Mukesh Patel School of Technology Management & Engineering Integrated Electronics & Telecommunication (2019 - 2020)

Program: B. Tech Integrated (EXTC)					Semester : III
Course: Computer Programming - II					Code: BTIET03001
Teaching Scheme				Evalu	uation Scheme
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 100 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	0	4	Scaled to 50 Marks	Scaled to 50 Marks

Pre-requisite: Nil

Objectives:

- 1. To enable the students to understand the basic concepts of object oriented programming and help them build programming logic.
- 2. To help them build classes and understand the re usability of classes.

Outcomes:

- 1. Develop and execute C++ program using basic programming constructs, various data types and functions
- 2. Implement object oriented concepts classes, objects, constructor, destructor, operator overloading, type conversion
- 3. Implement object oriented concepts inheritance, virtual functions and polymorphism
- 4. Implement the concepts of file handling and generic programming using templates

Detailed Syllabus:

Unit	Description	Duration
1.	Principles of Object Oriented Programming & Beginning with C++: Software Crisis, Software Evolution, Basic Concepts of OOP, Introduction to C++, Applications of C++, Structure of C++	04
	program, creating, compiling and linking C++ program, Data types, Variables, Operators in C++, Scope resolution operator, Manipulators.	
2.	Functions in C++: Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Arguments, Recursion.	04
3.	Classes and Objects: Specifying a Class, Defining member functions, Making an outside function inline, nesting of member functions, private member functions, Memory Allocation for Objects, Static Members, Arrays of Objects, Objects as Function Arguments, Returning Objects, friend functions.	05
4.	Constructors & Destructors: Constructors, Parameterized constructor, Multiple constructors in a class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructors, Destructors	03





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5.	Operator Overloading & Type Conversions: Overloading Unary	06		
	Operators, Overloading Binary Operators, Overloading Binary			
	Operators Using Friends, Rules for Overloading Operators, Type			
	Conversion			
6.	Inheritance: Defining Derived Classes, Single Inheritance,	07		
	Making Private member Inheritable, Multilevel, Multiple,			
	Hierarchical, Hybrid Inheritance, Virtual Base Classes, Abstract			
	Classes, Constructors in Derived Classes			
7.	Virtual Functions and Polymorphism: Need for Virtual			
	Functions, Pointer to Derived Class Object, Pure Virtual			
	Functions, Dynamic or Late Binding			
8.	File Handling: Files and Streams, Opening and Closing a File,	05		
	File pointers and manipulations, Sequential I/O Operations,			
	Updating a file: Random access, error handling during file			
	operations.			
9.	Templates: Introduction, Function Templates, Class Templates	03		
10.	Exception Handling: Basics of exception handling, Exception	04		
	handling mechanism, Throwing mechanism, Catching			
	mechanism, Rethrowing an exception, exceptions in constructor			
	and destructors.			
	Total Hours	45		

Text Book:

1. E. Balaguruswamy, "Programming in C++", Tata McGraw Hill Education, 5th Edition, 2011.

Reference Book:

 Herbert Schildt, "The Complete Reference C++", Tata McGraw Hill Education, 4th Edition, 2003

Term Work:

As per Department and Institute Norms for Term-work.

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Mukesh Patel School of Technology Management & Engineering Integrated Electronics & Telecommunication (2019 – 2020)

Program: B. Tech Integrated (EXTC)					Semester: III
Course: Electrical Technology					Code: BTIET03002
	Teachin	g Scheme		Evalu	aation Scheme
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 100 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
3	2	0	4	Scaled to 50 Marks	Scaled to 50 Marks

Pre-requisite:

- 1. Concept of emf, potential difference, current, ohm's law, resistivity, power dissipation in resistance, effect of temperature on resistance.
- 2. Concept of ideal and practical voltage and current source
- 3. Concepts of magnetic field, Faraday's laws of electromagnetic induction, hysteresis and eddy current losses, energy stored in an inductor, rise and decay of current and time constant in R-L circuit.

Objectives:

- 1. Understand and solve simple ac and dc electrical and magnetic circuits using different theorems and laws.
- 2. To get a basic understanding of the working principle and applications of motors.
- 3. To impart hands-on experience in assembling and testing circuits.
- 4. Get exposed to inter disciplinary engineering disciplines.

