



Government Polytechnic Mumbai

(Academically Autonomous Institute of Maharashtra Government)

49, Ali Yawar Jung Marg, Kherwadi, Bandra (E)

gpmumbai@gpmumbai.ac.in

Computer Engineering

First Year

Second Semester

Course Code	Course Title	Teaching Scheme				Credits	Examination Scheme					
		L	P	TU	Total		Theory		PR	OR	TW	
							TH	TS				
HU16102	Communication Skills	---	---	02	02	02	---	---	---	50*	---	
SC16108	Mathematics II	03	---	01	04	04	70	30	---	---	---	
SC16106	Chemistry of Engineering Material	03	02	----	05	05	70	30	---	---	50	
IT16202	Programming in C	03	04	----	07	07	70	30	50*	---	---	
EC16204	Basics of Electronics Engineering	03	02	----	05	05	70	30	50	---	---	
HU16103	Generic Skills	----	----	02	02	02	---	---	---	50	---	
IT16203	Web Technology	01	04	----	05	05	---	---	50*	---	50	
NC16201	Spoken Tutorial course	---	02	---	02	--	---	---	---	---	---	
NC16202	Digital India	---	03	---	03	--	---	---	---	---	---	
Total		13	17	05	35	30	280	120	150	100	100	
											750	

Abbreviations: L-Theory Lecture; P-Practical; TU-Tutorial; TH-Theory Paper; TS-Term Tests(02); PR-Practical Exam; OR-Oral Exam; TW-Term Work

Note: - * indicates assessment by External and Internal examiners

Academic Coordinator

Head of Department

Principal

Programme : CE/ME/EC/CO/IF/IS/EE/LG/LT													
Course Code: HU16102	Course Title: Communication Skills												
Compulsory / Optional: Compulsory													
Teaching Scheme and Credits				Examination Scheme									
TH	TU	PR	Total	TH	TS	PR	OR	TW	Total				
2	-	2		-	-	-	50*	-	50				

*External Examiner

Rationale:

The medium of instruction in the technological field is English, so it is necessary for the students of Engineering and Technology to learn and express through English language. These students are the future technicians, must be able to face the interview, handle the questions and present them in a proper way, acquire confidence to participate in the group discussion, introduced with the modern communication technology and be able to use these Medias for effective communication.

Course Outcomes:

Student should be able to

CO1	Develop the ability of listening and conversation skills.
CO2	Learn the social etiquettes and manners.
CO3	Acquire the practical knowledge of interview.
CO4	Participate in group discussion.
CO5	Identify the need of public speech and new techniques of communication.
CO6	Enable the students to be a good team leader

Course Content Details:

Unit No	Topics / Sub-topics
1	Listening Skills : Importance of good listening, Types of listening, Effective listening, How to overcome the obstacles in good listening
2	Social etiquettes : Business ethics, Telephone / Mobile etiquettes, E-mail etiquettes, Table manners & respect, Small talk and punctuality
3	Conversation skills : How to begin the conversation, Proper use of body language, Tone, voice and pauses, Use of proper grammar and words, How to end the conversation
4	Interview Skills : Introduction, Types of Interview, Preparing for an interview, Mock interview

5	Group Discussion : Need and importance of group discussion, Emotional stability, Communication with knowledge, Logical conclusion, Role of moderator in the group discussion
6	Public Speech : Welcome Speech, Farewell Speech, Guest's introduction, Vote of thanks

Sr. No.	Unit	Experiment/Assignment	Approx. Hours
1	1	Development of listening skills.	02
2	1	Teacher will read out a passage thrice. And the students will listen carefully following the guidelines and answer the questions.	04
3	2	Presentation of conversation on telephone / mobile (2 students)	04
4	2	Presentation of table manners and etiquettes.	04
5	3	Conversation on the given situation	04
6	4	Mock interview (6 students)	04
7	5	Group Discussion (6 students + 1 moderator)	04
8	6	Public speech	01
9	6	Presentation of welcome and farewell speech	02
10	6	Guest's introduction speech and vote of thanks	02
Total			32

References/Books

Sr.No.	Author	Title	Publication
1	Meenakshi Raman Sangita Sharma	Communication Skills	Oxford Higher Education
2	Homai Pradhan D.S.Bhende Vijaya Thakur	Business Communication	Himalaya Publishing House
3	Curriculum Development Centre	A Course in Technical English	Somaiya Publications Pvt.Ltd.

Course Curriculum Development Committee:

a. Internal Faculty

- 1) Smt. S.S. Kulkarni
- 2) Mrs. K.S. Pawar

b. External Faculty :- 1) Mr. Sandeep Barde

Academic Coordinator

Head of Department
(Science)

Approved Copy

Academic Co-ordinator
G. P. Mumbai

Principal
Government Polytechnic
Mumbai

Programme Code: CE/ME/ EE/IS/EC/CO/IF/RT									
Course Code:SC16108				Course Title: Mathematics-II					
Compulsory / Optional: Compulsory									
Teaching Scheme and Credits				Examination Scheme					
TH	TU	PR	Total	TH	TS	PR	OR	TW	Total
3	1	-	4	70 (3 Hrs.)	30	-	-	-	100

Rationale:

The study of mathematics is necessary to develop in the student, the skills essential for Studying engineering subjects. The subject is an extension of basic mathematics of first semester, which is a pre requisite, for engineering studies.

Course Outcomes:**Student will be able to:**

CO1	Define the basic principles of function, limits, derivatives, complex number and relations between two variables.
CO2	Apply rules, concept and properties to solve the problems.
CO3	Classify various types of statistical data.

Course Content Details:

Unit No	Topics / Sub-topics
1	1. Function 1.1 Concept of function, domain and range, 1.2 Type of functions (Only definitions).
2	2. Limit 2.1 Concept of limit 2.2 Limit of Algebraic, Trigonometric, Logarithmic and Exponential functions with simple example.
3	3. Derivatives 3.1 Definition of the derivative. 3.2 Derivatives of standard function.(No proof by first principle) 3.3 Differentiation of sum, difference, product and quotient of two or more functions 3.4 Differentiation of composite, inverse, implicit, parametric, exponential and logarithmic functions with simple example. 3.5 Second order derivative.
4	4 APPLICATION OF DERIVATIVES 4.1 Geometrical meaning of derivative 4.2 Tangents & Normals to the curve, 4.3 Maxima & minima of the functions 4.4 Radius of Curvature.

