

CURRICULUM

FOR

**DIPLOMA IN INFORMATION TECHNOLOGY,
COMPUTER SCIENCE & COMPUTER HARDWARE
AND MAINTENANCE**

(SECOND SEMESTER)



**Scheme: CGPA-2012
Implemented from session 2012-13**

**Under Credit Based Grading System
AS PER ORDINANCE 24(A)**



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

**SEMESTER: FIRST
COURSE CODE: 201
NAME OF COURSE: PROGRAMMING IN C**

**SCHEME: CGPA-2012
PAPER CODE: 6341**

RATIONALE

'C' is a general-purpose computer programming language. Originally C was designed for implementing system software; it is also widely used for developing portable application software. C is one of the most popular programming languages. It is widely used on many different software platforms for developing versatile applications.

For Diploma course this subject intends to develop basic programming skills in the students'. The students will learn the step by step procedure (i.e. Algorithm and flowcharting) in any program development process. The programming skills thus acquired using 'C' language can be used in developing programs for the scientific and business purposes. This subject will also serve as a first course of programming language later which will be useful to understand more advanced Object oriented Languages such as C++ or Java.



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: FIRST
COURSE CODE: 201
NAME OF COURSE: PROGRAMMING IN C

SCHEME:
PAPER CODE: 6341

ENABLING OBJECTIVES

The students after completing the course will be able to

- Use a C programming environment including an editor, compiler, linker, and debugger.
- Create simple programs for input and output operations
- Understand and apply control structures of a procedural programming language
- Understand and apply the principles of data storage and manipulation
- Develop program modularity by creating functions and using library functions and header files
- Perform tests in programs by using the "if" and "switch" control flow branching statements and repeat code segments by including "for, while," and "do...while" control flow loops
- Use critical thinking skills to develop and debug C programs
- Read and modify C programs written by others



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: **FIRST**
COURSE CODE: **104**
NAME OF COURSE: **PROGRAMMING IN C**

SCHEME:
PAPER CODE: **6341**

Lectures: **5 Hrs.** per week

SCHEME OF STUDIES

S. No.	Topic	SCHEME OF STUDIES		
		Hrs. of Study		
		Theory	Practical	Total
1.	Introduction To 'C' Programming			
2.	Decision Control Statements			
3.	Loop Control Statements			
4.	Arrays & Strings			
5.	Functions & Macro			
6.	Pointers			
7.	Structure, Union and Enumeration			
8.	File handling			
	TOTAL			



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: **FIRST**
COURSE CODE: 201
NAME OF COURSE: **PROGRAMMING IN C**

SCHEME:
PAPER CODE: **6341**

Lectures: **8 Hrs.** per week

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
1.	Introduction To 'C' Programming	<ul style="list-style-type: none">• Algorithms, Flowcharts, structured programming Concepts, History and features of 'C', 'C' Programme structure, Pre-processor directives• Character set and data types- Character set of 'C', identifiers, keywords, variables, Constants, data types, int, float, double, char, Qualifiers, long, short, unsigned and signed data type conversion, Escape sequences ((like \n, \b etc.), Comments• Operators and Expressions - Arithmetic, Relational, Logical, Assignment operators, unary & ternary operators, hierarchy of operators.• Input & Output Statements - Input and Output statements, Printf, Scanf, getchar, putchar, getch, putch, Conversion specifiers in format control string	
2.	Decision Control Statements	<ul style="list-style-type: none">• Conditional branching statements: if statement,• if- else, nested if• use of logical operators and Compound Relational Tests• Unconditional branching: goto statement• Multiple branching statements: switch case statement.	

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
3.	Loop Control Statements	Loop Statements: syntax and use of 'for' statement, while statement, 'Do-while' statement, 'break-continue' statement, nested looping.	
4.	Arrays & Strings	<ul style="list-style-type: none"> • Arrays- Concept of one dimensional and Multi- dimensional array, array declaration, Array initialisation, operations on one and two-dimensional arrays. • String Manipulations - Strings, gets, puts, string operations, string function (concatenation, comparison, length of a string etc.) 	
5.	Functions & Macro	<ul style="list-style-type: none"> • Library and User-Defined Functions - Concepts of library functions, Library functions (ceil, floor, exp, log, pow, fmod, abs, fabs, rand, srand, toupper, tolower, toascii etc.) -user-defined Functions, Function declaration, Function prototype, local and global variables - Parameter passing mechanisms, recursion - Storage classes –static auto, extern, register - simples and Conditional Macros and Its expansions 	
6.	Pointers	<ul style="list-style-type: none"> • Definition, Types, Declaration, & and * operator, pointer expression, pointer arithmetic, pointer to pointer, array of pointer, pointer to function. • Dynamic memory management functions-malloc, calloc and free. 	
7.	Structure, Union and Enumeration	<ul style="list-style-type: none"> • Structure:-Definition, Declaration, initializing structure, membership operator, accessing structure elements, structure within structure , array of structure, pointer to structure. • Union:-Definition, Declaration and Implementations • Enumerated Data Type:- Definition, Declaration and Type Def • Command line argument. 	
8.	File handling	File system basics, Opening & closing file, Reading & writing in file, File opening modes, String I/O in files.	