Outcomes:

After the successful completion of this course, the student will be able to

- 1. Analyze dc and ac circuits using network theorems & ac fundamentals.
- 2. Determine the resonant frequency of any given series or parallel RLC circuit.
- 3. Determine the efficiency and regulation of a single phase transformer.
- 4. Compare electric and magnetic circuits.
- 5. Solve simple and composite problems based on magnetic circuits.
- 6. Know various motors (dc and ac) and their applications.

Unit	Description	Duration
1.	D.C Circuit (only independent sources)	
	Superposition Theorem, Thevenin Theorem, Delta/Star	
	Transformation, Norton's Theorem, Maximum Power Transfer	12
	Theorem.	





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2.	Single phase transformer Emfconstruction, Emf equation, Equivalent circuit and phasordagram for different load, determination of efficiency ®ulation by direct loading. Losses in transformer, Estimation of regulation and Efficiency by OC & SC test.	09
3.	Magnetic Circuit Laws of magnetic force, definitions of field intensity, magnetic potential, flux & flux density, permeability, intensity of magnetization & susceptibility. Simple and composite magnetic circuits, comparison between electric and magnetic circuits, leakage flux, Faraday's laws of electromagnetic induction, induced emf, selfinductance, mutual inductance, coefficient of magnetic coupling, inductances in series and parallel.	08
4.	AC Motors Phase induction motor, Construction and working principle, starting methods. 3 phase induction motor, Construction and working principle, slip, torque equation, torque speed characteristics, applications.	08
5.	DC Motors Construction and working principle, types of motors and their characteristics, applications.	08
	Total Hours	45

Text Books:

 B. L. Theraja, Fundamentals of Electrical Engineering and Electronics, S. Chand & Co., 2nd Edition, 2004

Reference Books:

1. Vincent Del Toro, Electrical Engineering Fundamentals, Prentice Hall India Learning Pvt. Ltd., 2nd Edition, 2010.

Term Work:

- 1. At least ten laboratory experiments
- 2. Two term tests
- 3. Assignments based on the whole syllabus, duly recorded and graded.

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Mukesh Patel School of Technology Management & Engineering Integrated Electronics & Telecommunication (2019 – 2020)

Program: B. Tech Integrated (EXTC)					emester: III
Course : E	lectronic Ma	terials and C	Componen	its Co	ode: BTIET03003
	Teaching	Scheme		Е	valuation Scheme
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 100 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
2	0	2	3 ,	Scaled to 50 Marks	Scaled to 50 Marks

Prerequisite: Nil

Objectives:

- 1. To understand the construction and working of electronics components.
- 2. To understand the operation and applications of electronics material & components.
- 3. To learn measurements of various electronic quantities.

Outcomes:

After the successful completion of this course, the student will be able to

- 1. Describe the configuration of electronics components and its characteristics.
- 2. Identify and apply electronics components for different circuits.
- 3. Measure and compare the performance of various components for various electrical parameters.
- 4. Describe the working of simple circuits using different electronics components.

Unit	Description	Duration (Hrs)
1	Resistors: Introduction to Active & Passive Components, Fixed Resistors: Colour Coding, Tolerance Wattage, Temperature Coefficient, Operating Temperature Range, Carbon Composition Resistor, Cracked Carbon Resistor, Metal Film Resistor & Wire Wound Resistor. Ceramic & Aluminum Heat Sink, Variable Resistor, Linear & Logarithmic Potentiometer, Pots & Rheostat, Trimmers - Rectilinear Votary (Carbon, Wire Wound & Cermets) Non- linear Resistors, Thermistor - Bead, Probe, Disc & Rod Type, NTC, PTC, Varistors, Light Dependent Resister,	06