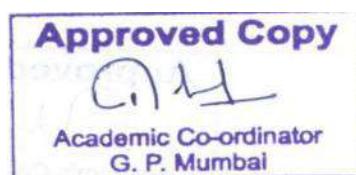
	5. <u>STATISTICS</u>
5	<p>5.1 Basic definitions-raw data, variate,frequency,cumulative frequency 5.2 Classification of data, class interval, mid value, length of the interval 5.3 Measure of central tendency – (mean, median & mode) 5.4 Mean deviation, Standard deviation, Coefficient of variance</p>
6	<p>6 <u>Complex number</u></p> <p>6.1 Definition & Algebra of complex numbers 6.2 Geometrical representation of complex number 6.3 Modulus & amplitude of complex number 6.4 Polar form of complex number 6.5 De moivre's theorem (no proof) , roots of complex number 6.6 Exponential form of complex number, Circular & Hyperbolic functions of complex numbers, relation between Circular & Hyperbolic functions, real & imaginary parts of Circular & Hyperbolic functions</p>
7	<p>7. <u>Numerical Analysis</u></p> <p>7.1 Solution of Algebraic equations using – i) Bisectional method ii) Regular – Falsi method , iii) Newton- Raphson method 7.2 Solution of simultaneous equation (i) Gauss elimination method (ii) Jacobi's method (iii) Gauss-Seidal method</p>

Suggested Specifications Table with Hours and Marks (Theory):

Unit No	Topic Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Function	04	02	02	00	04
2	Limits	08	04	02	04	10
3	Derivatives	13	04	04	06	14
4	Application of derivatives	07	00	04	04	08
5	Statistics	12	04	04	06	14
6	Complex number	12	02	04	04	10
7	Numerical analysis	08	02	04	04	10
		Total	48	18	24	70

Legends: R- Remember; U-Understand; A- Apply and above levels (Bloom's revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.



List of Tutorials:

Note: 1) Tutorials are to be used to get enough practice.

2) Make group of 20 student and for each group minimum 10 problems are to be given.

Sr. No.	Unit	Tutorials	Approx. Hours
1	1	Function	01
2	2	Limits	02
3	3	Derivatives	01
4	3	Derivatives	02
5	3	Derivatives	01
6	4	Application of derivatives	01
7	5	Statistics	01
8	5	Statistics	02
9	6	Complex number	01
10	6	Complex number	02
11	7	Numerical analysis.	02
Total			16

References/ Books:

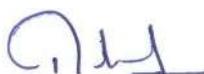
Sr.No.	Name of Book	Author	Publisher
1	Mathematics for polytechnic students	S.P. Deshpande	Pune VidyarthiGrahaPrakashan
2	Mathematics for polytechnic students (Volume I)	H. K. Das	S.ChandPrakashan
3	Companion to basic maths	G. V. Kumbhojkar	PhadkePrakashan
4	Applied Maths	N. Raghvendra Bhatt Late Shri R Mohan Singh	Tata McGraw Hill Publication

Course Curriculum Development Committee:**a. Internal Faculty**

- i. Miss.J.J.Ratnanai.
- ii. Mr.V.S.Patil

b. External Faculty

- i. Prof. P. S. Dave



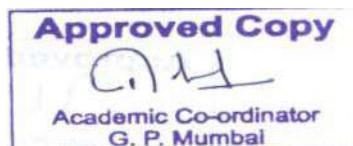
Academic Coordinator



Head of Department
(Science)



Principal
Govt. Polytechnic Mumbai



Programme : EE/EC/IF/IS/CO									
Course Code: SC16106			Course Title: Chemistry of Engineering materials						
Compulsory / Optional: Compulsory									
Teaching Scheme and Credits				Examination Scheme					
TH	TU	PR	Total	TH	TS	PR	OR	TW	Total
3	-	2	5	70 (3 Hrs.)	30	-	-	50	150

Rationale:

The subject is offered as one of the foundation subjects as it belongs to the category of basic sciences. The subject helps to understand and select different materials, their compositions, their properties and uses. The subject helps in reinforcing basic knowledge gained by students to apply and solve day to day problems related to the various engineering fields. This will provide input for better understanding of other foundation and technology subjects.

Course Outcomes: Student should be able to:

CO1	Identify and classify various materials used by them.
CO2	Select suitable substance, metal/alloy for a particular use.
CO3	Adopt methods of safety and precaution to aid preventive measures.
CO4	Develop problem solving attitude towards given problems related to the field of study.
CO5	Apply acquired knowledge to solve core engineering and technological problems.

Course Content Details:

Unit No	Topics / Sub-topics
1	<p>Atomic structure</p> <p>1.1 Introduction of atom, Fundamental Particles, Proton, Neutron, Electron; their mass, charge, location. and symbol</p> <p>1.2 Atomic number and atomic mass number. (Definition, symbol, fundamental nature, difference between. Atomic no. and atomic mass no.) Numerical based on atomic number & atomic mass number. Orbitals, Orbital, quantum no. and their significance</p> <p>1.3 Rules governing filling up of atomic orbitals, Aufbau's Principle, Pauli's exclusion principle, Hund's rule. Electronic configuration of inert gases. Electronic configuration of atoms up to atomic number 20, Isotopes and isobars and their differences, etc.</p>

	<p>1.4 Valency and chemical bonding. Valency: Definition, & examples. Types of valency: Electro valency & co-valency Examples.</p> <p>1.5 Electrovalent bond: Definition, Formation, examples. Formation of NaCl , MgCl₂, MgO,CaCl₂,CaO,AlCl₃.</p> <p>1.6 Co-va lent bond : Definition & formation Formation of following molecules Single bond : Hydrogen, Chlorine, Water , Ammonia, Hydrogen Chloride, Methane. Double bond : Oxygen, Carbon dioxide, Ethylene. Triple Bond : Nitrogen, Acetylene.</p> <p>1.7 Distinction between electrovalent and covalent compounds.</p>
2	<p>Electrochemistry</p> <p>2.1 Definition of Electrochemistry, Electrolytes: Definition, Types. Differences between Atom and ion. Definition of ionization & electrolytic dissociation, Arrhenius theory, Degree of ionization with factors affecting it.</p> <p>2.2 Terms related to Electrolysis (resistance, conductance, potential difference, their units) Mechanism of electrolysis. Examples of: mechanism of electrolysis of NaCl in fused & in aqueous state, electrolysis of CuSO₄ using Cu and Pt electrodes.</p> <p>2.3 Faradays First law of electrolysis and its mathematical derivation. Faradays second law of electrolysis& its mathematical derivation, Numerical based on laws of Faraday.</p> <p>2.4 Application of Electrolysis, electro- refining, Electroplating.</p> <p>2.5 PH value : Definition ,Formula, PH scale, its salient Features, Numerical based on PH, Applications of PH related to Engg. field. (Corrosion of bridges, Electroplating Sewage treatment, City water supply).</p> <p>CASE STUDY RELATED TO PH/ ELECTROLYSIS PROCESS</p>
3	<p>Cells and batteries</p> <p>3.1 Conductors: Definition, types (Metallic & Electrolytic) Difference between the two,</p> <p>3.2 Ohm's law, charge & discharge of cells, closed circuit voltage, open circuit voltage , Electrochemical couple, separator, electromotive force (EMF),</p>