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: FIRST
COURSE CODE: 201
NAME OF COURSE: PROGRAMMING IN C
3 Hrs. per week

SCHEME:
PAPER CODE: 6341

LIST OF EXPERIMENTS

1. Assignment to prepare general algorithms and flow chart.
2. Study of turbo C editor -file menu, edit menu, run menu, compile menu etc.
3. Assignment to write character, operator set of C Language.
4. Assignment to identify valid and invalid variables, constants and expressions.
5. Program based on Input/Output statements.
6. Programs based on Arithmetic expression
7. Programs based on goto statement
8. Programs based on 'if' and 'Nested if'
9. A Program based on 'switch case' statement.
10. At least one program based on each:
 - i. 'for' statement
 - ii. 'while' statement
 - iii. 'do-while' statement
 - iv. break continue statement
11. program based on pointer expression
12. program based on pointer arithmetic.
13. program based on pointer to pointer.
14. program based on array of pointer
15. program based on dynamic memory management functions.
16. Program based on two dimensional array.
17. Program based on Library functions
18. Programs based on string operations
19. Programs based on functions.
20. program based on pointer to function
21. program based on Parameter passing mechanisms.
22. programs based on recursion
23. program based on macros.
24. program based on storage classes.
25. program based on structure, union and enumeration.
26. program based on command line argument
27. programs based on files.

Yashwant Kanetkar ,BPB
Publications, B-14, Connaught

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL



**DIPLOMA IN
INFORMATION TECHNOLOGY,CSE AND CHM**

SEMESTER: **FIRST**
COURSE CODE: **201**
NAME OF COURSE: **PROGRAMMING IN C**

SCHEME:
PAPER CODE: **6341**

SUGGESTED LEARNING RESOURCES:

Textbooks/Reference books (as mentioned below).

TITLE	AUTHOR	PUBLICATION
Programming in C	Balaguruswamy	Tata MacGrawhills
Let Us Learn C	Yashwant Kanetkar	BPB Publications,
The Spirit of C	Mullish Cooper,	Jaico Publishing House, Mumbai
The C Programming	Kernighan, Brian W.; Dennis M. Ritchie, Prentice Hall C: The Complete Osborne Media;	ISBN 0-13-110163-3 Herbert Schildt,4 edition, McGraw-Hill
Reference		
Exploring C	Yashwant Kanetkar	BPB Publications,

Web sites : <http://www.w3schools.com>



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: SECOND
COURSE CODE: **203**
NAME OF COURSE: **DIGITAL TECHNIQUES**

SCHEME: **CGPA-2012**
PAPER CODE: **6342**

RATIONALE

This subject will help the students to learn facts, Concepts, principle and procedure of digital electronics. These techniques can be used for designing sequential and combinational circuits, which forms the basis of any electronic device.



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: SECOND
COURSE CODE: **203**
NAME OF COURSE: **DIGITAL TECHNIQUES**

SCHEME: **CGPA-2012**
PAPER CODE: **6342**

Lectures: **8 Hrs.** per week

SCHEME OF STUDIES

S. No.	Topic	SCHEME OF STUDIES		
		Hrs. of Study		
		Theory	Practical	Total
1.	FUNDAMENTAL CONCEPTS			
2.	LOGIC GATES			
3.	BOOLEAN ALGEBRA			
4.	COMBINATIONAL LOGIC DESIGN			
7.	SEQUENTIAL LOGIC CIRCUIT			
	TOTAL			

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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: SECOND
COURSE CODE: 203
NAME OF COURSE: **DIGITAL TECHNIQUES**

SCHEME:
PAPER CODE: **6342**

Lectures: 8 Hrs. per week

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
1.	FUNDAMENTAL CONCEPTS:	1.1 Comparison between analog and digital signals. 1.2 Different types of number system and codes used in digital computer	
2.	LOGIC GATES :	2.1 Basic Logic Gates: Logic symbols and truth table of all gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR 2.2 Realization of all other gates using universal gate.	
3.	BOOLEAN ALGEBRA:	3.1 Rules and laws of Boolean algebra, Demorgan's theorem. 3.2 Evaluation of logic expression, algebraic reduction of Boolean	
4.	COMBINATIONAL LOGIC DESIGN	4.0 COMBINATIONAL LOGIC DESIGN 4.1 Introduction to logic design 4.2 Karnaugh map representation of logical functions, Simplification of logical function using K-map, (2, 3, 4 variable) Sum of products (SOP) Product of Sum (POS) 4.3 Don't care conditions. 4.4 Design example: half adder, full adder, Half subtractor, full subtractor, BCD to seven-segment decoder (using k-map) 4.5 Gray to binary code converter (using k-map) 4.6 Universal Gate	
5.	COMBINATIONAL LOGIC DESIGN USING MSI CIRCUITS	5.1 Multiplexer (:1) demultiplexer (1:4), Decoder (3:8) encoder (8:3) using combinational logic design.	

