



SHRI VILE PARLE KELAVANI MANDAL'S
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC



INFORMATION TECHNOLOGY DEPARTMENT

SEMESTER-II





SHRI VILE PARLE KELAVANI MANDAL'S
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC



INFORMATION TECHNOLOGY DEPARTMENT

Shri Vile Parle Kelavani Mandal's SHRI BHAGUBHAI MAFATLAL POLYTECHNIC																			
Learning and Assessment Scheme for Post S.S.C Diploma Programs																			
Program Name		: Diploma In Information Technology																	
Programme Code		: IT			Year		With Effect From Academic		: 2023-24										
Duration Of Programme		: 6 Semester			Duration		: 16 WEEKS												
Semester		: II			Scheme		: 2023												
Sr No	Course Title & Code	Course Category	IKS (Hrs)	Learning Scheme					Credits	Paper Duration (Hrs.)	Assessment Scheme								Total Marks
				Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs)	Notional Learning Hrs /Week			Theory (Marks)			Based on LL & TL			Based on Self Learning (SLA) (Marks)		
				CL	TL	LL					FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR			
1	Applied Science (ASC238902)	DSC	4	3	-	2	1	6	3	1.5	30	70@	100	25	25	-	25	175	
2	Website Designing (WSD238907)	SEC	0	2	-	4	2	8	4	3	30	70	100	25	25	-	25	175	
3	Applied Mathematics (AMT238908)	AEC	2	3	2	-	1	6	3	3	30	70	100	-	-	-	25	125	
4	Environmental Studies (EVS238909)	VEC	0	2	-	-	-	2	1	-	-	-	-	25	-	-	-	25	
5	Programming in C++ (CPP230901)	SEC	0	2	-	4	2	8	4	3	30	70	100	25	25	-	25	175	
6	Computer Networks (CON230902)	SEC	1	4	-	2	2	8	4	3	30	70	100	25	-	25	25	175	
7	IT Workshop & Practice (IWP230903)	SEC	0	-	-	2	-	2	1	-	-	-	-	25	-	-	-	25	
Total			07	16	2	14	8	40	20	No. of papers=5	150	350	500	150	75	25	125	875	

Abbreviations : IKS - Indian Knowledge System, CL - Classroom Learning, TL - Tutorial Learning, LL - Laboratory Learning, FA - Formative Assessment, SA - Summative Assessment, SLA - Self Learning Assessment, TH - Theory, PR - Practical, OR - Oral
Legends : @ Online Examination-
Note :
1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+TL+LL+SL)Hrs. x 15 Weeks
5. 1 credit is equivalent to 30 Notional Hrs.
6. ^ Self learning hours shall not be reflected in the Time Table.
7. SA-PR, SA-OR: Assessed by Internal and External Examiners Jointly FA-PR, SLA: Assessed by Internal Examiner Only
Course Category : Discipline Specific Course Core (DSC) : 1, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern./Apprenti./Project./Community (INP) : 0, Ability Enhancement Course (AEC) : 1, Skill Enhancement Course (SEC) : 4, Generic Elective (GE) : 0

Head of Department

Controller of Examination

Secretary CDC



Principal





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1. COURSE DETAILS

Programme: CSE/IT	Semester: I/II
Course: APPLIED SCIENCE	Course Category: DSC
Course Code: ASC238902	Duration:16 Weeks

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Paper Duration (Hrs.)	Assessment Scheme							Total Marks
Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs)			Theory (Marks)			Based on LL & TL			Based on Self Learning	
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR		
3	-	2	1	3	1.5	30	70@	100	25	25	-	25	175

Total IKS Hrs for the course :04

3. COURSE OBJECTIVE

To develop basic concept, facts, and principles of applied science and apply these concepts to solve engineering problems.

4. SKILL COMPETENCY

- Use of measuring instruments, gain understanding of waves and properties of matter
- Classification of light properties
- Apply the concept of electrostatics and electrochemistry

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Develop fundamental knowledge of physical, scalar and vector quantities
CO2	Learn the physical properties of matter and types of waves
CO3	Classify different properties of light
CO4	Apply the concepts of Electrostatics, Current Electricity and Electro Chemistry





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6. CO-PO, CO- PSO MAPPING TABLE - COMPUTER SCIENCE ENGINEERING

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Applied Science (ASC238902)	CO1	3	2	-	3	-	-	-	1	-
	CO2	3	2	1	1	-	-	-	1	-
	CO3	3	2	-	2	-	-	-	1	-
	CO4	3	2	1	3	-	-	-	1	-
	CO Avg.	3	2	1	2.5	-	-	-	1	-

CO-PO, CO- PSO MAPPING TABLE - INFORMATION TECHNOLOGY

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Applied Science (ASC238902)	CO1	3	2	-	3	-	-	-	1	-
	CO2	3	2	1	1	-	-	-	1	-
	CO3	3	2	-	2	-	-	-	1	-
	CO4	3	2	1	3	-	-	-	1	-
	CO Avg.	3	2	1	2.5	-	-	-	1	-





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7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	<p>General physics</p> <p>1.1 Physical measurement and units</p> <p>1.1.1 fundamental physical quantities, examples.</p> <p>1.1.2 Derived physical quantities, examples</p> <p>1.1.3 System of units, C.G.S., M.K.S., F.P.S and S.I. units</p> <p>1.1.4 Dimensions analysis and its applications</p> <p>1.1.5 Errors – Types of errors (systematic and random), Estimation of Error (absolute error, relative error, percentage error), Numerical</p> <p>Brihath Shathaka (divisions of the time, unit of distance) (IKS)</p> <p>1.2 Scalars and Vectors</p> <p>1.2.1 Scalar and vector quantities with examples</p> <p>1.2.2 Types of vectors</p> <p>1.2.3 Vector operations (addition, subtraction, dot product and cross product)</p> <p>1.2.4 Triangle law and parallelogram law</p> <p>1.2.5 Resolutions of vectors</p>
II	<p>Properties of matter</p> <p>2.1 Elasticity</p> <p>2.1.1 Definitions - Deforming force, restoring force, elastic body and plastic body</p> <p>2.1.2 Stress, strain and their types</p> <p>2.1.3 Modulus of elasticity</p> <p>2.1.4 Elastic limit, Hooke's law.</p> <p>2.1.5 Determination of "Y" by Searle's method</p> <p>2.1.6 Behaviour of a wire under continuously increasing stress, yield point, breaking stress</p> <p>2.1.7 Numerical</p> <p>2.2 Surface tension</p> <p>2.2.1 Molecular force, cohesive force and adhesive force, molecular range, sphere of influence</p> <p>2.2.2 definition and S.I. unit of surface tension</p> <p>2.2.3 Effect of impurity and temperature on surface tension</p>
III	<p>Oscillations and waves</p> <p>3.1 Oscillations</p> <p>3.1.1 Simple harmonic motion – Definition of S.H.M., Time period, frequency, expression for displacement, velocity and acceleration</p> <p>3.1.2 linear simple harmonic motion and angular simple harmonic motion, simple pendulum</p> <p>3.2 Wave motion</p> <p>3.2.1 Wave motion, Types of wave, transverse and longitudinal waves with examples</p> <p>3.2.2 Properties of wave (amplitude, time period, frequency, wavelength, wave velocity and phase)</p> <p>3.3 Sound</p> <p>3.3.1 Definition and formation of stationary wave, node, antinode, free vibration forced vibration and resonance, velocity of sound by resonance.</p> <p>Gol Gumbaz, 17th-century mausoleum is topped with an acoustic marvel (IKS)</p>