	<p>3.3 Cells Definition, types (Electrolytic & Electrochemical), differences between them</p> <p>3.4 Classification of electrochemical cell (Primary & secondary cells) Definition & Difference between the two.</p> <p>3.5 Primary cells: Lac lance cells, Dry cells, Daniel cells.</p> <p>3.6 Secondary cells: Lead acid storage cell (Construction working charging & discharging) Nickel- cadmium cell (Construction working charging & discharging) Battery : Definition, Example</p> <p>CASE STUDY: PRIMARY CELLS/ SECONDARY CELLS</p>
4	<p>Metallurgy & alloys</p> <p>4.1 Metals & their characteristics, (hardness, ductility, malleability, toughness, brittleness, tensile strength, weldability, casting, forging, soldering) Occurrence of metals (native state and combined state, examples) , definition of Mineral, Ore, Gangue, Flux, Slag, Metallurgy.</p> <p>4.2 Process of extraction of metal from ore i.e Flowchart of metallurgy. Different steps of metallurgy. A) Grinding and pulverization B) Concentration (definition) a. Physical method (to be taught in detail) • Gravity separation • Magnetic separation • Froth floatation b. Chemical method • Calcination • Roasting (difference between the two) C) Reduction by a. Smelting (in detail: definition, diagram, description and zones of blast furnace, products of blast furnace) b. Aluminothermic (only definition) c. Electrolysis (only definition) D) Refining:</p>

	<ul style="list-style-type: none"> • Definition and Name of different methods (Poling, Liquation, Distillation, electro-refining) <p>4.3 Important ores of iron, Copper, Zinc, Aluminum,</p> <p>4.4 Physical properties and uses of some metals along with chemical properties Ex :- Fe, Cu, Al, Cr, Ni, Sn, Pb, Zn, Co, Ag, W</p> <p>4.5 Definition of alloy: purposes of preparation of Alloy. Preparation of binary alloy by fusion method</p> <p>4.6 Some useful alloys : composition, properties and uses</p> <ol style="list-style-type: none"> 1 Brass 2 Duralumin 3 Solder: Wood's metal 4 Babbitt metal.
	<p>ACTIVITY: PREPARATION OF METALLURGY FLOWCHARTS / VARIOUS METHODS OF CONCENTRATION</p>
5	<p>Semiconductors & Insulators</p> <p>5.1. Semiconductors: Definition, Example, properties & uses of silicon & Germanium , formation of semiconductor.</p> <p>5.2. Insulators : Definition, Example: air; silicone fluids : Definition, Example, properties & uses</p> <p>5.3 Superconductors: Definition, Example, properties & uses.</p>
6	<p>Corrosion.</p> <p>6.1 Definition of corrosion, Types of corrosion (Atmospheric & Electrochemical Corrosion)</p> <p>6.2 Mechanism of atmospheric corrosion, types of oxides formed, (stable, unstable, volatile, with examples), factors affecting atmospheric corrosion.</p> <p>6.3 Electrochemical corrosion / immersed corrosion</p> <ul style="list-style-type: none"> • Definition, types of cells formed (galvanic cells & concentration cells, examples of both cell formations). • Mechanism of immersed /electrochemical corrosion (hydrogen evolution mechanism & oxygen absorption mechanism, diagram, explanation and chemical equations of both mechanisms).

	<ul style="list-style-type: none"> • Factors affecting immersed corrosion (Ph value, hydrogen over voltage, solubility of corrosion products, irregularities on surface, etc.) <p>6.4 Protection of metals from Corrosion :- only definition:</p> <ol style="list-style-type: none"> i. purification of metals ii. alloy formation iii. cathodic protection iv. controlling external conditions v. protective coatings <ol style="list-style-type: none"> a) organic coating(by paints and varnishes), b) inorganic coating (metallic oxides) c) metallic coating (detail) <p>6.5 Protective metallic coatings (definition, process, application, diagram)</p> <ol style="list-style-type: none"> a. hot dipping(galvanizing & tinning) b. sherardizing c. metal spraying
7	<p>ACTIVITY : VIEWING THE PROCESSES DESCRIBED ABOVE</p> <p>Lubricants</p> <p>7.1 Definition of lubricant, example, various functions of a lubricant, classification of lubricants (solid, semi-solid and liquid) examples, conditions under which each lubricant is used.</p> <p>7.2 Lubrication: definition and types.</p> <p>Types of lubrications: (Definition, diagram & description of each type.)</p> <ul style="list-style-type: none"> • Fluid film • Boundary, • Extreme pressure lubrication. <p>7.3 Characteristic of good lubricants, requirements of an ideal lubricant</p> <p>A) Physical Characteristics</p> <ul style="list-style-type: none"> • Viscosity • Viscosity index • Oiliness • Volatility

	<ul style="list-style-type: none"> • Flash point & Fire Point • Cloud and Pour point <p>B) Chemical Characteristics</p> <ul style="list-style-type: none"> • Acidity /Neutralization no. • Emulsification • Saponification value <p>7.4 Selection of lubricant for a particular machine depending upon its working condition (Table showing machines, their working condition, nature of lubricant needed, type of lubrication used).</p> <p>ACTIVITY: SELECTION OF LUBRICANT BASED ON NATURE OF MACHINE</p>
8	<p>Engineering Materials</p> <p>8.1 Plastic</p> <ul style="list-style-type: none"> • definition , example • Polymerization: definition different methods of Polymerization addition and condensation. • Addition polymerization : definition formation of polyethylene Polytetrafluoroethylene PVC , polystyrene etc., • Condensation-polymerization: definition and examples (formation Of Bakelite , nylon-66 etc). • Types of plastic: thermosoftening ,thermosetting plastics, Differences between them. • Compounding of plastic , Materials needed for it (pigments, fillers, Plasticizers accelerators etc.,) • Properties and engineering applications <p>8.2 Rubber :</p> <ul style="list-style-type: none"> • Definition of rubber (elastomer). • Natural rubber : Basic unit in natural rubber(isoprene) • Occurrence & Processing of Latex .Limitations of natural rubber, • Vulcanization Of rubber: Definition. process, examples • Synthetic rubber: need for it, various examples (Buna-S, Buna –N, Thiokol, neoprene, butyl rubber)

	<ul style="list-style-type: none"> Properties of rubber (elasticity, tack, shock absorbance, rebound, tensile strength, related uses) <p>8.3 Insulators (definition, examples)</p> <ul style="list-style-type: none"> Teflon(PTFE): Preparation, Properties and uses Ceramics : properties and uses <p>8.4 Adhesives</p> <ul style="list-style-type: none"> Phenol Formaldehyde resin : Preparation, Properties, Uses Urea Formaldehyde resin : Preparation, Properties, Uses Epoxy resin : Properties, Uses <p>8.5 Conducting Polymers : Properties, Uses</p> <p>8.6 Liquid Crystal Polymers : Properties, Uses</p> <p>8.7 XLPE Cross polyethylene: Properties, Uses</p>
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Suggested Specifications Table with Hours and Marks (Theory):