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
6.	LOGIC FAMILIES	5.2 BCD adder, using (7483). ALU(74181). Digital comparator (7485),Parity generator/checkers(74180). 5.3 Code converters: BCD to binary(74184), Binary to BCD(74185A) 5.4 Priority encoder: Decimal to BCD(74147), Octal to binary priority encoder (74148) Hexadecimal to binary priority encoder using 74148 encoders. 5.5 Decoder/drivers for display device:BCD to decimal decoder/driver (7447, 7448) 6.1 Digital integrated circuits, its introduction 6.2 Introduction: RTL, DTL, IIL, ECL, MOS families 6.3 Propagation delay time, speed, power consumption, fan_in , fan_out. 6.4 TTL and C-MOS logic families: Introduction 6.5 Analysis of open collector and tri-state logic, Input/output parameters, advantages, applications, 6.6 IC-interfacing, TTL driving CMOS, CMO driving TTL	
7.	SEQUENTIAL LOGIC CIRCUIT	7.1 Introduction : One bit memory cell 7.2 Flip-Flop-S-R, Clocked RS, T,D, J-K, master slave , JK 7.3 Triggering of flip-flops, analysis of clocked sequential circuits, state reduction and assignment, Flip-flop excitation table, design procedures, design of counters, design with state equation. Working Principle and Truth-Table 7.4 Registers ,shift registers. Working with SISO,SIPO,PISO,PIPO shift registers . 7.5 Counters : Ripple counters, synchronous and asynchronous counters, timing sequences, Ring and Johnson counter, application of counters, Counter 4 Bit	



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NAME OF COURSE: **DIGITAL TECHNIQUES**

SCHEME:
PAPER CODE: **6342**

SUGGESTED LIST OF EXPERIENCES/TUTORIALS

- 1 Study and Verify the truth table of logic gates (74xx series).
- 2 Realization of AND, OR, NOT and Ex-OR logic gates using NAND and NOR gate
- 3 Verification of Demorgan's theorem
- 4 Implementation of full adder, subtractor using gates
- 5 Study of gray to binary code convertor using gates
- 6 Study to multiplexer and demultiplexers.
- 7 Implementation of combination logic circuit using mux and Dmux.
- 8 Study of BCD adder
- 9 Study of BCD to seven segment decoder.
- 10 Verification of truth table of flip flop using IC's
- 11 Shift registers using D flip-flop.
- 12 Presetable shift right, shift left registers.
- 13 Ripple counter using J-K flip flap
- 14 Decode counter 7490.
- 15 Synchronous counter using J-K flip-flops.
- 16 Up/down counter.
- 17 Mod N counter using J-K flip-flop
- 18 Study of 6116 RAM
- 19 Study of 2732 EPROM



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NAME OF COURSE: **DIGITAL TECHNIQUES**

SCHEME:
PAPER CODE: **6342**

REFERENCE BOOKS

S.No.	TITLE	AUTHOR, PUBLISHER, EDITION AND YEAR OF PUBLICATION
1.	Digital principles	Malvino & Leach, Tata McGraw-Hill Publishing Company Ltd. New Delhi, Latest, 2000
2.	Modern Digital Electronics	R.P.Jain, Tata McGraw-Hill Publishing Company Ltd. New Delhi, 2nd Edition, 2000
3.	Digital Electronics	V.K. Puri, Tata McGraw-Hill Publishing Company Ltd. New Delhi, 1st Edition, 2000
4.	Computer Design Latest & Digital Techniques	Morris Mano, Tata MacGrawHills
5.	Digital principles	Malvino & Leach, Tata McGraw-Hill Publishing Company Ltd. New Delhi, Latest, 2000
6.	Modern Digital Electronics	R.P.Jain, Tata McGraw-Hill Publishing Company

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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: FIRST
COURSE CODE: 202
**NAME OF COURSE: ENVIRONMENTAL
ENGINEERING AND SAFETY**

SCHEME:
PAPER CODE: 6035

RATIONALE

Engineers and scientists from a number of related disciplines have been involved over years in the development of an academic basis for understanding and management of the environment. The purpose of keeping the environmental Engineering and safety is to introduce a unique approach to the overall concept of environment engineering, an approach that emphasizes the relationship between the principles observed in the natural purification process and those employed in the engineered process.