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IV	<p>Optics 4.1 Reflection, refraction, snell's law, total internal reflection. Speed of light - 2202 yojans per half nimish (IKS) 4.2 Interference 4.2.1 Interference of light, constructive and destructive interference, conditions for constructive and destructive interference 4.2.2 Conditions for steady interference pattern 4.3 Diffraction 4.3.1 Diffraction of light, Diffraction grating 4.4 Polarization 4.4.1 polarization of light, definition- plane of polarization, plane of vibration 4.4.2 Applications of polaroid 4.5 Photoelectric effect 4.5.1 Concept of photon, Planck's hypothesis 4.5.2 Statement of photoelectric effect, definitions- threshold frequency, threshold wavelength, work function, stopping potential 4.5.3 Characteristics of photoelectric effect, Einstein's photoelectric equation (no derivation) 4.5.4 Photoelectric cell – principle, working and applications 4.5.5 Numerical based on above concepts</p>
V	<p>Electrostatics and current electricity 5.1 Electrostatics 5.1.1 concept of charge, properties of charge (additive nature, quantization of charge, conservation of charge), unit of charge. 5.1.2 Electric field and their properties 5.1.3 Electric flux, electric flux density, relation between electric flux density and electric field intensity 5.1.4 Electric potential and potential difference 5.2 Capacitor 5.2.1 Principle of capacitor, capacitance and its unit, definition of 1 farad 5.2.2 capacitors in series and parallel 5.2.3 Numerical based on above concepts 5.3 Current electricity 5.3.1 current and its unit, resistance and its unit 5.3.2 Ohm's law 5.3.3 Specific resistance, Combination of resistances 5.3.4 Potentiometer, Wheatstone bridge</p>
VI	<p>Electro Chemistry 6.1 Electronic concept of oxidation, reduction and redox reactions. The iron pillar at Qutub Minar in Delhi (IKS) 6.2 Definition of terms: electrolytes, non-electrolytes with suitable examples, 6.3 Faradays laws of electrolysis and simple numerical problems. 6.4 Industrial Application of Electrolysis – 6.4.1 Electroplating 6.5 Application of redox reactions in electrochemical cells – 6.5.1 Primary cells – dry cell, 6.5.2 Secondary cell - commercially used lead storage battery, fuel and Solar cells. 6.6 Metals and Alloys 6.6.1 Characteristics and Physical properties of metals 6.6.2 Purpose of making alloy, classification, Applications.</p>





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8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of –10 Experiments/assignments/drawings

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	Know your physics lab	2	CO1
2	Use of Vernier calipers and micrometer screw gauge	4	CO1
3	To study Parallelogram law of vector addition	2	CO1
4	Determination of young's modulus by searle's method	2	CO2
5	Determination of velocity of sound by resonance tube method.	2	CO2
6	Frequency of A.C. supply by sonometer	2	CO2
7	Refractive index of prism by minimum deviation- Pin method	4	CO3
8	Wavelength of light by diffraction grating	2	CO3
9	Use of potentiometer (principle, comparison of cell, calibration of voltmeter)	4	CO4
10	To verify Ohm's law by plotting graph between current and potential difference.	2	CO4
11	Use of wheatstone's bridge (resistance, verify laws of resistance, specific resistance)	2	CO4
12	Construction and measurement of emf of electro chemical cell (Daniel cell)	2	CO4
Total		30	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. Micro-Project

- Vernier Calipers: Prepare prototype vernier caliper of desired least count using card sheet
- Carbon resistors: Determine the resistance and tolerance of carbon resistors using color codes
- Mobile applications: Use mobile applications for measurements of different physical quantities
- Optical Fiber and TIR: Prepare model to demonstrate total internal reflection
- Interference and Diffraction: Prepare model to demonstrate Interference and Diffraction

2. Model/Chart making

- Prepare a chart to summarize units and measurements
- Series and parallel resistances: Prepare models for combination of series and parallel resistances

3. Quiz

- Quiz on Simple harmonic motion, oscillation, Sound waves.
- Quiz on Surface tension, elasticity.

4. Assignment

- Convert the units of a given physical quantity from one system of units to another.
- Demonstrate the variation of angle of refraction with respect to refractive index using online tool
- Use a digital vernier caliper and micrometer screw gauge for measurements. (lab- based).
- Applications of optical fibers in Information technology and Computer engineering etc.
- Solve numerical based on Faraday's first and second law of electrolysis.





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10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments.
3. Guest/Expert lectures
4. Demonstrations
5. Slides
6. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES (minimum 3 to 5)

Sr.No.	Title of Book	Author	Publication
1	Engineering physics	R.K.Gaur and S.L. Gupta	Dhanpat Rai Publication
2	Concept of physics I & II	H.C.Verma	Bharati Bhawan
3	Chemistry for Engineers	Agnihotri, Rajesh	Wiley India Pvt.Ltd.
4	Engineering chemistry	Jain and Jain	Dhanpat Rai Publishing Co.

12. LEARNING WEBSITE & PORTALS (minimum 5)

1. <https://www.physicsclassroom.com>
2. <https://www.khanacademy.org>
3. <http://physics.about.com>
4. <https://ncert.nic.in/textbook/pdf/lech103.pdf>
5. <https://chem.libretexts.org/>

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning
4. Term Work
5. Seminar/Presentation

Summative Assessment (Assessment of Learning)

1. End Term Exam
2. Micro-project
3. Tutorial Performance





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14. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	General physics	CO1	8	6	3	3	12
II	Properties of matter	CO1	8	4	4	3	11
III	Oscillations and waves	CO2	7	4	4	3	11
IV	Optics	CO3	9	4	6	3	13
V	Electrostatics and current electricity	CO4	8	4	6	3	13
VI	Electro Chemistry	CO4	5	4	3	3	10
GRAND TOTAL			45	26	26	18	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Mr. Ajinkya A. Jogale
2	Internal	Mrs. Geetha .S
3	External	Mr. Manoj Jaiswar
		Organization: T. P. Bhatia junior college





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1. COURSE DETAILS

Programme: Computer Engineering/Information Technology	Semester: I/II
Course: Website Designing	Course Category: SEC
Course Code: WSD238907	Duration: 16 Weeks