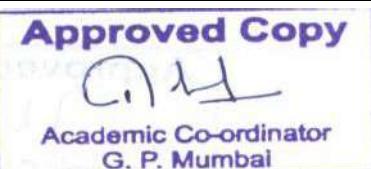
Unit No	Topic Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Atomic Structure	06	04	04	00	08
2	Electrochemistry	06	02	04	02	08
3	Cells and batteries	05	02	04	02	08
4	Metallurgy and alloys	06	04	02	02	08
5	Semi conductors and insulators	04	02	04	02	08
6	Corrosion	06	02	04	02	08
7	Lubricants	06	02	04	02	08
8	Engineering materials	09	04	08	02	14
		Total	48	22	34	14
						70

Legends: R- Remember; U-Understand; A- Apply and above levels (Bloom's revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of experiments/Assignments: (any 12 experiments)

Sr. No.	Unit	Experiment/Assignment	Approx. Hours
1	1	Tour of chemistry laboratory &safety measures.	02
2	2	To find out the electrochemical equivalent of copper	02
3	2	To find out PH of different solutions using Lovibond comparator, PH paper, PH meter	02
4	3	To Prepare Daniel Cell and note its EMF.	02



5	4	To Find out the percentage of Cu. from the given alloy sample	02
6	1,4	Qualitative analysis of any three salt solutions.	02
7	1,4	Solution 1	02
8	1,4	Solution 2	02
9	1,4	Solution 3	02
10	3,5	Compare electrode potentials of different electrodes using a standard electrode and help determine which metal corrodes faster	02
11	6	To study corrosion of aluminum rod/ in acidic and an alkaline medium and plot a graph of the cell.	02
12	7	Determination of coefficient of viscosity of given Oil by Ostwald's viscometer	02
13	7	To find out acid value of given lubricant oil by titration with KOH.	02
14	8	Preparation of phenol formaldehyde resin and to study its properties and uses	02
15	2	To find out end point of titration between weak acid and weak base using conductivity meter	02
16	8	Preparation of urea-formaldehyde resin and to study its properties and uses	02
Total			32

References/ Books:

Sr.No.	Name of Book	Author	Publisher
3	Engineering Chemistry	M. M. Uppal	Khanna Publisher, Delhi
1	Polytechnic Chemistry	V. P. Mehta	Jain Brothers, New Delhi.
2	Applied Chemistry	P. C. Jain & Monica Jain	DhanpatRai and Sons, New Delhi
4	Chemistry in Engineering and Technology Volume I and II	J. C. Kurlacose J. Jairam	Tata Mcgraw hill.

Course Curriculum Development Committee:

a. Internal Faculty

- i. Mrs. J.V. Iyengar (Lecturer in Chemistry)
- ii. Head of Departments of EC, EE, CO, IF, IS

Academic Coordinator

Head of Department
(Science)Principal
Govt. polytechnic Mumbai

Programme : CO/IT									
Course Code: IT16202			Course Title: Programming in C						
Compulsory / Optional: Compulsory									
Teaching Scheme and Credits				Examination Scheme					
TH	TU	PR	Total	TH	TS	PR	OR	TW	Total
03	--	04	07	70 (3 Hrs.)	30	50*	--	--	150

*Assessed by External Examiner

Rationale:

In today's information technology era, computer technology plays an important role. Computer applications are all pervasive in day to day life of human being. It become compulsory to all employable to have sound knowledge of how computer works and process data and information.

This subject covers from the basic concept of C to pointers in C. This subject will act as "programming concept developer" for students. It will also act as "Backbone" for subjects like OOPS, VB, Windows Programming, JAVA, OOMD, etc.

Course Outcomes:

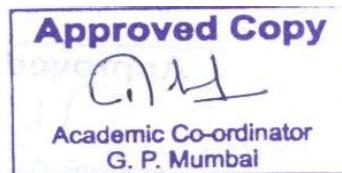
Student should be able to

CO1	Illustrate the Flowchart and describe an algorithm for a given program.
CO2	Develop Conditional and iterative statements to write C programs.
CO3	Exercise user defined functions to solve real time problems
CO4	Describe C Programs using pointers and to allocate memory using dynamic memory management functions
CO5	Develop programs using input and output operations
CO6	Understand the concepts of constants, variables, data types and operators.

Course Content Details:

Unit No	Topics / Sub-topics
1	Program Logic development 1.1 Fundamentals of algorithms: Notion of an algorithm. Pseudo-code conventions like assignment statements and basic control structures. 1.2 Algorithmic problems: Develop fundamental algorithms for (i) Exchange the values of two variables with and without temporary variable, (ii) Counting positive numbers from a set of integers, (iii) Summation of set of numbers, (iv) Reversing the digits of an integer, (v) Find smallest positive divisor of an integer other than 1, (vi) Find G.C.D. and L.C.M. of two as well as three positive integers, (vii) Generating prime numbers. 1.3 Flow chart: flow charts for all algorithms developed

2	<p>Basics of C programming</p> <p>2.1 Different approaches in programming: Procedural approach, Object Oriented approach, Event Driven approach.</p> <p>2.2 Structure of C: Header and body, Use of comments, Compilation of a program.</p> <p>2.3 Data Concepts: Variables, Constants, data types like: int, float char, double and void. Qualifiers: short and long size qualifiers, signed and unsigned qualifiers. Declaring variables, Scope of the variables according to block, Hierarchy of data types.</p> <p>2.4 Basic Input output: C program structure, Input and output using printf() and scanf(), character I/O. (Programs based on I/O)</p>
3	<p>Control Structures</p> <p>3.1 Decision making: If Statement, If else statement, Nesting of if-else</p> <p>3.2 branching: The switch statement</p> <p>3.3 Looping: While loop, Do-while loop, For loop</p> <p>3.4 Ternary operator</p> <p>3.5 Go to statement</p> <p>3.6 Use of break and continue statements</p>
4	<p>Arrays and Strings</p> <p>4.1 One dimension, two dimension and multidimensional arrays</p> <p>4.2 Array declaration</p> <p>4.3 Array initialization</p> <p>4.4 calculating the length of an array</p> <p>4.5 Operation on array</p> <p>4.6 String input/output</p> <p>4.7 String operations</p> <p>4.8 Array of strings</p>
5	<p>Structure and Union</p> <p>5.1 Basic Concept</p> <p>5.2 Structure declaration, initialization</p> <p>5.3 Structure within structure</p> <p>5.4 Nested Structures</p> <p>5.5 Array of Structure</p> <p>5.5 Union</p>
6	<p>Functions</p> <p>6.1 Concept of library functions</p> <p>6.2 String functions (comparison, concatenation, length)</p> <p>6.3 User-defined functions</p> <p>6.3 Local & global variables</p> <p>6.4 Parameter passing</p> <p>6.5 Storage classes</p>



7	Pointers 7.1 Basic concept 7.2 Pointer & arrays 7.3 Pointer & functions 7.4 Pointer arithmetic
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Suggested Specifications Table with Hours and Marks (Theory):