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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: **FIRST**
COURSE CODE: **202**
NAME OF COURSE: **ENVIRONMENTAL
ENGINEERING AND SAFETY**

SCHEME:
PAPER CODE: **6035**

Lectures: **6** Hrs. per week
Practical: **2** Hrs. per week

SCHEME OF STUDIES

S. No.	Topic	SCHEME OF STUDIES		
		Hrs. of Study		
		Theory	Practical	Total
1.	INTRODUCTION TO ENVIRONMENT	04		
2.	AIR POLLUTION SOURCES AND EFFECTS	09		
3.	METEOROLOGICAL ASPECTS OF AIR POLLUTANT DISPERSION	09		
4.	AIR POLLUTION CONTROL METHODS AND EQUIPMENTS	18		
5.	WATER POLLUTION SOURCES AND CLASSIFICATION	09		
6.	WASTE WATER TREATMENT METHOD	09		
7.	SOLID WASTE MANAGEMENT	14		
8.	NOISE POLLUTION AND CONTROL	09		
9.	SAFETY PRACTICES	09		
	TOTAL	90	30	120

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DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM

SEMESTER: **FIRST**
COURSE CODE: **202**
NAME OF COURSE: **ENVIRONMENTAL
ENGINEERING AND SAFETY**

SCHEME:
PAPER CODE: **6035**

Lectures: **6** Hrs. per week

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
1.	INTRODUCTION TO ENVIRONMENT	<ul style="list-style-type: none">- THE BIOSPHERE, biotic and abiotic- An aquatic ecosystem- Types of pollution- Impact of human being on environment.- Impact of environment on human being- Basic approach to improve environmental qualities- Role of an environmental engineer	04
2.	AIR POLLUTION SOURCES AND EFFECTS	<ul style="list-style-type: none">- Standard definition of air pollution- Composition of natural air- Names of air pollutants- Classification of air pollutants, primary and secondary pollutants- Classification of source of air pollutants on different bases- Definition of different types of aerosols.- Effect of air pollution on: human health, material properties, vegetation.- Major toxic metals and their effects- Major environmental phenomenon e.g., acid rain, global warming, green house effect, ozone layer depletion.- Air quality standards- Brief description of air pollution laws	09
3.	METEOROLOGICAL ASPECTS OF AIR POLLUTANT DISPERSION	<ul style="list-style-type: none">- Meteorological parameters influencing air pollution- Environmental lapse rate, temperature	09

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
4.	AIR POLLUTION CONTROL METHODS AND EQUIPMENTS	<ul style="list-style-type: none"> inversion, atmospheric stability and adiabatic loss rate. - Turbulence, topographical effects, - Plume behavior, looping, coning, fanning fumigation, lofting, trapping. - Natural purification processes of air - Artificial purification methods of air - Brief description of following control equipments along with sketch e.g, gravitation settling chamber, cyclone, scrubber, bag house filter, electrostatic precipitator. - Brief description of following processes for the control of gaseous pollutants e. g., absorption, adsorption, condensation, combustion etc 	18
5.	WATER POLLUTION SOURCES AND CLASSIFICATION	<ul style="list-style-type: none"> - Water resources - Uses of water - Classification of water - Origin, composition and characteristics of domestic waste water as well as industrial waste water - Biochemical oxygen demand - Water pollution laws and standards - Uses of waste water - Classification of waste water - Chemical oxygen demand 	09
6.	WASTE WATER TREATMENT METHOD	<ul style="list-style-type: none"> - basic processes of water treatment - Meaning of primary, secondary and tertiary treatment - Flow chart of a simple effluent treatment plant - Theory of industrial waste treatment - Volume reduction, neutralization and proportioning 	09
7.	SOLID WASTE MANAGEMENT	<ul style="list-style-type: none"> - Sources and classification of solid waste - Public health aspects - Disposal methods – open dumping , sanitary , land fill - Incineration , composting - Potential methods of disposal - Recovery and recycling of paper, glass, metal and plastic 	14
8.	NOISE POLLUTION AND CONTROL	<ul style="list-style-type: none"> - Sources of noise pollution - Units of Noise pollution measurement - Allowable limits for different areas - Problems of noise pollution and measures to control it 	09

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
9.	SAFETY PRACTICES	<ul style="list-style-type: none"> - Noise pollution control devices brief discussion - Responsibility of employees and employers regarding health and safety - Fire hazards ,prevention and precautions - Industrial hazards prevention and protection - Protection from air and noise pollution 	09

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DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM