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Paper Duration (Hrs.)	Assessment Scheme							Total Marks
Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs)			Theory (Marks)			Based on LL & TL			Based on Self Learning	
CL	TL	LL				FA-TH	SA-TH	Total	Practical (Marks)			SLA (Marks)	
									FA-PR	SA-PR	SA-OR		
2	-	4	2	4	3	30	70	100	25	25	-	25	175

Total IKS Hrs for the course :00

3. COURSE OBJECTIVE

The internet based applications are used in various sectors such ticket booking, banking, government agencies etc. This subject gives introduction to client servers programming. It also gives students the practical exposure to widely used web technologies to write web pages.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- **Develop static webpages.**
- **Validate web pages using client side scripting language.**

5. COURSE OUTCOMES(COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Conceptualize on fundamental terminologies in web designing
CO2	Design web pages using HTML block level and text level tags, frames, forms, tables
CO3	Format the web pages using style sheets
CO4	Validate web pages using JavaScript





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6. CO-PO, CO- PSO MAPPING TABLE - Computer Engineering

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Website Designing (WSD238907)	CO1	3	-	-	-	-	1	1	3	-
	CO2	3	-	3	-	-	1	1	3	-
	CO3	3	-	3	-	-	1	1	3	-
	CO4	3	2	3	-	-	1	1	3	-
	CO Avg.	3	2	3	-	-	1	1	3	-

CO-PO, CO- PSO MAPPING TABLE - Information Technology

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Website Designing (WSD238907)	CO1	3	-	-	-	-	1	1	3	-
	CO2	3	-	3	-	-	1	1	3	-
	CO3	3	-	3	-	-	1	1	3	-
	CO4	3	2	3	-	-	1	1	3	-
	CO Avg.	3	2	3	-	-	1	1	3	-





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7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	INTRODUCTION TO WEB DESIGNING 1.1. Use of Internet, Terminologies used in internet, Internet verses www. 1.2. Web client-server computing, Client-Server Architecture, various types of server, Types of server, server side coding, client side coding, 1.3. Introduction to Markup languages and Scripting languages, Search Engine 1.4. Principles of web designing 1.5. Planning process of web page designing 1.6. Rules of web Designing 1.7. Introduction to web hosting
II	HTML 2.1. Introduction to HTML, Components of HTML: Tags – closed tags and open tags, Attributes, Elements, 2.2. Structure Tags: DOCTYPE, HTML, HEAD, TITLE, BODY tags. 2.3. Block Level Elements: Headings, Paragraphs, Breaks, Divisions, Centered Text, Block Quotes, reformatted text, Address. 2.4. Text Level Elements: Bold, Italic, Teletype, Underline, Strikethrough, Superscript, subscript, Horizontal Rules, special characters 2.5. Adding comments, The Meta tag. Creating Lists, Ordered Lists, Unordered Lists, Definition Lists, Nested Lists 2.6. Linking HTML Documents URL: Types of URLs, Absolute URLs, Relative URLs, 2.7. The Anchor Tag, linking: To document in the same folder, to document in the different folder, to document on the web, To specific section within the document 2.8. Images Image formats: gif, jpeg, png, the inline image: an IMG tag, alternate text, image alignment, buffer space – HSPACE, VSPACE, wrapping text, height and width of images, Image as a link, Image mapping 2.9. Colors and Backgrounds, the text color: color attribute of FONT tag, text attribute of BODY tag, Background color: bgcolor attribute of BODY tag, Background images: background attribute of BODY tag, Changing link colors: link, alink, vlink attributes of BODY tag
III	TABLES & FRAMES 3.1. Tables, creating basic tables: TABLE, TR, TH, TD tags., Formatting tables: border, cellpadding, cellspacing, width, align, bgcolor attributes, Adding captions: CAPTION tag. 3.2. Formatting contents in the table cells: align, valign, bgcolor, height, width, nowrap attributes, Spanning rows and columns: rowspan and colspan attributes. 3.3. Frames: Introduction to frames: What is frame? Advantages and disadvantages of using frames. Creating frames: FRAMESET tag – rows, cols attributes, FRAME tag –name, frameborder, marginheight, marginwidth, src, resize, scrolling, attributes. Use of NOFRAMES tags Frame targeting.





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IV	<p>FORMS</p> <p>4.1. Forms creating basic form: FORM tag, action and method attributes. 4.2. Form fields: Single line text field, password field, multiple line text area, radio buttons, check boxes, pull down menus: SELECT and OPTION tags. Buttons: submit, reset and generalized buttons. 4.3. Formatting technique: Using table to layout form.</p>
V	<p>STYLE SHEETS</p> <p>5.1. Adding style to the document: Linking to style sheets, embedding style sheets, Using inline style. 5.2. Selectors: CLASS rules, ID rules. 5.3. Style sheet properties: font, text, box, color and background properties.</p>
VI	<p>INTRODUCTION TO JAVA SCRIPT</p> <p>6.1. Embedding JavaScript in HTML document, Variables, Constants, Adding comments, 6.2. Operators: Assignment, Arithmetic and Comparison operators 6.3. Control structures and looping: if, if...Else, for, for. In, while, do. While, break and continue. Event handlers: on Click, onMouseOver, onMouseOut, on Submit, onReset, on Focus, on Blur, on Select.</p>

8. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of –10 Experiments/assignments/drawings.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	To demonstrate Various options of Web Browser	02	CO1
2	To create web page to implement block level tags	02	CO2
3	To create webpage to implement text level tags (part 1)	04	CO2
4	To create webpage to implement text level tags (part 2)	04	CO2
5	To link documents using absolute and relative paths.	02	CO2
6	To implement Image Mapping in HTML	02	CO2
7	To write an HTML code to create tables a. To apply table borders, sizes and headers b. To perform padding, spacing, colspan and rowspan c. To implement nested tables	02 02 02	CO2
8	To create HTML frames and apply various formatting tags	04	CO2
9	To design HTML forms and apply various formatting tags	04	CO2
10	To create Cascaded style sheet a. To create internal stylesheet b. To create external style sheet c. To use Selector in stylesheet	04 02 02	CO3
11	To implement basic concepts of JavaScript. To use variables, datatypes and Operators To implement conditional statements and loops To implement Arrays To implement procedures	02 04 04 04	CO4
12	To implement validation programs using JavaScript. a. To use JavaScript functions b. To handle events in JavaScript	04 04	CO4
	TOTAL	60	





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9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITIES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. Mini-Project(Website)

Apply html basic tags, list, tables, frames, forms, CSS and Javascript to Design mini website.

2. Seminar/ Presentation

To Demonstrate/presentation on Mini Project(website).