Unit No	Topic Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Program Logic development	05	01	03	03	07
2	Basics of C programming	09	04	06	02	12
3	Control Structures	10	04	06	06	16
4	Arrays and Strings	08	02	04	04	10
5	Structure and Union	05	02	02	04	08
6	Functions	05	02	02	04	08
7	Pointers	06	01	04	04	09
Total		48	16	27	27	70

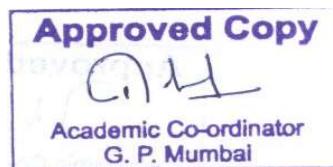
Legends: R- Remember; U-Understand; A- Apply and above levels (Bloom's revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of experiments/Assignments:

Sr. No.	Unit	Experiment/Assignment	Approx. Hours
1	1	Write an algorithm and draw the flow chart for following: a) To find out number is odd or even. b) To find out factorial value of a number. c) To check a number is prime number or not.	04
2	1,2	Program based on Input/output statement. a) To find out number is odd or even. b) To find out factorial value of a number. c) To check a number is prime number or not.	04
3	1,2,3	Program using control structures: Decision making a) To find whether the input number is even or odd. b) To find whether the number entered is positive or negative.	04

4	3	Program using control structures: Branching a) To find the greatest number among three numbers using nested if b) Program that asks user an arithmetic operator ('+', '-', '*' or '/') and two operands and perform the corresponding calculation on the operands using switch case.	04
5	3	Program using control structures: Looping(using loops) a) To find the sum of first n natural numbers where n is entered by user. b) To Find Number of Digits in a Number. c) To check whether a number is palindrome or not. d) To Generate Multiplication Table.	04
6	4	Program to perform insert and delete operation on one dimensional array.	04
7	4	Program to accept values in 2-Dimensional 3 by 3 arrays and displays the sum of all the elements.	04
8	4	Program using array of strings.	04
9	5	Program using structure and union a) To store information of 3 students (Name, Roll No, Marks) b) To store information of 2 employees (emp_id, name, salary) and display the details of the employee having salary greater than Rs. 5000.	04
10	6	Program to perform different operations on string.	04
11	6	Program using function(call by value) a) to swap to numbers b) to find square of a given number	04
12	6	Program using function(call by reference) a) To swap to numbers b) To find square of a given number	04
13	7	Program using pointer.	04
14	7	Program to compute the sum of all elements stored in an array using pointers	04
15	7	Program using pointer Arithmetic.	04
16		Mini Project	04
Total			64



References/ Books:

Sr. No.	Name of Book	Author	Publisher
1	The C Programming Language	Brian W. Kernighan, Dennis Ritchie	Prentice Hall
2	Programming in ANSI C	E. Balgurusamy	The Mc-Graw Hill
3	Let us C	Yashawant Kanetkar	BPB Publications

Course Curriculum Development Committee:**a. Internal Faculty**

- i. Ms. U.C.Khake (Lecturer in Computer Engineering, Govt. Polytechnic Mumbai)
- ii. Ms. S. A. H. Shaikh (Lecturer in Information Technology, Govt. Polytechnic Mumbai)
- iii. Mrs. V. S. Lokhande (Lecturer in Computer Engineering, Govt. Polytechnic Mumbai)

b. External Faculty

- i. Ms. Nisha Vartha (Lecturer in Information Technology, Govt. Polytechnic Thane)

Academic Coordinator**Head of Department
(Information Technology)****Principal
Govt. Polytechnic Mumbai**

Programme : CO/IT/IS									
Course Code:EC16204				Course Title: Basics of Electronics Engineering					
Compulsory / Optional: Compulsory									
Teaching Scheme and Credits				Examination Scheme					
TH	TU	PR	Total	TH	TS	PR	OR	TW	Total
3	-	2	5	70 (3 Hrs.)	30	50	-	-	150

Rationale:

This course is one of the core subject and it covers fundamentals of electronics. Therefore it is necessary for the students of electronics and related branches to study. It includes basic principles, construction of semiconductor devices, their biasing techniques and simple applications. Student will be able to analyze and apply knowledge of this subject.

Course Outcomes: Student should be able to:

CO1	Learn the fundamentals of electronics.
CO2	Know the principle of diodes and transistors. Understand the construction and materials used for diodes and transistors.
CO3	Identify the components from their configuration and sketch their symbols.
CO4	Evaluate the characteristics of electronic components
CO5	Assemble, test and analyze basic circuits such as rectifiers, amplifiers, clipper, oscillator etc.

Course Content Details:

Unit No	Topics / Sub-topics
1	Semiconductor Theory: 1.1 Review of atomic structure, Effect of Heat on atomic structure. Concept of Energy band theory, Classification of material on the basis Energy band theory Conductor, Insulator Semiconductor. 1.2 Intrinsic and Extrinsic Semiconductors, P-type and N-type Semiconductors. Majority and minority charge carriers. 1.3 P-N Junction formation, Concept of depletion layer and barrier Potential. 1.4 Biasing of PN Junction: Forward and reverse biased. Reverse breakdown: Avalanche breakdown. Reverse Saturation current. 1.5 PN junction Diode: V-I characteristics, Diode current Equation, Effect of temperature, Static and dynamic resistance.



	<p>1.6 Comparison of Si and Ge Diode. Packages of Diode.</p> <p>1.7 Definition of following terms: Forward voltage and Forward Current, PIV, Power dissipation of diode, Junction Capacitance, Barrier potential / Knee Voltage.</p> <p>1.8 Differentiate faulty and good Diode.</p>
2	<p>Diode applications:</p> <p>2.1 Review of Transformer: Step Up, Step down (Not for exam)</p> <p>2.2 Rectifier: Definition , Types, Circuit diagram, waveforms and Working of(a) Half wave rectifier (b) Full Wave rectifier (Centre Tapped) (c) Bridge rectifier.</p> <p>2.4 Definition of following terms: Ripple factor, efficiency of Rectifier, TUF, Peak-to -peak voltage, Peak voltage, rms voltage.</p> <p>2.5 Comparison of Rectifiers on types, number of diodes used, efficiency, ripple factor, TUF, rms voltage, Average voltage.</p> <p>2.6 Filters: Need of filter, Types of filters: Capacitor, Choke input and II-type filters. Working and Input ,Output waveforms.(Refer 2.2)</p> <p>2.7 Diode as clipper and clamper</p> <p>(a) Circuit diagram, waveform and working of positive and negative (series and shunt)</p> <p>(b) Circuit diagram, waveform and working of positive and negative Clamper.</p>
3	<p>Special Diodes :</p> <p>Symbol, construction, characteristics, working, application and general specification of the following diodes:</p> <p>3.1 Zener Diode, Zener diode as a regulator.</p> <p>3.2 Block diagram of series regulated power supply, Definition of load & line regulation.(Simple numerical on load & line regulation no derivation to be asked in the exam)</p> <p>3.3Light Emitting Diode, Calculation of series resistance.</p> <p>3.4Photo Diode.</p>
4	<p>Transistor Fundamentals:</p> <p>4.1 Bipolar Junction Transistor: Two diode analogy of transistor, Packages and</p>