SEMESTER: **FIRST**
COURSE CODE: **202**
NAME OF COURSE: **ENVIRONMENTAL
ENGINEERING AND SAFETY**

SCHEME:
PAPER CODE: **6035**

Practical: 2 Hrs. per week

LIST OF EXPERIMENTS

S.NO.	NAME OF THE EXPERIMENT	HRS OF PRACTICAL
	<p>GROUP A AIR POLLUTION (Any one experiment may be selected from this group)</p> <ol style="list-style-type: none">1. Air monitoring and determination of SPM, CO, Nox, SO₂ with high volume sampler.2. Monitoring of stack gases and determination of SPM, CO, Nox, SO₂ with slack monitoring kit.3. Determination of CO, HC, in exhaust gases from petrol vehicle <p>GROUP B NOISE POLLUTION</p> <ol style="list-style-type: none">4. Determination of sound pollution in (a) Auditorium (b) Factories (c) Busy roads (d) Theatre (e) TV rooms (select any three situations) <p>GROUP C INDUSTRIAL WASTE WATER (Any Two experiment may be selected from this group)</p> <ol style="list-style-type: none">5. Determination of BOD/COD ratio in industrial waste water.6. Determination of Ph and alkanity/ acidity in industrial waste water.7. Dermination of solids in industrial waste water.8. Determination of turbidity, cobur, and temperature of industrial waste water. <p>GROUP D POLLUTION STANDARDS (Any Two experiment may be selected from this group)</p> <ol style="list-style-type: none">9. Study of drinking water standards.10. Study of effluent standards for water disposal.11. Study of air pollution standards.	<p>30</p>

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**SEMESTER: FIRST
COURSE CODE: 202
NAME OF COURSE: ENVIRONMENTAL
ENGINEERING AND SAFETY**

**SCHEME: CGPA-2012
PAPER CODE: 6035**

REFERENCES

1. Environmental pollution control Engineering by C.S. Rao
2. Air pollution and control by Seth
3. Air pollution by M.N Rao
4. Industrial waste and its treatment by Seth
5. Paryavaran Yantriki Hindi granth akadami



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN INFORMATION TECHNOLOGY, CSE AND CHM

SEMESTER: FIRST
COURSE CODE: 204
NAME OF COURSE: BASIC ELECTRICAL,
ELECTRONICS & MEASUREMENT

SCHEME: CGPA-2012
PAPER CODE: 6343

RATIONALE

The students after studying this subject will be able to understand the basics of electrical, electronics and measurements. Electricity finds its base as basic energy for modern industrial activities. Electronics, which is being extensively, used today, in all industries, power system operation, communication systems, computers and information technology. This course will form the base for handling various types of equipment used in IT industry and will facilitate in operation and maintenance to carry out his/her job function effectively.



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: **FIRST**
COURSE CODE: **204**
NAME OF COURSE: **BASIC ELECTRICAL,
ELECTRONICS & MEASUREMENT**

SCHEME: **CGPA-2012**
PAPER CODE: **6343**

SCHEME OF STUDIES

S. No.	Topic	SCHEME OF STUDIES		
		Hrs. of Study		
		Theory	Practical	Total
1.	INTRODUCTION TO ENVIRONMENT	04		
2.	AIR POLLUTION SOURCES AND EFFECTS	09		
3.	METEOROLOGICAL ASPECTS OF AIR POLLUTANT DISPERSION	09		
4.	AIR POLLUTION CONTROL METHODS AND EQUIPMENTS	18		
5.	WATER POLLUTION SOURCES AND CLASSIFICATION	09		
6.	WASTE WATER TREATMENT METHOD	09		
7.	SOLID WASTE MANAGEMENT	14		
8.	NOISE POLLUTION AND CONTROL	09		
9.	SAFETY PRACTICES	09		
	TOTAL	90	30	120



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM

SEMESTER: **FIRST**
COURSE CODE: **204**
NAME OF COURSE: **BASIC ELECTRICAL,
ELECTRONICS & MEASUREMENT**

SCHEME: **CGPA-2012**
PAPER CODE: **6343**

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
1.	REVIEW OF GENERAL TOPICS	1.1 Atomic Structure of Conducting and Semi-Conducting materials. 1.2 Behavior of materials with electricity. 1.3 Concept of unit of Electric current and Voltage 1.4 Ohm's Law, Concept of Resistance, Conductance, Resistivity and Conductivity. Their units and dependence on temperature 1.5 Power & Energy, heating effect of electric current and conversion of units (Mechanical to Electrical) 1.6 Kirchoff's Voltage and current Laws & their applications in simple DC Circuits. 1.7 Series & Parallel combination of resistance and wattage, Consideration with Simple Problem	08
2.	ELECTROMAGNETISM	Concept of magnetic field production by flow of current, concept of $m m f$, flux, reluctance, permeability, Analogy between electrical & magnetic circuits. 2.2 Faraday's Laws of electromagnetic induction, self and mutually induced $e m fs$, simple numerical problems	06
3.	A.C. THEORY	3.1 Concept of alternating voltage and current, difference between AC and DC. 3.2 Concept of cycle, frequency, period, amplitude, instantaneous value, average value, r.m.s. value and peak value, form factor (definitions only.) 3.3 Concept of impedance, phase angle,	06