10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments.
3. Guest/Expert lectures
4. Demonstrations
5. Slides
6. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1	Html & Web Design: Tips & Techniques	Kris Jamsa, Konrad King, Andy Anderson	Tata Mc-graw hill edition
2	HTML & CSS: The Complete Reference, Fifth Edition	Thomas A. Powell	McGraw Hill Professional
3	How to do everything with Java Script-	Scott Duffy	McGraw-Hill

12. WEB REFERENCES

1. <https://www.w3schools.com/html/>
2. <https://www.tutorialspoint.com/html/>
3. <https://www.javatpoint.com/html-tutorial>
4. <https://www.geeksforgeeks.org/html-tutorials/>
5. <http://www.echoecho.com/html.htm>

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning
4. Term Work
5. Seminar/Presentation





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Summative Assessment (Assessment of Learning)

1. End Term Exam
2. Mini-project
3. Tutorial Performance

**14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE
(Specification Table)**

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Introduction to web Designing	CO1	02	7	-	-	7
II	HTML	CO2	06	-	6	8	14
III	Tables & Frames	CO2	07	-	7	7	14
IV	Forms	CO2	04	-	4	6	10
V	Style sheets	CO3	04	-	4	6	10
VI	Introduction to JavaScript	CO4	07	-	6	9	15
	TOTAL		30	7	27	36	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Ms.Neha More
2	Internal	Mrs.Rupali Pawar
3	External	Mr. Rushabh Udani
		Organization: Tech Mahindra, Mumbai





INFORMATION TECHNOLOGY DEPARTMENT

1. COURSE DETAILS

Programme: Computer Engineering / Information Technology	Semester:II
Course: Applied Mathematics	Course Category: AEC
Course Code: AMT238908	Duration:16 Weeks

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Paper Duration (Hrs.)	Assessment Scheme							Total Marks
Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs)			Theory (Marks)			Based on LL & TL			Based on Self Learning	
CL	TL	LL				FA-TH	SA-TH	Total	Practical (Marks)				
									FA-PR	SA-PR	SA-OR	SLA (Marks)	
3	2	-	1	3	3	30	70	100	-	-	-	25	125

Total IKS Hrs for the course :02

3. COURSE OBJECTIVE

This course intends to teach student basic facts, concepts, principle and procedure of Mathematics as a tool analyses Engineering problem and as such down foundation for the understanding engineering and core technology subject and Understand basic facts of mathematics in the field of analysis – Derivatives, Statistics, Integration, Complex number and Vector.

4. SKILL COMPETENCY

- Solve broad-based Engineering problems using the Basic Knowledge of mathematics.

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to:

CO No.	COURSE OUTCOME
CO1	Analyze suitable methods to solve derivatives and its application in the field of engineering.
CO2	Use Basic concepts of Statistics and probability to solve engineering related problems.
CO3	Integrate various expressions using concepts of inverse differentiation, partial function, method of substitution
CO4	Apply the concept of vector to solve problems of work done and force and various operation on Complex numbers.





INFORMATION TECHNOLOGY DEPARTMENT

6. CO-PO, CO- PSO MAPPING TABLE – COMPUTER ENGINEERING

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Applied Mathematics (AMT238908)	CO1	3	3	2	2	1	1	2	1	1
	CO2	3	3	2	2	2	2	2	1	1
	CO3	2	2	2	2	1	1	1	1	1
	CO4	2	2	1	1	-	1	1	1	1
	CO Avg.	2.5	2.5	1.75	1.75	1.33	1.25	1.5	1	1

CO-PO, CO- PSO MAPPING TABLE – INFORMATION TECHNOLOGY

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Applied Mathematics (AMT238908)	CO1	3	3	2	2	1	1	2	1	1
	CO2	3	3	2	2	2	2	2	1	1
	CO3	2	2	2	2	1	1	1	1	1
	CO4	2	2	1	1	-	1	1	1	1
	CO Avg.	2.5	2.5	1.75	1.75	1.33	1.25	1.5	1	1





INFORMATION TECHNOLOGY DEPARTMENT

7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	Derivatives and its Application 1.1. Derivatives – basic formulas, rules 1.2. Derivatives for exponential, logarithmic, inverse, parametric, composite functions. 1.3. Derivative of one function with respect to other 1.4. Double derivative 1.5. Maxima & minima 1.6. Radius of Curvature
II	Probability Distribution 2.1 Definition of probability, addition and multiplication theory of probability 2.2 Probability Distribution: - Binomial Distribution, Poisson Distribution & Normal Distribution. 2.3 Probability in Indian Knowledge System: Probability in Ancient Time.
III	Statistics 3.1 Statistic: Measure of central tendency (mean, medium and mode) for un -grouped and grouped frequency distribution. 3.2 Measures of dispersion such as range, mean deviation, standard deviation, variance and coefficient of variance.
IV	Integration 4.1. Basic formulas 4.2. trigonometric, substitution method and Finding last term and solve 4.3. Using LIATE rule 4.4. Partial fraction 4.5. Definite Integrals 4.6. Properties of definite integrals
V	Complex number 5.1. Definition 5.2. Simple rules: addition, subtraction, multiplication, division 5.3. De-Moivre's theorem (without proof)
VI	Vector 6.1. Definition: Algebra of vectors 6.2. Vector product 6.3. Scalar product 6.4. Work done and moment of force





INFORMATION TECHNOLOGY DEPARTMENT

8. LIST OF TUTORIALS

Term Work Consists of Journal containing minimum no of –10 Tutorials

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	Tutorials on rules of derivatives	2	CO1
2	Tutorials on derivatives of composite functions	2	CO1
3	Tutorials on derivative of exponential function	2	CO1
4	Tutorials on derivative of logarithmic, inverse and trigonometric function	4	CO1
5	Tutorials on derivative of function with wrt function and derivative of parametric function	3	CO1
6	Tutorials on application of derivatives	3	CO1
7	Tutorials on probability & probability distribution	3	CO2
8	Tutorials on statistics.	3	CO2
9	Tutorials on basic formulas of integration and LIATE rules	2	CO3
10	Tutorials on definite integrals	2	CO3
11	Tutorials on complex numbers & De Moivre's theorem	2	CO4
12	Tutorials on vectors and its application	2	CO4
TOTAL		30	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITIES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

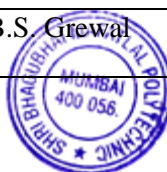
1. Assignment
 - Problems on Radius of Curvature
 - Problems on finding mode
 - Normal Distribution
2. Solving Mathematical problems using Sci-Lab programming.
 - Problem based on Derivatives.
 - Problem based on Integration.
 - Problem based on Numerical Methods.