	<p>terminal identification of Transistor.</p> <p>4.2 Symbol, Construction and working of PNP and NPN transistors.</p> <p>4.3 Transistor configuration: CE, CB, CC modes.</p> <p>4.4 Characteristics of transistors in CE configuration. Expression of collector current, Concept of collector leakage current. Relation between α and β. (no derivation to be asked in the exam)</p> <p>4.5 Concept of Early Effect.</p> <p>4.6 Transistor Parameters/ Ratings: Maximum collector current, Maximum collector voltage, Maximum Base current, Maximum power dissipation, Operating frequency range, Current gain (h_{fe}).</p> <p>4.7 Importance of Heat sink.</p> <p>4.8 Differentiate faulty and good Transistor.</p>
5	<p>BJT biasing:</p> <p>5.1 Introduction: Need of biasing, DC Operating point and load line, factors contributing to thermal instability, Effect of temperature (Thermal runaway), Stability Factor</p> <p>5.2 Transistor biasing: Circuit and analysis of biasing network such as Fixed bias, Collector feedback bias, Emitter Bias, Voltage divider bias.</p> <p>5.3 Application of Transistor as a Switch</p> <p>5.4 Single stage Common Emitter (CE) amplifier: Working and frequency response</p>
6	<p>Field Effect Transistor:</p> <p>6.1 Introduction, Symbol, Packages and terminal identification of FET (N channel, P channel)</p> <p>6.2 JFET: Construction of JFET, Formation of depletion region, Operation, Output and Transfer characteristics.</p> <p>6.3 JFET Parameters, relation between JFET parameters.</p> <p>6.4 Comparison between BJT and FET.</p>
7	<p>Introduction to Oscillators:</p> <p>7.1 Need and condition for oscillators (Barkhausen criteria)</p> <p>7.2 Types of feedback : Positive and Negative</p>



	7.3 Type of oscillator: RC phase shift oscillator and Hartley oscillator: Working, frequency expression and applications.
	7.4 Introduction to Multivibrators: Concept of Astable, Monostable and Bistable

Suggested Specifications Table with Hours and Marks (Theory):

Unit No	Topic Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Semiconductor Theory	10	04	04	04	12
2	Diode Applications	10	04	09	02	15
3	Special Diodes	04	02	04	02	08
4	Transistor Fundamentals	08	06	08	02	16
5	BJT Biasing	08	02	04	04	10
6	Field Effect Transistor	04	02	03	00	05
7	Introduction to Oscillators	04	02	02	00	04
Total		48	22	34	14	70

Legends: R- Remember; U-Understand; A- Apply and above levels (Bloom's revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of experiments/Assignments: (any 12 experiments)

Sr. No.	Unit	Experiment/Assignment	Approx. Hours
1	-	Introduction of front panel and controls of multimeter, CRO, Function generator and their use for testing and measurement.	02
2	1	To construct and test the V-I characteristic of semiconductor P-N diode. Find out static, dynamic resistance and knee voltage. Find the maximum current and PIV of diode from datasheet of given diode.	02
3	2	To construct and test half wave rectifier. Observe and measure input and output waveforms.(peak voltage, peak to peak voltage, R.M.S voltage, Calculate average voltage)	02
4	2	To construct and test full wave Center tapped rectifier with filter. Observe and measure input and output waveforms.(peak voltage, peak to peak voltage, R.M.S voltage, Calculate average voltage.)	02
5	2	To construct and test Bridge Full wave rectifier with filter. Observe and measure input and output waveforms. (Peak voltage, peak to peak voltage, R.M.S voltage, Calculate average voltage.). Observe the effect of filter capacitor on ripple.	02
6	3	To construct and test the V-I characteristic of Zener diode.	02
7	3	To construct and test Zener regulator. Find out load and line regulation.	02
8	3	To construct and test the V-I characteristics of LED.	02



9	4	To construct and test input and output characteristics of BJT and Calculate input resistance and output resistance of BJT in CE Mode.	04
10	5	To construct and test transistor as switch and Observe input and output waveforms.	02
11	5	To construct and test the frequency response of single stage CE amplifier and Calculate gain bandwidth product of given circuit.	04
12	6	To construct and test the output characteristic of FET. Label and interpret the various parameters on it.	04
13	7	To construct, test and verify oscillation frequency of RC phase shift oscillator	02
Total			32

References/ Books:

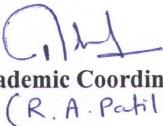
Sr.No.	Name of Book	Author	Publisher
1	A text book of Applied Electronics	R. S. Sedha	S. Chand and Co. Ltd.
2	Electronic Devices and circuits	Allen Mottershead	Prentice Hall of India Ltd.
3	Basic Electronics	Bernard Grob	McGraw Hill
4	Principles of Electronics	V. K. Mehta	S. Chand and Co. Ltd.
5	Electronic Device and circuit	G. K. Mittal	Khanna publishers
6	Electronic Principles	Albert Malvino	Tata McGraw Hill
7	Basic Electronic and Linear circuit	N. N. Bhargava, S. C. Gupta	Tata McGraw Hill

Course Curriculum Development Committee:**a. Internal Faculty**

- i. Mr.S.R.Aher
- ii. Ms. Monali B. Ghodke
- iii. Ms.Avanti S.Pawar

b. External Faculty

- i. Mr.Ghadyalji

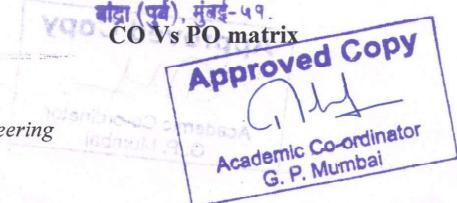

Academic Coordinator
(R. A. Patil)


Head of Department


Principal
Govt. polytechnic Mumbai

Course Name:- Basics of Electronics Engineering Course Code:-EC16204

Basics of Electronics Engineering



EC16204

Programme : ME/CE/EC/CO/IF/IS/EE/RT/LT/LGFT									
Course Code: HU16103			Course Title: Generic Skills						
Compulsory / Optional: Compulsory									
Teaching Scheme and Credits				Examination Scheme					
TH	TU	PR	Total	TH	TS	PR	OR	TW	Total
-	2	-	2	-	-	-	50		50

Rationale:

The inclusion of this course is need of the day. The technicians along with technology must learn the generic skills to be successful technician. The subject is included under the category of humanities. The role of subject is to make the student aware of its importance in the society to inform him/her about technical education system, the institute (library, various dept, curriculums etc.) to help him/her with essential etiquettes & manners.

Course Outcomes: Student should be able to,

CO1	Identify his/her role in various areas of life.
CO2	Know the various areas in technical education system.
CO3	Know importance of curriculum, MIS, IS, etc
CO4	Exhibit his/her behavior in proper manner
CO5	Develop & adopt self study techniques.
CO6	Follow rules & regulation strictly & become a law abiding citizen.