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
4.	GENERAL ELECTRICAL MACHINES	numerical problems, RL & RLC series circuits. 4.1 Introduction, definition of motor & generator and common features of static & rotating electrical machines. 4.2 Transformer- Construction- core type, shell type, transformation ratio and e.m.f equation	12
5.	SEMINDUCTOR PHYSICS	5.1 Conducting materials, effect of temperature conductivity in Germanium and Silicon. 5.2 Extrinsic Semi-Conductors, doping, P-N type Semi-Conductor, majority and minority carriers, effects of temperature. 5.3 P-N junction, drift and diffusion currents, depletion layer, potential barrier, effects of forward and reverse biasing of P-N junction. Energy band diagrams, breakdown mechanism.	12
6.	SEMI CONDUCTOR DIODES	6.1 Use of diode as half wave and full wave (Centre tapped and bridge type) rectifiers. Relation between d.c. output and a.c. input voltage. 6.2 Concept of ripples, filter circuits, Shunt capacitor, Series inductor & filters and their applications. 6.3 Zener-diode and its V-I Characteristics.	08
7.	TRANSISTORS	7.1 Construction of bi-polar junction transistor with respect to :- 7.1.1 Working-principle of transistor, forward and reverse biasing. 7.1.2 Transistor Configuration-Common Base (CB), Common Emitter (CE) and Common Collector (CC), their Comparison of configuration and applications. General introduction of UJT, FET and SCR.	08
8.	REGULATED POWER SUPPLY	8.1 Need of regulated power supply, regulation, Block diagram of regulated power supply, stabilisation of voltage by Zener-diode, its limitations. 8.2 transistorised regulated power supply and short circuit protection	
9.	MEASURING INSTRUMENTS	9.1 Working principle and Construction of Ammeters and Voltmeter, difference	

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
		<p>between them, extension of range and simple numerical problems.</p> <p>9.2 Principle and working of Watt meter (dynamometer type) and Energy meter (static type)</p> <p>9.3 Digital measuring instruments, Basic concepts of CRO.</p>	



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: FIRST
COURSE CODE: 204
**NAME OF COURSE: BASIC ELECTRICAL,
ELECTRONICS & MEASUREMENT**

SCHEME: CGPA-2012
PAPER CODE: 6343

LIST OF EXPERIENCES/TUTORIALS

1. Verification of Ohm's law
2. Verification of Kirchoff's law
3. Find out the value of capacitance of corrector
4. Plotting V-I Characteristics of semi-conductor diode.
5. Plotting V-I characteristics of Zener diode and finding its reverse breakdown voltage.
6. Observation of output wave shapes and input wave shapes of Full wave/Half wave rectifier.
7. Plotting input/output characteristics of CE configuration of transistor.
8. Measure voltage, current, power and energy in single phase AC circuit.
9. Colour coding of resistance and units of capacitance.
10. Study of AC/DC Voltmeter
11. Study of AC/DC Ammeter
12. Study of AC/DC Wattmeter
13. Study of Digital Instruments and Displays
14. Study of Regulated Power Supply



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DIPLOMA IN INFORMATION TECHNOLOGY, CSE AND CHM

SEMESTER: SECOND
COURSE CODE: 203
NAME OF COURSE: **BASIC ELECTRICAL,
ELECTRONICS & MEASUREMENT**

SCHEME: **CGPA-2012**
PAPER CODE: **6343**

LIST OF REFERENCE BOOK

1.	Electronic Technology	E.admiralty
2.	Electrical Engineering basic technology	Hubscher, Klaue pfloger, Appelt, Willey Eastern Ltd, New Delhi
3.	Electrical Engineering	J.B. Gupta
4.	Experiments in basic electrical Engineering	S.K. Bhattacharya, S.K. Rastogi, K.M., New Age International , New Delhi
5.	Problems in Electrical Engineering	Smith P., 1st ,1996,
6.	A Text book of Applied Electronics	R.S. Sedha, S. Chand & Co. New Delhi
7.	Principals of Electronics	Latest , V.K.Mehta , S.Chand Publication
8.	Electronics Principles	Malvino TMH
9.	Electrical Technology	B.L. Thereja , Chand Rai
10.	Electronic Technology	E.admiralty



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**DIPLOMA IN
INFORMATION TECHNOLOGY, CSE AND CHM**

SEMESTER: SECOND
COURSE CODE: **203**
NAME OF COURSE: **ELECTRONIC WORKSHOP**

SCHEME: **CGPA-2012**
PAPER CODE:

RATIONALE

This subject envisages to develop practical skills in handling various tools, accessories, equipment used in the manufacturing and testing electronic circuits. It will also make the students familiar with the measuring techniques used in electrical/electronics systems. The student will also be able to implement, test electronics circuits on breadboard and prepare PCB.