10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments.
3. Industry visit
4. Guest/Expert lectures
5. Self-Learning Online Resource

11. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1	Mathematics for polytechnic Student II	Shri. S.P.Deshpande	Pune Vidyarthi Graha Prakashan Pune-30
2	G.V. Kumbhojkar	Engineering Mathematics	Phadke Prakashan, Kolhapur
3	Higher Engineering Mathematics	Dr. B.S. Grewal	Khanna Publishers 2/B, Delhi-6





INFORMATION TECHNOLOGY DEPARTMENT

12 LEARNING WEBSITE & PORTALS

1. <http://tutorial.math.lamar.edu/Classes/Alg/ComplexNumbers.aspx>
2. http://www.academia.edu/2391781/Numerical_Methods_Solved_Examples
3. www.derivative-calculator.net
4. www.stattrek.com/statistics/problems.aspx
5. <https://www.integral-calculator.com>

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning

Summative Assessment (Assessment of Learning)

1. End Term Exam

**14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE
(Specification Table)**

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Derivatives and its Application	CO1	12	2	8	6	16
II	Probability Distribution	CO1	05	-	4	4	8
III	Statistics	CO2	06	-	4	7	11
IV	Integration	CO3	12	2	8	6	16
V	Complex Number	CO4	06	2	3	6	11
VI	Vector	CO4	04	2	2	4	8
GRAND TOTAL			45	8	29	33	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.





SHRI VILE PARLE KELAVANI MANDAL'S
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC



INFORMATION TECHNOLOGY DEPARTMENT

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Dr. Kavita Dange
2	Internal	Mr. Akhileshwar Singh
3	External	Prof. Taqdis Pawale
		Organization: Mithibai Degree College, Vile Parle, Mumbai





INFORMATION TECHNOLOGY DEPARTMENT

1. COURSE DETAILS

Programme: Computer Engineering / Information Technology	Semester: II/II
Course: Environmental Studies	Course Category: VEC
Course Code: EVS238909	Duration:16 Weeks

2.. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								Total Marks
Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR		
2	-	-	-	1	-	-	-	25	-	-	-	25	

Total IKS Hrs. for the course :02

3. COURSE OBJECTIVE

Environmental Sciences is a multidisciplinary course aimed to impart knowledge about the current situation and future prospects of nature and natural resources. It is designed to create awareness of ecosystems of the world, earth's resources –renewable and non-renewable, health benefits of nature and adverse effects with depletion of environment. Such a knowledge can encourage today's generation to switch to safer and better choices.

Environmental education makes people understand the importance of renewable energy. Nonrenewable sources of energy like petrol, diesel etc. are the major sources of the world's pollution. Using renewable sources like solar energy, wind energy etc. is encouraged by Environment Education, and is imperative in our fight against global warming

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- Sense of social responsibility.
- Communication and analytical skills.
- Ability to apply knowledge and skills in real-world settings.
- Competence in developing arguments from scientific, ethical and philosophical perspective.

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Identify and classify different natural resources and use them prudently.
CO2	Recognize, categorize the different ecosystems and understand the importance of a balanced ecosystem.
CO3	Estimate the importance of biodiversity and its conservation.
CO4	Judge the type of pollution, identify the pollutants, causes, effects and develop methods to reduce the same.
CO5	Use the information regarding environmental legislation to improve upon their surroundings for the betterment of the community.





INFORMATION TECHNOLOGY DEPARTMENT

6. CO-PO, CO- PSO MAPPING TABLE

COMPUTER ENGINEERING

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Environmental Studies (EVS238909)	CO1	2	-	1	-	3	-	1	1	-
	CO2	-	-	-	-	2	-	-	-	-
	CO3	-	-	3	-	2	-	1	1	-
	CO4	2	-	2	-	2	1	1	1	1
	CO5	-	1	2	-	2	1	-	-	1
	CO Avg.	2	1	2	-	2.2	1	1	1	1

INFORMATION TECHNOLOGY

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Environmental Studies (EVS238909)	CO1	2	-	1	-	3	-	-	1	-
	CO2	-	-	-	-	2	-	-	-	-
	CO3	-	-	3	-	2	-	-	1	-
	CO4	-	1	2	-	2	1	-	1	-
	CO5	2	-	2	-	2	1	1	-	-
	CO Avg.	2	1	2	-	2.2	1	1	1	-





INFORMATION TECHNOLOGY DEPARTMENT

7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic	CO	Hours
I	The Multidisciplinary nature of environmental studies: 1.1 Definition, scope and importance Need for public awareness 1.2 Natural Resources: Renewable and non-renewable resources: Natural resources and associated problems 1.21 Forest resources: Use and over-exploitation, deforestation. Timber extraction, mining, dams and their effects on forest and tribal people. 1.22 Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams' benefits and problems. 1.23 Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. 1.24 Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity. 1.25 Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. 1.3 Energy resources: 1.3.1 Renewable Energy Resources – Biogas, Solar energy, Wind energy, Energy from falling water, Energy from wastes and tidal energy. 1.3.2 Non-Renewable Energy Resources – Coal, Oil, Natural gas Issue of economic viability and ability to meet demands. Inequitable use of energy in urban and rural areas	CO1	6
II	Eco Systems: 2.1 Concept of ecosystem 2.2 Major ecosystems in the world. 2.3 IKS-Traditional Knowledge Systems, Culture and Environmental Sustainability: Concepts of India.	CO2	4
III	Biodiversity and Its Conservation 3.1 Concepts 3.2 Threats to biodiversity 3.3 Value and conservation of biodiversity 3.4 IKS-Indian agricultural tradition living in harmony with nature its flora and fauna.	CO3	4
IV	Environmental Pollution 4.1 Definition Causes, effects and control measures of 4.2 Air pollution 4.3 Water pollution 4.4 Soil pollution 4.5 Noise pollution	CO4	6





INFORMATION TECHNOLOGY DEPARTMENT

V	Social issues and the Environment 5.1 Types of wastes – generation, characteristics, treatment and disposal of: 5.2 Solid waste 5.3 e- waste 5.4 Biomedical waste 5.5 From Unsustainable to Sustainable development 5.6 Water conservation, rain water harvesting, watershed management 5.7 Environmental ethics: Issues and possible solutions like Carbon Credit. 5.8 Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. 5.9 IKS-Ancient Indian civilization- use of natural material and its easy disposal.	CO4	6
VI	Environmental Protection 6.1 Environment legislations- 6.2 Legal aspects related to environment 6.3 Brief description of various acts involving air, water and forests. 6.4 ISO-14000 6.5 Issues involved in enforcement of environmental legislation	CO5	4
	Total Hours		30

8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of 05 Assignments

Sr. No.	Title of Assignment	Approx. Hrs required	CO
1	Write a note on different renewable sources of energy.	-	CO1
2	List any two man-made disasters. Analyze its causes and effects on environment.	-	CO2, CO4
3	Enlist the different causes and effects of global warming and ozone depletion.	-	CO2, CO4
4	Explain in detail about biomedical waste its sources, storage and disposal.	-	CO4, CO5
5	List any five Environmental Protection Acts.	-	CO 5
6	Suggest the different ways in which a citizen can contribute in maintaining ecological balance.	-	CO1, CO3

9. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of assignments.
3. Slides





INFORMATION TECHNOLOGY DEPARTMENT

10. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1.	Text book of Environmental studies	Erach Bharucha	UGC Press
2.	Environmental studies	Rajagopalan	Oxford University Press
3.	Environmental studies	Anandita Basak	Dring Kindersley (India)Pvt. Ltd Pearson
4	Fundamental concepts in Environmental studies	D.D. Mishra	S. Chand & Co. Ltd.
5	Role of Tech. in Environment and Health	Jain and Jain	Dhanpat Rai Publishing Co. New Delhi