Course Content Details:

Unit No	Contents
1	<p>Social Aspects:</p> <p>1.1 Role of an individual in the family, in the institute, in the society. 1.2 Social responsibilities & rights of an individual. 1.3 Role of a diploma holder in the present day scenario.</p>
2	<p>Technical education in Maharashtra:</p> <p>2.1 Definition of technical education its types, structure (ITI, Diploma & Degree) 2.2 Governance in Technical Education (MSBTE, Autonomous & private – structure, fees, faculty, exam, evaluation etc.)</p>



3	<u>Awareness of curriculum:</u> 3.1 Definition of curriculum . Steps observed in its design. 3.2 Objectives, rationale, core subjects, other subjects and credit system.
4	<u>MIS (Management Information System) :</u> 4.1 Definition, its working, applications & relevance in the present day scenario. 4.2 MIS applied to exam section, student registration, subject registration, exam registration. 4.3 Department related applications: Work related to office, library & others.
5	<u>Library :</u> 5.1 Introduction to library, its functioning, its role in an institute. 5.2 Facilities available in library, search facility for books on internet, concept of digital library. 5.3 Lectures by librarian on Library functioning 5.4 Knowing library ethics.
6	<u>Health Awareness and Social mannerism:</u> 6.1 Introduction to health and hygiene (WHO- definition) Definition, its importance. 6.2 Mannerisms— In the Institute: Overall discipline including pitch and tone of voice ,accent, body language, dressing sense. In the Laboratory : Handling of tools and equipments and its Maintenance. In the Classroom: Peer sensitivity and relationship, body posture and attentivity norms. 6.3 Seminar culture –Etiquettes to be observed while attending seminars, And presenting seminar. 6.4 Party and Ceremonial functions
7	<u>Self Study Techniques :</u> 7.1 Extraction / Collection of information from various sources. 7.2 Importance of soft skills . Listening, reading & writing skills 7.3 Safety precautions in laboratories and. workshop.
8	<u>Self Presentation</u> 8.1 Resume – 8.1.1 Rescume writing tips 8.1.2 Types of resumes



Government Polytechnic, Mumbai

Sr. No.	Unit	Assignment	Approx. Hours
1	1	Define role and responsibility of individual in the family	04
2	1	State in brief the role of diploma holder in industry.	02
3	2	Draw organization chart / hierarchy in Technical Education System of Maharashtra State Understand about Autonomous and State Governed Curriculum Scheme.	03
4	3	Enumerate in detail steps observed in designs of curriculum	03
5	3	To develop good learning habits, abilities and attitudes for enjoy learning.	04
6	4	To know MIS system and its effect on efficiency of the system.	03
7	5	Functioning of Library and Concept of digital library.	03
8	6	Significance of hygiene for maintaining health.	02
9	7	Development of Listening, Reading and Writing Skills.	04
10	7	Safety precautions in various laboratories and workshop.	02
11	8	Resume writing techniques.	02
Total			32

References/ Books:

Sr.No.	Name of Book	Author	Publisher
1	Generic Skills	A.K.Gupta	S.K.Kataria
2	Generic skill Development Manual.		MSBTE, Mumbai
3	Lifelong learning in Global Knowledge Economy, Challenge for Developing countries.		World Bank Publication



Government Polytechnic, Mumbai

Course Curriculum Development Committee:

- a. Internal Faculty: 1) Mr. S. V. Joshi - HOD Of Mechanical Engg. *Ay.*
2) Mr . R. A. Kulkarni - Workshop Superintendent
3) Mrs. M. P. Deshpande - Lecturer in Electronics Engg. *R.P.*

- b. External Faculty: 1) Mr . S.G.Deshpande
2) Mr.U.M. Kantute

Q.H
Academic Coordinator
(R. A. Patil)

S. Joshi
Head of Department
Mechanical Engineering
H.O.D.
Dept. of Mechanical Engineering
Govt. Polytechnic, Mumbai-51.

M.
Principal
Govt. Polytechnic Mumbai



Programme : Diploma in Information Technology/Computer Engineering									
Course Code: IT16203			Course Title: Web Technology						
Compulsory / Optional: Compulsory									
Teaching Scheme and Credits				Examination Scheme					
TH	TU	PR	Total	TH	TS	PR	OR	TW	Total
1	-	4	5	-	-	50*	-	50	100

*External Examiner

Rationale:

Diploma holders of Information Technology often work to develop professional looking static and dynamic websites using different Web Technologies. Some common Web technologies which are used to develop websites are HTML, Javascript, CSS, XML, XHTML, AJAX, ASP.NET , PHP.

This is a Hands-on course in designing and developing Static World Wide Web pages using HTML (HyperText Markup Language) and CSS (Cascading Style Sheets) which will develop abilities in students to create and deploy Static Web pages.

Course Outcomes:

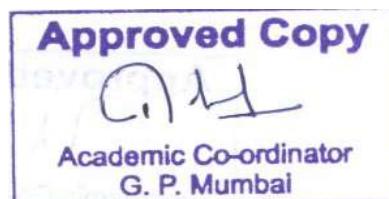
Student should be able to

CO1	Visualize the basic concept of HTML.
CO2	Recognize the elements of HTML.
CO3	Read and write HTML code.
CO4	Understand concept of CSS and write code.
CO5	Create a fully functioning static website.
CO6	Develop the concept of web publishing.

Course Content Details:

Unit No	Topics / Sub-topics
1	INTRODUCTION TO WEB TECHNOLOGY 1.1 Careers in Web Technologies and Job Profiles 1.2 Web Site Design Principles – How the Website Works?, Five Golden rules of web designing, Analyze your Audience, Build a Web Site Development Team, Filenames and URLs, Directory Structure, Diagram the Site. 1.3 Planning Site Navigation – Creating Usable Navigation, Using Text Based Navigation, Using Graphics- Based Navigation.
2	HTML 4.01: INTRODUCTION TO ELEMENTS OF HTML 2.1 Basic structure tags: !DOCTYPE, HTML, HEAD, TITLE, BODY with attributes. 2.2 Block level tags and horizontal rules: Headings, Paragraphs, Breaks, Divisions, Centered Text, Block Quotes, Preformatted text, Address, HR tag.