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NAME OF COURSE: **ELECTRONIC WORKSHOP**

SCHEME: **CGPA-2012**
PAPER CODE:

SCHEME OF STUDIES

S. No.	Topic	SCHEME OF STUDIES		
		Hrs. of Study		
		Theory	Practical	Total
1.	TOOLS AND ACCESSORIES USED IN MANUFACTURING OF ELECTRONIC CIRCUITS	3		
2.	BASIC ELECTRONIC COMPONENTS	2		
3.	DIGITAL MULTIMETER :	1		
4.	FUNCTION GENERATOR	2		
5.	CRO	2		
6.	DIFFERENT CABLES & CONNECTORS	1		
7.	DIFFERENT CONNECTORS	1		
8.	DIFFERENT SWITCHES	1		
9.	DIFFERENT DISPLAY DEVICES	1		
10.	PREPARING CABLES AND BOARDS	1		

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DIPLOMA IN INFORMATION TECHNOLOGY.CSE AND CHM



SEMESTER:SECOND

COURSE CODE: **203**

NAME OF COURSE: **ELECTRONIC WORKSHOP**

SCHEME: **CGPA-2012**

PAPER CODE:

COURSE CONTENTS

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
1.	TOOLS AND ACCESSORIES USED IN MANUFACTURING OF ELECTRONIC CIRCUITS.	<ul style="list-style-type: none">○ Different types of cutters.○ Nose pliers.○ Wire strippers○ Screw drivers○ Lead straightners○ Extracters○ Soldering Iron○ Desoldering Pump○ Crimping tool.	
2.	BASIC ELECTRONIC COMPONENTS	<ul style="list-style-type: none">○ Colour coding of resistors and capacitors○ Types of resistors, capacitors inductors○ Identification of components i.e. Diodes, Transistors, FET, UJT, SCR, Transormers.○ Study and use analog multi-meter to measure: AC and DC voltage. AC and DC current Different resistor Continuity testing	
3.	DIGITAL MULTIMETER :	<p>Study and use digital multimeter to measure:</p> <ul style="list-style-type: none">AC and DC voltageAC and DC currentDifferent resistorContinuity testing	

S.NO.	TOPIC	CONTENTS	HRS OF STUDY
4.	FUNCTION GENERATOR	Front panel controls and there uses Frequency changer and amplifier	
5.	CRO	Front panel control and their functions Different waveforms. Measurement of amplitude and frequencies	
6.	DIFFERENT CABLES & CONNECTORS	Co-axial cable Twisted pair cable Flat ribbon cable Fibre optic cable	
7.	DIFFERENT CONNECTORS	BNC connector Banana connector Crocodile connector Male and female Dtype connector Flat cable connector Printed circuit connector UTP connector	
8.	DIFFERENT SWITCHES	Toggle switches-SPST, SPDT,DPST,DPDT Thumb-wheel switches Rotary switches Push on/Push off switches Keyboard switches-mechanical, capacitive, membrane DIP switches	
9.	DIFFERENT DISPLAY DEVICES	LED display Seven segment display LCD display	
10.	PREPARING CABLES AND BOARDS	Prepare computer network cable (use different type of cable and connectors stated as in chapter 6). Study and use bread boards to implement simple electronic circuits using resistors/ capacitors/ diodes/ transistors/ switches/display devices. Prepare two simple electronic circuits using general purpose PCBs. Prepare two PCBs for simple electronic circuits	

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NAME OF COURSE: **ELECTRONIC WORKSHOP**

SCHEME: **CGPA-2012**
PAPER CODE:

LIST OF EXPERIMENTS /TUTORIALS

1. Identify the various types of resistors and find out the values from color bands /written values on them and measure with multimeter.
2. Identify the (i) terminals of a diode and its polarity, (ii) zener, LED, Photodiode, IR diode (ii) terminals of a Transistor and its Type (n-p-n or p-n-p).
3. Identify and use different tools and accessories used in manufacturing of electronic circuits.
 - Different types of cutters.
 - Nose pliers
 - Wire strippers
 - Screw drivers
 - strengtheners
 - Extractors
 - Soldering iron
 - Desoldering pump
 - Crimping tool
4. Identify the type of components(L,C,R) and find out the values using LCR- Meter
5. Identify the various waveforms of Function Generator using CRO. Measure Amplitude & Frequency for various waveforms using CRO.
6. Use regulated power supply and identify front panel controls and their functions.
7. Use DC and AC voltmeter and ammeter to measure DC and AC voltage current.
8. Use analog multi-meter to measure
 - AC and DC voltage
 - AC and DC current
 - Resistance of Different resistors
 - Continuity testing.
9. Use digital multi meter to measure:
 - AC and DC voltage
 - AC and DC current
 - Different resistor
 - Continuity testing.
10. Identify various kinds of electronic components
11. Use different switches
 - Toggle switches – SPST, SPDT, DPST, DPDT
 - Thumb-wheel switches
 - Rotary switches
 - Push on/Push off switches

- Keyboard switches – mechanical, capacitive, membrane
 - DIP switches
12. Use different switches
 13. LED display
 14. Seven segment display
 15. LCD display
 16. Solder the joint connection of wires and components on a PCB and check it.
De-solder it and Re-solder.
 17. Prepare computer network cable (use different type of cable and connectors)
 18. Use of breadboards to implement simple electronic circuits using resistors/ capacitors/ diodes/ transistors/switches/display devices.
 19. Prepare two simple electronic circuits using general purpose PCBs.
 20. Prepare two PCBs for simple electronic circuits.
 21. Assemble circuit on breadboards and PCBs (e.g rectifiers, oscillators, amplifiers).