12. LEARNING WEBSITE & PORTALS

1. <https://study.com/academy/.../what-are-natural-resources-definition-lesson->
2. www.yourarticlelibrary.com/biodiversity/biodiversity...ecological-diversity/4474
3. <https://www.britannica.com/science/pollution-environment>
4. <https://businessworld.in/article/Major-Environmental-Laws-Of-India/09-09-2017-125737>
5. <https://sdgs.un.org/events/launch-e-learning-course-harnessing-climate-and-sdgs-synergies-33337>

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Seminar and Presentation
2. Term Work

14. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Mrs. Radhika Patwardhan
2	Internal	Ms. Sharyu Kadam
3	External	Mrs Nidhi Dikshit
		Assistant Proffessor, BMC college,Mumbai





INFORMATION TECHNOLOGY DEPARTMENT

1. COURSE DETAILS

Programme: Information Technology	Semester: II
Course: Programming in C++	Course Category: SEC
Course Code: CPP230901	Duration: 16 Weeks

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Paper Duration (Hrs.)	Assessment Scheme							Total Marks
Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs)			Theory (Marks)			Based on LL & TL			Based on Self Learning	
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR		
2	-	4	2	4	3	30	70	100	25	25	-	25	175

Total IKS Hrs for the course :00

3. COURSE OBJECTIVE

This course intends to teach the student the basic concepts of object-oriented programming (OOP). Object-oriented programming offers a new and powerful way to cope with this complexity. Its goal is to develop more reliable and more easily maintained programs. This course will act as a backbone for all other courses that are based on Object Oriented concept.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences.

- Differentiate between Procedure Oriented and Object Oriented Programming languages
- Develop object oriented programs using C++

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Describe principles of OOP
CO2	Use modularity in program building
CO3	Apply Data Hiding and Data Abstraction concepts in program
CO4	Implement Compile time and Runtime polymorphism
CO5	Implement code reusability using Inheritance
CO6	Demonstrate File Handling operations





INFORMATION TECHNOLOGY DEPARTMENT

6. CO-PO, CO- PSO MAPPING TABLE - Information Technology

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Programming in C++ (CPP230901)	CO1	3	2	2	2	-	2	2	3	-
	CO2	3	2	2	2	-	3	2	3	-
	CO3	3	3	3	2	-	3	3	3	-
	CO4	3	2	2	2	-	2	2	3	-
	CO5	3	3	3	2	-	3	3	3	-
	CO6	3	2	2	2	-	2	2	3	-
	CO Avg.	3.00	2.33	2.33	2.00	-	2.50	2.33	3.00	-





INFORMATION TECHNOLOGY DEPARTMENT

7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	Principles of Object-Oriented Programming & Elements of C++ Language 1.1. Basic concepts of OOP, Comparison of procedural programming and OOP, Advantages of OOP, OOP Languages 1.2. Definitions, Class, objects, Concepts of inheritance and encapsulation, Polymorphism 1.3 Basic program construction: main and functions, Program statements, Class declaration, comments, C++ compilation 1.4. Tokens and identifiers, Character set and symbols, Keywords, C++ identifiers 1.5. Variables and constants, Integers & characters, symbolic constants 1.6. Dynamic initialization of variables, Reference variables, Enumerated variables 1.7. Data Types, Basic data types, Derived data Types-Arrays and strings, User defined data types 1.8. Operators, Arithmetic, relational, logical operators and operator precedence, Manipulators, Type conversions and type cast operators 1.9. Console I/O: cin, cout functions 1.10. Control statements, The if statement if-else; else...if 1.11 Switch statements, Loops: for and While-do statements, break, continue, go to
II	Functions 2.1. Simple functions, Declaration of functions, Calling functions, Function definition 2.2. Passing arguments and returning values, Passing by value 2.3. Return statement, Void functions, Reference variables and arguments 2.4. Inline functions, Comparison of macros and inline function, Default arguments 2.5. Friend functions, Static functions
III	Class, Object, Constructors & Destructors 3.1. Declaration of classes and objects in C++, Class definition, Declaration of members 3.2. Objects as data types, Objects as function arguments, Array of objects, returning objects from function, Structures and classes 3.3. Constructors, default constructor, Parameterized constructors 3.4. Dynamic initialization of objects, Copy constructors, Use of copy constructor, Shallow copying and deep copying, Destructors
IV	Compile time & Run time Polymorphism 4.1 Overloaded functions 4.2. Operator overloading, overloading unary operators 4.3. Overloading binary operators, Arithmetic operators, Relational operator, Examples: Addition of polar coordinates and concatenation of strings 4.4 Memory management using new and delete operators, Pointers to objects 4.5 Virtual functions and Runtime Polymorphism
V	Inheritance 5.1. Derived classes and base class, defining a derived class, Accessing the base class members, Access specifier: private, public and protected 5.2. Derived class constructors, Overriding the member functions, Class hierarchies, Abstract base class 5.3. Constructors and member functions, Inheritance, Public and private and protected inheritance 5.4. Access combinations and usage of access specifier 5.5. Multiple inheritance, Member functions in multiple inheritance, Constructors in multiple inheritance, Ambiguity in multiple inheritance





INFORMATION TECHNOLOGY DEPARTMENT

VI	File Handling 6.1 C++ streams, File stream classes 6.2 Creating, opening, closing, deleting files 6.3 File modes, File pointers and manipulators
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8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of –10 Experiments/assignments/drawings

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	To develop a C++ program using class and object. 1.a Developing a class related with Product. 1.b Developing a class related with Student	2 2	CO1
2	To demonstrate constructors	2	CO3
3	To demonstrate destructors	2	CO3
4	To implement passing and returning objects to and from a function. 3.a Arithmetic operations on 2 complex numbers 3.b Addition of 2 Time class objects	2 2	CO2
5	To apply an array of objects in real world programs. 4.a Array of Employee objects with calculation of salary 4.b Array of Bank account objects with deposit and withdraw operations	3 3	CO3
6	To use static data and static functions	2	CO2
7	To use friend functions	2	CO2
8	To implement types of Inheritance	10	CO5
9	To implement overload functions	6	CO4
10	To overload unary operators (minus or increment/decrement operator)	3	CO4
11	To overload binary operators (arithmetic or relational operator)	3	CO4
12	To allocate memory dynamically to the object	3	CO4
13	To allocate memory dynamically & create an array of objects dynamically for Book class.	3	CO4
14	To implement run time polymorphism using virtual function.	4	CO4
15	To demonstrate file related operations in C++	6	CO6
TOTAL		60	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. **Mini Project**
 - a. Deciding requirements/features and interface layout
 - b. Developing modules/functions for each feature
 - c. Testing