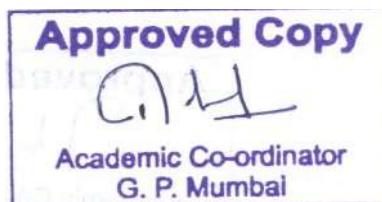
	<p>2.3 Text level tags and special characters: Bold, Italic, Teletype, Underline, Strikethrough, Superscript, Subscript, DIV tag</p> <p>2.4 Working with lists: Ordered Lists, Unordered Lists, Definition Lists, Nested Lists.</p> <p>2.5 URL and Anchor tag: URL: Types of URLs, Absolute URLs, Relative URLs. Anchor Tag: Linking various documents for internal and external links. Marquee Tag.</p> <p>2.6 IMAGES, COLORS AND BACKGROUNDS: IMG tag and different Image formats, colors and backgrounds.</p>
3	<p>TABLE, FRAME AND FORMS</p> <p>3.1 Working with table: TABLE tag with attributes. TABLE, TR, TH, TD tags, border, cell spacing, cell padding, width, align, bgcolor attributes.</p> <p>3.2 Working with frame: Types of Frames with their attributes Creating frames: FRAMESET tag – rows, cols attributes, FRAME tag –name, frame border, margin height, margin width, src, resize, scrolling attributes. Use of NOFRAMES tag, Frame targeting.</p> <p>3.3 Working with forms and controls: Creating basic form: FORM tag, action and method attributes. Form fields: Single line text field, password field, multiple line text area, radio buttons, and check boxes. Pull down menus: SELECT and OPTION tags. Buttons: submit, reset and generalized buttons.</p>
4	<p>HTML5</p> <p>4.1 Introduction to HTML5</p> <p>4.2 Whats new in HTML5: New Structure Tags (SECTION, NAV, ARTICLE, ASIDE, HEADER, FOOTER), New Form Tags (search, tel, url, email, number and range), HTML5 DocType.</p>
5	<p>INTRODUCTION TO XHTML 1.1</p> <p>5.1 What is XHTML (EXtensible HyperText Markup Language)?</p> <p>5.2 Difference between HTML & XHTML</p> <p>5.3 Introduction to Doc Types (Strict, Transitional and Mobile)</p>
6	<p>CASCADING STYLE SHEETS 2.0</p> <p>6.1 Introduction to CSS 6.2 Types of Style Sheets (Inline, Internal and External) 6.3 Creating Style Sheet 6.4 CSS Properties 6.5 CSS Styling(Background, Text Format, Controlling Fonts) 6.6 Working with block elements and objects 6.7 Working with Lists and Tables 6.8 CSS Id and Class 6.9 Box Model(Introduction, Border properties, Padding Properties, Margin properties) 6.10 CSS Color 6.11 Creating page Layout and Site Designs.</p>



7	CASCADING STYLE SHEETS (CSS 3.0) 7.1 INTRODUCTION TO CSS 3 7.2 NEW CSS3.0 PROPERTIES: CSS Rounded Corners, Border Images, Border Shadows, CSS Gradients, CSS Background properties, Text-Shadow Property, Text-Stroke Property.
8	PUBLISHING AND MAINTAINING YOUR WEB SITE 8.1 Publishing Your Web Site 8.2 Testing Your Web Site 8.3 Refining and Updating Your Content 8.4 Attracting Notice to Your Web Site. 8.5 Create Web Sites and Publishing on free web servers (Joomla, Yola, Zoho etc)

Suggested Specifications Table with Hours and Marks (Theory):

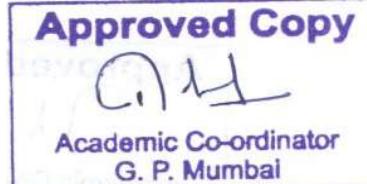
Unit No	Topic Title	Teaching Hours	Distribution of Theory Marks
1	Introduction to web technology	2	
2	Html 4.01: introduction to elements of HTML	2	
3	TABLE, FRAME and FORMS	3	
4	HTML5	1	
5	Introduction to XHTML 1.1	1	
6	Cascading style sheets 2.0	4	
7	Cascading style sheets (CSS 3.0)	2	
8	Publishing and maintaining your web site	1	
Total		16	Not Applicable



List of experiments:

Sr. No.	Unit	Experiments	Approx. Hours
1	1	Build a Website Development Team, Analyze your Audience, Identify the Contents, decide Filenames and URL, create Directory Structure for your website, Diagram your selected web Site. For Example: 1. Web site for Information Technology/ Computer Department. 2. Web site for any Vehicle Showroom. 3. Web site for Travel and Tourism Agency. 4. Web site for any Sport.(Ex. Cricket, Tennis etc.) 5. Any other suggested topic by subject teacher.	4
2	2	Write a HTML code for creating Web page using structure tags for displaying “Welcome to HTML” message.	1
3	2	Create a web page for displaying a paragraph using Block level, HR tags, Text level tags and special characters .	2
4	2	Create a web page for implementing different types of Lists .	2
5	2	Create a web page to link web page in the same directory, different directory, in a subdirectory of a parent directory, any other directory, and link to Email ID for your website.	2
6	2	Create a web page for changing colors of links using BODY tag attributes.	1
7	2	Create a web page using IMG tag implementing various attributes, implementing image as a button and setting image as background.	1
8	3	Create a web page implementing all formatting and table tag .	2
9	3	Create a web page for students Registration form using FORM tag .	3
10	3,4	Create a web page using HTML5 tags (Structure Tags, Form Tags)	2
11	6	Create a web page for applying Background, Text Format, and Controlling Fonts using CSS .	2
12	6,7	Create a web page for demonstration of CSS applying Internal/External/ Inline style.	2
13	6,7	Working with List, HTML elements box, Positioning and Block properties in CSS 3.0.	2
14	6,7	Creating one page Layout using CSS.	2
15	8	Mini project Creation and Publishing Finalizing Mini Project containing minimum Ten web pages from above practicals and Publishing it.	4
Total			32

Notes: If possible an industrial visit should be arranged or videos should be shown of different websites and CSS.



References/ Books:

Sr. No.	Name of Book	Author	Publisher
1	HTML and XHTML – The complete reference	Thomas Powell	Tata McGraw Hill, New Delhi.
2	HTML5 Black Book	Kogent Learning Solutions Inc.	DreamTech
3	Murach's HTML5 and CSS3	Zak Ruvalcaba and Anne Boehm	Murach
4	Learning Web Design	Robbins	O'Reilly
5	SAMS Teach Yourself HTML & CSS in 24 Hours	Dick Oliver	Pearson Education Publication
6	HTML, XHTML and CSS	Anne Boehm	Murach's Publication

REQUIRED SOFTWARE:

Text editor of your choice: Notepad++ (windows), Komodo Edit (mac), Edge Code (Creative Cloud) Web Browser of your choice: Mozilla Firefox, Google Chrome, Internet Explorer, Safari, opera.

REFERENCE SITES:

<http://www.w3schools.com/html>

http://www.w3schools.com/html/html_xhtml.asp

<http://www.december.com/html/>

<https://pantherfile.uwm.edu/vanpelt/www/709-webdesignmanual-3Feb05.pdf>

<http://www.html.net/>

<http://www.2createawebsite.com>

<http://webdesign.about.com>

Course Curriculum Development Committee:**a. Internal Faculty**

- i. Ms. Sadaf A.H.Shaikh (Lecturer in Information Technology, Government Polytechnic Mumbai)

b. External Faculty

- i. Ms. Farheen S. Shaikh (Sr. Software Developer, Capgemini India)

Academic Coordinator

(R. A. Patil)

Head of Department
(Information Technology)

Principal
Govt. Polytechnic Mumbai