SUGGESTED IMPLEMENTATION STRATEGIES :

The subject content is expected to be taught by the teacher from electronics department. The teacher is expected to explain functions of the front panel controls of all electronic instruments/equipments along with measuring techniques. Teacher in the electronic workshop should demonstrate and guide students for developing the skills of soldering and PCB manufacturing.

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN INFORMATION TECHNOLOGY, CSE AND CHM

SEMESTER: **FIRST**

COURSE CODE: **105**

NAME OF COURSE: **PROFESSIONAL ACTIVITIES**

SCHEME: **CGPA-2012**

Practical: **2 Hrs.** per week

RATIONALE

Professional Activities is not a descriptive course, as per conventional norms; therefore specific content for this course cannot be prescribed. It is a group of open-ended activities; where in variety of tasks are to be performed, to achieve objectives. However general guidelines for achieving the target and procedure for its assessment are given under the course content.

As the student has to practice this course in all the six semesters, the guidelines given therein are common and applicable to each semester.

OBJECTIVES:

- To allow for professional development of students as per the demand of engineering profession.
- To provide time for organization of student chapter activities of professional bodies) i.e. Institute of engineers, ISTE or Computer Society of India etc.)
- TO allow for development of abilities in students for leadership and public speaking through organization of student's seminar etc.
- To provide time for organization of guest lectures by expert engineers/eminent professionals of industry.
- To provide time for organization of technical quiz or group discussion or any other group activity.
- To provide time for visiting library or using Internet.
- To provide time for group discussion or solving case studies.
- To provide time for personality development of students.
- To provide time for working for social cause like awareness for environmental and ecology etc.

DETAILED INSTRUCTIONS TO CONDUCT PROFESSIONAL ACTIVITIES:

- J. Study hours, if possible should be given greater time slot with a minimum of two hrs/week to a maximum of four hrs/week.

- K. This course should be evaluated on the basis of grades and mark sheet of students, should have a separate mention of the grade awarded. There will be no pass/fail in professional activities (PA).
- L. Following grade scale of evaluation of performance in PA has been established.

<u>Grades</u>	<u>Level of performance</u>
A	Excellent
B	Good
C	Fair
D	Average
E	Below Expectations

- M. Grades once obtained in a particular examination shall become final and no chance of improvement in grades will be given to the students.
- N. Assessment of performance in PA is to be done internally by the Institution, twice in a Semester/Term through a simultaneous evaluation of the candidate by a group of three teachers, of the deptt. Concerned. Group of teachers will jointly award the grade to candidate in the assessment. Best of the grades obtained by the student in these two assessments shall be finally taken on the mark sheet of the respective Semester/Term.

Candidate abstaining from the prescribed course work and/or assessment planned at the Institute shall be marked ABSENT in the mark sheet, instead of any grade.

- O. While awarding the grades for performance in PA, examining teacher should reach the final consensus based on the attendance, punctuality, interest, presentation skills in seminar on the topic assigned (collection of relevant data, observations, analysis, findings/conclusion) and its written report, awareness of latest developments in the chosen programme of study.
- P. Institution shall maintain the record of grades awarded to all the students in PA for a period of 1 year.
- Q. It shall be mandatory for students to submit a compendium for his PA in the form of a Journal.
- R. Compendium shall contain following:
- VIII. Record of written quiz.
 - IX. Report/write up of seminar presented
 - X. Abstract of the guest lectures arranged in the Institution.
 - XI. Topic and outcome of the group discussion held.
 - XII. Report on the problems solved through case studies.
 - XIII. Report on social awareness camps(organized for social and environmental prevention).
 - XIV. Report on student chapter activities of professional bodies like ISTE, IE (India), CSI etc.

K. PA is not a descriptive course to be taught in the classroom by a particular teacher. Various activities involved in the achievement of objectives of this course should be distributed to a number of teachers so that the talent and creativity of group of teacher's benefit the treatment of the course content.

These activities should preferably be conducted in English language to maintain continuity and provide reinforcement to skill development.

Small groups shall be formed like in tutorials, group discussion, case studies, seminar, project methods, roll play and simulation to make the development of personality affective.

Treatment of PA demands special efforts, attention, close co-operation and creative instinct on the part of teachers of department concerned. Since this course is totally learner centered, many of the activities planned under this course shall come out from the useful interaction of student, among themselves and with the teachers. The guide teacher/s shall best act as a facilitator of these creative hunts/ exercises, which unfold many of the hidden talents of the students or bring out greater amount of confidence in them, to execute certain activity.