INFORMATION TECHNOLOGY DEPARTMENT

- d. Presentation
- e. Documentation

2. Assignment

Practice problems based on OOP features – Class & object, Array of objects, Inheritance, File handling

10. IMPLEMENTATION STRATEGY (PLANNING)

- 1. Teaching Plan
- 2. Minimum no of practical/assignments
- 3. Guest/Expert lectures
- 4. Slides
- 5. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES (minimum 3 to 5)

Sr.No.	Title of Book	Author	Publication
1	Object Oriented Programming in C++	Robert Lafore	SAMS,2001
2	Object Oriented Programming with C++	E.Balagurusamy	Tata McGraw Hill
3	The Complete Reference C++	Herbert Schildt	Tata McGraw Hill
4	Mastering C++	K.R. Venugopal	Tata McGraw Hill
5	The C++ Programming Language	Bjarne Stroustrup	Addison-Wesley
6	C++ How to Program	Paul Deitel, Harvey Deitel	DEITEL

12. LEARNING WEBSITE & PORTALS (minimum 5)

- 1. <https://www.w3schools.in/cplusplus-tutorial>
- 2. <https://www.javatpoint.com/cpp-tutorial>
- 3. <http://www.cplusplus.com/doc/tutorial>
- 4. <https://www.studytonight.com/cpp>
- 5. <https://www.programmiz.com/cpp>

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

- 1. Test
- 2. Rubrics for COs Assignment
- 3. Self-Learning
- 4. Term Work
- 5. Seminar/Presentation





INFORMATION TECHNOLOGY DEPARTMENT

Summative Assessment (Assessment of Learning)

1. End Term Exam
2. Mini-project
3. Tutorial Performance

14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE (Specification Table)

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Principles of Object-Oriented Programming & Elements of C++ Language	CO1	06	4	4	4	12
II	Functions	CO2	04	2	2	6	10
III	Class, Object, Constructors & Destructors	CO3	06	4	8	6	18
IV	Compile time & Run time Polymorphism	CO4	06	2	4	4	10
V	Inheritance	CO5	05	2	4	6	12
VI	File Handling	CO6	03	2		6	8
GRAND TOTAL			30	14	28	28	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Mr. Manish Solanki
2	Internal	Mrs. Krishna Bhatt
3	External	Mr. Manish Salvi
		Organization: Senior Lecturer, Computer Engineering Department, Thakur Polytechnic, Kandivali(E).





INFORMATION TECHNOLOGY DEPARTMENT

1. COURSE DETAILS

Programme: Information Technology	Semester: II
Course: Computer Network	Course Category: SEC
Course Code: CON230902	Duration:16 Weeks

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Paper Duration (Hrs.)	Assessment Scheme							Total Marks
Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs.)			Theory (Marks)			Based on LL & TL			Based on Self Learning	
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR		
4	-	2	2	4	3	30	70	100	25	-	25	25	175

Total IKS Hrs. for the course :01

3. COURSE OBJECTIVE

This Course will help the students to comprehend the fundamentals of Computer Network. The subject will familiarize the students in details of logical and physical layers of the TCP/IP and ISO-OSI reference model.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences.

- **Identify the network architectures and use of networking devices, transmission media and protocols.**
- **Design network using simulator and learn the sharing of networking devices, files and folders.**

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Identify network architecture, devices , physical media and design network topology
CO2	Interpret various Flow, Error and Access control mechanisms
CO3	Design a computer network using IP addressing scheme and sub netting
CO4	Explain the types of transport layer protocols
CO5	Describe services of Application layer, Presentation and Session Layer
CO6	Explain software defined network and its functionalities





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6. CO-PO, CO- PSO MAPPING TABLE

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Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Computer Network (CON230902)	CO1	3	2	3	2	-	2	3	-	3
	CO2	3	1	1	-	-	2	2	-	3
	CO3	3	2	3	2	2	2	2	-	3
	CO4	3	1	1	2	-	2	2	-	3
	CO5	3	1	2	2	-	2	2	-	3
	CO6	3	2	-	-	-	-	2	-	3
	CO Avg.	3	1.5	2	2	2	2	2.1	-	3

7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	Introduction to Computer Network and Physical layer
	1.1 Network Architecture
	1.2 Network Topologies
	1.3 Network Devices
	1.3.1 Hub, Bridge, Repeater, Router, Gateway, switch
	1.4 Protocol and Standards
	1.5 OSI and TCP/IP Model
	1.6 Layered Architecture
	1.7 Transmission Media
	1.7.1 Guided Transmission Media- Twisted Pair, Coaxial Cable, Fiber Optics
1.7.2 Wireless Transmission- Radio Transmission, Infrared transmission Microwave Transmission	
1.8 Switched Network	
1.8.1 Circuit Switched Network	
1.8.2 Packet switched Network	
1.8.3 Message Switched Network	
II	Data Link Layer
	2.1 Data Link Layer Design Issues
	2.2 Framing - Fixed size & variable size
	2.3 Error detection and Correction – Types of errors, redundancy, parity code, hamming code, cyclic redundancy, checksum
	2.4 Elementary data link protocols – Simplest, Stop and wait
	2.5 Sliding window protocols – Stop and wait ARQ, Go-back-N-ARQ, Selective repeat ARQ
	2.6 Data link protocols – HDLC, point to point
	2.7 Multiple access- CSMA, CSMA/CD, CSMA/CA
	2.8 Controlled access- Reservation, Polling, Token Passing





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III	Network Layer 3.1 Network Layer Design Issues 3.2 Logical addressing-IPV4 addresses, Address space, Notation, Class full addressing, Classless addressing 3.3 Introduction to IPv6 - Structure, Address space 3.4 Routing – Forwarding of IP packets & delivery, Routing table 3.5 Address mapping – ARP, RARP, BOOTP 3.6 Congestion control – ICMP 3.7 Wireless technology- Bluetooth 3.8 IKS: Case study on Cybercrime and IT act 2000.
IV	Transport Layer 4.1 Transport services – Connectionless and connection-oriented, client-server paradigm, reliable versus unreliable 4.2 Elements of transport protocols – Port number, Use of Socket address 4.3 UDP - User datagram, operations, services, applications 4.4 TCP - Segment, operations, services, applications, flow & error control 4.5 Wireshark- concept, features, functionality, color coding, capturing of packets and security
V	Application Layer, Presentation & Session Layer 5.1 Introduction and functional overview of presentation & session Layer 5.2 DNS – Label, domain name, domain, namespace 5.3 Electronic Mail – Architecture, web based mail 5.4 WWW – client, server, URL, cookies, static & dynamic document, HTTP, FTP
VI	Software Defined Network 6.1 Importance of SDN 6.2 SDN control plane and data plane 6.3 SDN architecture 6.4 SDN working and functionalities

8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of 10 experiments/assignments/drawings

