GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Diploma in Vocation (D.Voc), 2nd Semester
Branch: Automobile Servicing/Software Development
Subject Name: General Foundation Course - I
Subject Code: 1220101

With effective from academic year 2018-19

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory		Tutorial/ Practical		
L	P	OJT	C	University exams (ESE)	Progressive Assessment (PA)	External Practical /viva Exam(ESE)	Internal evaluation Practical /viva Exam(PA)	
3	-	-	3	50	-	-	-	50

L- Lectures; P- Practical; OJT- On Job Training; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Program Objectives:

- To make the students aware about various electronic devices and circuits
- To make the students understand various concepts and devices related to basic electronics.

Course Content: Theory

Unit No.	Content	Hours
1.	**Overview of Atom, Sub-Atomic Particles and CRO** • Brief History of Electronics. • Atom and its elements, • Electron, Force, Field intensity, Potential, Energy, current • Electric field, Magnetic field, Motion of charged particles in electric and magnetic field. • Overview of CRO, Electronic and Magnetic deflection in CRO, Applications.	10
2.	**Voltage and Current** • Resistance, Ohm's law, V-I Characteristics, Resistors, Capacitors, Inductors. • Voltage and Current sources, Symbols and Graphical representation • Overview of AC, DC, Cells and Batteries, Energy and Power.	08
3.	**Basics of Semiconductor** • Semiconductor materials, Metals and Semiconductors and Photo-electric emission. • N-type and P-type semiconductor, Effects of temperature on Conductivity of semiconductor. • PN junction diode, depletion layer, Forward & Reverse bias, V-I Characteristic, Effects of temperature, Zener diode, Photo diode, LED, Types and applications of diode. • Diode as a rectifier, Half wave and full wave rectification, Zener diode Regulator. • Introduction to Filters, Clippers, Clampers	08
4.	**Bipolar Junction Transistor** • Operation of NPN and PNP transistors, Biasing of BJT. • CB, CE and CC configuration • Introduction to FET, JFET, MOSFET, CMOS and VMOS	08

5.	**Transistor Amplifier and Applications** • Introduction, Single and Multi-stage amplifiers • Introduction to Oscillators • Introduction to Thyristors, PNPN diode, SCR, LASCR, DIAC, TRIAC	**08**
	Total Hours:	**42**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks				
R Level	U Level	A Level	N Level	E Level
5	20	15	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate and above Levels (Bloom's Taxonomy)

Reference Books:

1. Electronic Devices and Circuit Theory by R. L. Boylestad and L. Nashelsky, Pearson Education.
2. Electronic Principles by Albert Malvino & David, Tata McGraw-Hill.
3. Sedha R.S., "Applied Electronics", S. Chand & Co., 2006.
4. Muthusubramanian R, Salivahanan S and Muraleedharan K A, "Basic Electrical, Electronics and Computer Engineering", Tata McGraw Hill, Second Edition, 2006.
5. Mehta V K, "Principles of Electronics", S.Chand & Company Ltd, 1994.

Course Outcomes:

At the end of this course students will be able to:

- Ability to identify the electronics components and explain their characteristics.
- Ability to identify electronics components and use of them to design circuits.