundamental concepts and principles related to the behavior and operation of electronic components and circuits. Here's a breakdown of what such a course might include:

**Introduction to Electronics:** This section provides an overview of what electronics is, its importance, and its applications in various fields.

**Atomic Structure and Semiconductors:** Understanding the basics of atomic structure, electron behavior in atoms, and the concept of semiconductors is crucial since most electronic components are made from semiconductor materials.

**Basic Electronic Components:** Students learn about passive components like resistors, capacitors, and inductors, as well as active components like diodes and transistors. They understand their symbols, functions, properties, and applications.

**Circuit Analysis Techniques:** This involves learning techniques to analyze simple electronic circuits using laws like Ohm's Law, Kirchhoff's Laws, and nodal and mesh analysis.

**Safety Considerations:** Importance of electrical safety practices, handling electronic components safely, and understanding hazards associated with electricity.

**Projects and Applications:** Practical projects and applications to reinforce theoretical knowledge and encourage creativity and problem-solving skills.

Depending on the level and focus of the course, some of these topics may be covered in more detail, and additional advanced topics may be included. The aim is to provide students with a solid foundation in electronics that they can build upon in further studies or in practical applications.

**Course schedule:** There will be 1 clock hour of teaching every day for 30 days.

**Course Venue:** Navjivan science college, Dahod

**Course Duration:** 30 Days

**Eligible Students:** Any Student from F.Y. to T.Y. will be preferred

**Course Content : Basics of Electronics 2022-23**

**UNIT:1 AMMETER, VOLTMETER, MULTIMETER**

Introduction, DC ammeter, multi range ammeter, RF ammeter, basic meter, Basic meter as a DC Voltmeter, Multi range Voltmeter, Multi meter, Multi meter Operating Instructions.

**UNIT:2 COMPUTER SKILLS**

Practice with MS office, Basic Microsoft Word, Basic Microsoft Excel, Use the internet, browse, create mail IDs, download desired data from internet using search engines.

**UNIT:3 Basic information of IC**

SMD (Soldering and De-soldering ) of various type of IC Packages, identify the defects , Construct and test simple electrical control circuits, prepare terminate and test various type of electronic cables used in various electronic systems.

**UNIT:4 SIGNAL GENERATORS**

Introduction, Fixed Frequency AF Oscillator, Variable AF Oscillator, Basic Standard Signal Generator, AF Sine & Square Wave Generator, Random Noise Generator.

**RECOMMENDED REFERENCE BOOKS:**

1. Electronic Instrumentation by H S KALSI
2. Rajiv Gandhi Youth Computer Shakshatra Mission
3. Integrated Circuits by K.R. Botkar

**COURSE OUTCOMES:**

- Student can learn how to apply and demonstrate knowledge of the basic concepts of Physics to analyze a wide variety of physical Instruments
- After completing the course the incumbent is able to the use the computer for basic purposes of developing computer skills.
- Student can be aware of different types of ICs & Application of It.

### **Report of Certificate Course in Physics, 2023-24**

The Certificate course in Physics was conducted by Navjivan Science College of Science from 01 January 2024 to 14 February 2024 in which 28 students from college actively participated. The duration of the teaching was 30 hrs. The course was aimed to clear the fundamental concepts of Electronics which the students skip during their graduation and post graduation. The objective of the course was to prepare quality graduates and post graduates so that they can meet the requirements of electrical industries and can be benefitted by greater job opportunities offered by eminent Solid state electronics industries of India.

#### **Key Topics Covered:**

##### **1. Atomic Structure and Electric Charge:**

- Introduction to atoms and their structure.
- Understanding electric charge and its properties.
- Concept of electrons, protons, and neutrons.

##### **2. Voltage, Current, and Resistance:**

- Definition of voltage, current, and resistance.
- Ohm's Law and its application.
- Series and parallel circuits.

##### **3. Basic Circuit Components:**

- Resistors: Types, color coding, and applications.
- Capacitors: Types, capacitance, and applications.
- Inductors: Types, inductance, and applications.

##### **4. Semiconductor Devices:**

- Introduction to semiconductors.
- Diodes: Characteristics, types, and applications.
- Transistors: Bipolar junction transistors (BJTs) and field-effect transistors (FETs).

## 5. **Electronic Circuit Analysis:**

- Kirchhoff's Laws and their application in circuit analysis.
- Node and mesh analysis techniques.
- Thevenin and Norton equivalent circuits.

## 6. **Digital Electronics:**

- Introduction to digital signals and binary numbering system.
- Logic gates: AND, OR, NOT, NAND, NOR, XOR, and XNOR gates.
- Combinational and sequential logic circuits.

**Delivery Method:** The course content is typically delivered through a combination of lectures, practical demonstrations, and hands-on lab sessions. Participants engage in theoretical learning supplemented by practical experiments to reinforce their understanding of electronic concepts.

**Assessment:** Assessment methods may include quizzes, assignments, lab reports, and a final examination to evaluate participants' comprehension of the course material.

**Conclusion:** The basics of electronics certificate course provides a comprehensive introduction to the foundational principles of electronics. Participants gain the knowledge and skills necessary to analyze simple electronic circuits and lay the groundwork for further study or application in various fields such as engineering, telecommunications, and automation.