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1.	To perform various networking commands in Windows	02	CO1
	To identify different types of network devices & configure hub using network simulation tool	02	CO1
2.	To configure switch and router using network simulation tool	02	CO1
3.	To design computer network topology (any two) using network simulation tool	02	CO1
4.	To design a network according to given case study – college, small office, company	02	CO4
5.	To design a network using IP addressing and subnetting	04	CO4
6.	To configure wireless network of multiple PC's using access points	02	CO3
7.	To add computer to LAN and share files and folders to the existing network	02	CO2





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8.	To perform printer sharing in the network	02	CO2
9.	Use Network sniffing tool and capture TCP,UDP, IP, ARP, ICMP, Telnet, FTP packets	04	CO3
10.	To setup FTP client and server	02	CO5
11.	To configure Email protocol - SMTP	02	CO5
12.	To configure HTTP protocol	02	CO5
13.	Assignment: SDN	-	CO6
TOTAL		30	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. Quiz

- Quiz based on 5 Units

2. Assignment

- Case Study on designing a network
- Assignment on Network layer and Data Link layer of ISO-OSI reference Model

10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments.
3. Industry visit
4. Guest/Expert lectures
5. Demonstrations
6. Slides
7. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES (minimum 3 to 5)

Sr.No.	Title of Book	Author	Publication
1.	Computer Network	A.S.Tanenbaum	Pearson, Prentice Hall
2.	Data communication and Networking	Behrouz A. Forouzan	Tata McGraw-Hill
3.	Data and Computer Communication	William Stallings	Prentice Hall
4.	Data communications and distributed networks	U.D.Black	Prentice Hall

12. LEARNING WEBSITE & PORTALS (minimum 5)

1. [http:// www.idc-online.com/resources/technical-references/data-communications-technical-references.html](http://www.idc-online.com/resources/technical-references/data-communications-technical-references.html)
2. [http:// www.crectirupati.com/sites/default/files/lecture_notes/DCN%20NOTES.pdf](http://www.crectirupati.com/sites/default/files/lecture_notes/DCN%20NOTES.pdf)
3. [http:// www.filehorse.com/download-cisco-packet-tracer-64/](http://www.filehorse.com/download-cisco-packet-tracer-64/)
4. [http:// www.wireshark.org/docs/wsug_html_chunked/ChapterIntroduction.html](http://www.wireshark.org/docs/wsug_html_chunked/ChapterIntroduction.html)
5. [http:// www.engpaper.com/computer-network-2019.htm](http://www.engpaper.com/computer-network-2019.htm)
6. <http://www.onlinetutorials.com>





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13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning
4. Term Work
5. Seminar/Presentation

Summative Assessment (Assessment of Learning)

1. End Term Exam
2. SLA

**14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE
(Specification Table)**

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Introduction to Computer Network and Physical layer	CO1	8	3	3	4	10
II	Data Link Layer	CO2	12	6	6	2	14
III	Network Layer	CO3	12	4	4	8	16
IV	Transport Layer	CO4	10	4	4	2	10
V	Application Layer, Presentation & Session Layer	CO5	10	3	3	4	10
VI	Software Defined Network	CO6	08	4	4	2	10
GRAND TOTAL			60	24	24	22	70

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Mrs Krishna Bhatt
2	Internal	Mrs Abhilasha More
3	External	Mr Aniket Mishra
		Asst. Professor, Thakur College of Engineering, Mumbai





INFORMATION TECHNOLOGY DEPARTMENT

1. COURSE DETAILS

Programme: Information Technology	Semester: II
Course: IT Workshop & Practices	Course Category: SEC
Course Code: IWP230903	Duration:16 Weeks

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								
Actual Contact Hrs./Week			Self-Learning (SL [^]) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	Total Marks
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR		
-	-	2	-	1	-	-	-	-	25	-	-	-	25

Total IKS Hrs for the course :00

3. COURSE OBJECTIVE

This course will give the exposure of philosophy of IT Workshop and tools. It enables students to install various softwares, support files, Operating System, diversified open-source tools i.e., editors, IDEs, Linux operating system, Database and Git. The primary focus is on equipping students with knowledge of industry-recognized open-source software tools.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- Install Operating system on virtual machine and execute basic commands.
- Use application softwares and Open Source Tools.

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Install operating system (Linux/Windows) to execute system utility and basic commands
CO2	Acquire knowledge of IDE/ open source technologies.
CO3	Configure Database server to execute Basic SQL statements
CO4	Use version control tools (Github)





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6. CO-PO, CO- PSO MAPPING TABLE

Course Name and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
IT Workshop & Practice (IWP230903)	CO1	1	1	1	3	--	--	2	3	--
	CO2	1	-	1	3	--	--	2	2	--
	CO3	1	2	1	2	--	--	2	3	--
	CO4	1	2	1	3	--	2	2	2	--
	CO Avg.	1.00	1.67	1.00	2.75	--	2.00	2.00	2.50	--

7. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of 10 Experiments

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx. Hrs required	CO
1.	To install Linux (Ubuntu) physically on Windows based machine and collaboration between various OS.	2	CO1
2.	To install Linux (Ubuntu) virtually on Windows based machine.	4	CO1
3.	To explore Linux (Ubuntu) desktop functionalities.	2	CO1
4.	To traverse through Linux File Structure.	2	CO1
5.	To compare closed (proprietary) and open source software's with their licenses.	2	CO2
6.	To install VS code and explore the features	2	CO2
7.	To install Eclipse IDE and explore the features	2	CO2
8.	To install Android Studio and explore the features	2	CO2
9.	To install, configure Database and to execute INSERT, UPDATE, SELECT and DELETE commands.	4	CO3
10.	To get hands on with PhpMyAdmin (GUI interface for database)	2	CO3
11.	To get hands on with various Git commands.	2	CO4
12.	To create micro project related directories and controlling their versions using Git and Git Hub.	4	CO4
TOTAL		30	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum 10 no of practical/assignments.
3. Guest/Expert Lectures
4. Self-learning Online Resources





INFORMATION TECHNOLOGY DEPARTMENT

9. SUGGESTED LEARNING RESOURCES

Sr. No.	Title Of Book	Author	Publication
1	Understanding Open Source and Free Software Licensing	Andrew M. St. Laurent	O'Reilly Media, Inc.
2	The Official Ubuntu Book	Matthew Helmke Amber Graner	Prentice Hall
3	MySQL Reference Manual	Online Documentation	https://dev.mysql.com/

10 LEARNING WEBSITE & PORTALS

1. <https://ubuntu.com/tutorials>
2. <https://www.javatpoint.com/mysql-tutorial>
3. <https://product.hubspot.com/blog/git-and-github-tutorial-for-beginners>
4. <https://bellard.org/jslinux/>
5. <https://docs.github.com/en>

11. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Rubrics for Cos Assignment
2. Term work

12. COURSE EXPERT COMMITTEE MEMBERS

Sr.		NAME
1	Internal	Mr. M.R. Solanki
2	Internal	Mr. A. B Dongoankar
3	External	Ms Ekta Shah
		Organization: Data Scientist, Quantiphi Analytics, Mumbai