# EXAM ATTENDANCE SHEET

## Navjivan Science college , Dahod

Department of: Physics

Certificate Course : Basic Concept of Electronics

| Sr.No | Name                              | Mobile No  | Sing        |
|-------|-----------------------------------|------------|-------------|
| 1     | BARIA AJAY .A                     | 8980644989 | Baria       |
| 2     | BARIA GAUTAM P                    | 7567149106 | Baria.G.P.  |
| 3     | BARIA JIGNESH .Y                  | 9638021530 | Jignesh     |
| 4     | BARIA KEVIN .M                    | 9023936517 | Kevin       |
| 5     | BARIA MANU .S                     | 6354392964 | Manu        |
| 6     | BARIA SILPA .B                    | 8320557281 | S.D. Baria  |
| 7     | BARIA VIPUL .G                    | 9328642760 | Vipul       |
| 8     | BHURA KIRTAN .A                   | 9913083661 | Kirtan      |
| 9     | BHURA VIPUL .G                    | 7016393622 | Bhura V.G.  |
| 10    | BHURIYA ATUL .U                   | 9313892636 | Atul        |
| 11    | BHURIYA CHIRAG.M                  | 9313377603 | Chirag      |
| 12    | HATHILA SUNIL .G                  | 7066476388 | Sunil       |
| 13    | KAPASIYA DEVANSH.M                | 4765551745 | Devan       |
| 14    | KHAPED PARAG .M                   | 7698937091 | Parag       |
| 15    | PARMAR JITENDRA .S                | 8733409270 | Jitendra    |
| 16    | PATEL ALPANA .G                   | 6352657408 | Patel A.G.  |
| 17    | PATEL JAYA .R                     | 8320557281 | Patel       |
| 18    | PATHAN SANIYA .A                  | 8320640245 |             |
| 19    | SHARMA NIDHI .V                   | 9913978993 |             |
| 20    | BHABHOR ANKITKUMAR RAJENDRABHAI   | 9316841741 | A.R.B       |
| 21    | DEVDA PRINCEKUMAR JASVANTLAL      | 8866927269 | Prince      |
| 22    | PALAS ANUJBHAI MANUBHAI           | 9510964471 | Palas A.M   |
| 23    | NIMACHIYA DURGESHKUMAR DINESHBHAI | 9054758121 |             |
| 24    | SOLANKI JAYESHKUMAR RAJESHBHAI    | 7874619427 | J.R Solanki |
| 25    | SOLANKI UMESHKUMAR GORDHANBHAI    | 9313332761 | Umesh       |
| 26    | PITHAYA RAHUL SHANTILAL           | 7041310340 | Rahul P.S   |
| 27    | PARMAR KAUSHIKKUMAR MANGALSINH    | 9316932620 | Kaushik     |
| 28    | RANA DRHUVI                       | 8849603540 | Drhuv       |
| 29    |                                   |            |             |
| 30    |                                   |            |             |

**MARKSHEET****Navjivan Science college , Dahod**

Department of: Physics

Certificate Course : Basic Concept of Electronics (2023-24)

DURATION: 01/01/2024 TO 14/02/2024 (30:GHR)

| Sr.No | Name                              | SEM | MARKS | GRADE |
|-------|-----------------------------------|-----|-------|-------|
| 1     | BARIA AJAY .A                     | VI  | 42    | A     |
| 2     | BARIA GAUTAM P                    | VI  | 50    | A+    |
| 3     | BARIA JIGNESH .Y                  | VI  | 50    | A+    |
| 4     | BARIA KEVIN .M                    | VI  | 46    | A+    |
| 5     | BARIA MANU .S                     | VI  | 42    | A     |
| 6     | BARIA SILPA .B                    | VI  | 42    | A     |
| 7     | BARIA VIPUL .G                    | VI  | 48    | A+    |
| 8     | BHURA KIRTAN .A                   | VI  | 48    | A+    |
| 9     | BHURA VIPUL .G                    | VI  | 48    | A+    |
| 10    | BHURIYA ATUL .U                   | VI  | 50    | A+    |
| 11    | BHURIYA CHIRAG.M                  | VI  | 46    | A+    |
| 12    | HATHILA SUNIL .G                  | VI  | 42    | A     |
| 13    | KAPASIYA DEVANSH.M                | VI  | 50    | A+    |
| 14    | KHAPED PARAG .M                   | VI  | 44    | A     |
| 15    | PARMAR JITENDRA .S                | VI  | 50    | A+    |
| 16    | PATEL ALPANA .G                   | VI  | 50    | A+    |
| 17    | PATEL JAYA .R                     | VI  | 48    | A+    |
| 18    | PATHAN SANIYA .A                  | VI  | 48    | A+    |
| 19    | SHARMA NIDHI .V                   | VI  | 44    | A     |
| 20    | BHABHOR ANKITKUMAR RAJENDRABHAI   | IV  | 36    | A     |
| 21    | DEVDA PRINCEKUMAR JASVANTLAL      | IV  | 34    | B     |
| 22    | PALAS ANUJBHAI MANUBHAI           | IV  | 40    | A     |
| 23    | NIMACHIYA DURGESHKUMAR DINESHBHAI | IV  | 44    | A     |
| 24    | SOLANKI JAYESHKUMAR RAJESHBHAI    | IV  | 46    | A+    |
| 25    | SOLANKI UMESHKUMAR GORDHANBHAI    | IV  | 40    | A     |
| 26    | PITHAYA RAHUL SHANTILAL           | IV  | 34    | B     |
| 27    | PARMAR KAUSHIKKUMAR MANGALSINH    | IV  | 30    | B     |
| 28    | RANA DRHUVI                       | IV  | 42    | A     |



## Certificate Course in Physics