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2	Capacitors Fixed Capacitors, Principal of Capacitor, Capacitance Working Voltage, Insulation Resistance C/V Ratio, Power Factor, Capacitance Frequency Characteristics, Specifications & Applications of Glass, Impregnated Paper, Metallized Paper (With Self Healing Effect), Ceramic Aluminum & Tantalum Capacitor, Variable Capacitor - Straight-line Inverse Square Law & Square Law of Variable Capacitor Plates, Air Dielectric Gang Condenser, PVC Dielectric Gang Condenser, Trimmer Capacitor, Air dielectric- Rotary, Differential Rotary & Concentric Cylinder Type, Ceramic Rotary, Mica Compression & Plastic Dielectric.	06
3	Inductor and Transformers Inductor, Concept, Operation at Low & High Frequency, Self & Mutual Inductance Quality Factor, Inductive Reactance, Leakage Inductance, Construction & Applications: Air Core, Iron core, Ferrite Core, AFC, RFC, Filter Chokes. Transformer, Types of Coils - Shell, Core Type Laminations (E, I, L, F & Pot Core), Types of Transformer: Power, Auto, Variable, Audio Frequency, RFT & IFT, Driver, Isolation, Pulse, Current, High voltage (EHT), Losses in Transformer, Shielding of Transformer.	06
4	Relays and Display Relays, Definitions of NO, NC Contents, Operate Time, Release Time & Bounce Time, Mechanical & Electrical Life. Constructions, Specifications & Applications: General-Purpose Electromagnetic Relay, Dry Reed Relay, Ferried Relay Solid- State Relays, Display Devices - LED, Nixie Tube, Dual Color LED 7-Segment Display, LCD - Types, Reflected Light, Twisted Pneumatic Drive, Switching & Two Phase Drive, Alphanumeric Display Like Dot Matrix.	06
5	Microphones, Speakers & Batteries Principle, Construction & Applications: Microphone - Carbon, Capacitor, Moving Coil, Crystal, Ribbon, Loud speakers - Cone Type, Horn Type Speakers Woofer, Tweeter & Speaker, Batteries, Cells & Battery Fundamentals, Charging & Discharging Process Difference Between Primary & Secondary Cell, Types of Batteries - Lead Acid Battery - Construction,	06





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Open Circuit Voltage Specific Gravity, Discharge, Ampere -	
Hour Rating, Ni-Cd battery Construction, Specifications, Charging Methods of Above Batteries, Maintenance Free	
Battery (Introduction).	
 Total Hours	30

Text Books:

1. Electronic Components and Materials by SM Dhir, Tata McGraw Hill, New Delhi, 4th edition, 2011.

Reference Books:

1. Text book of Applied Electronics by R.S. Sedha, S. Chand Publication, 5th edition, 2014.

Term Work:

- 1. Two term tests
- 2. Assignments based on the whole syllabus, duly recorded and graded.

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Mukesh Patel School of Technology Management & Engineering Integrated Electronics & Telecommunication (2019 – 2020)

Program: B. Tech Integrated (EXTC)				Sen	nester: III	
Course:	Enginee	ring Mathe	ematics - I	Code: BTIET03004		
	Teaching	Scheme		Eval	uation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Theory (3 Hrs, 100 Marks)	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)	
3	0	2	4	Scaled to 50 marks	Scaled to 50 marks	

Objectives:

- 1. To impart knowledge of complex numbers and its applications to solve Engineering problems.
- 2. To provide an understanding of principles of vector algebra, single variable and multivariable calculus.

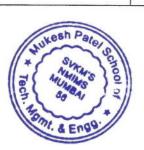
Outcomes:

After successful completion of this course, students will be able to:

- 1. Understand the concepts of complex numbers, hyperbolic functions, Mean value theorems and vector products to solve Engineering problems.
- 2. Express functions in series using Taylor's and Maclaurin's expansions, and evaluate limits of indeterminate forms using L' Höspital's Rule.
- 3. Find partial derivatives of functions and carry out the knowledge to error and approximations, maxima and minima.
- 4. Apply the concepts such as gradient, directional derivative, curl and divergence to solve real life problems.

	led Syllabus:	
Unit	Description	Duration
1.	Complex Numbers: Introduction to complex numbers, modulus and amplitude of a complex number, Argand's diagram, cartesian, polar and exponential forms of a complex number. Algebra of complex numbers: equality, addition, subtraction, multiplication and division. De-Moivre's theorem, Roots of complex numbers, Euler's form of circular functions, Hyperbolic functions, relation between circular	12
2.	and hyperbolic functions. Mean value theorems, Series expansion and Indeterminate forms: Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem.	10





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	Taylor's formula, Maclaurin's series.	
	Indeterminate forms: $\frac{0}{0}, \frac{\infty}{\infty}, 0 \times \infty, \infty - \infty, 0^0, \infty^0, 1^{\infty}$ by L'Höspital's	
	rule.	
3.	Partial Derivatives and its applications:	13
	Partial Derivatives of two and three variable functions, Partial	
	derivative of composite function, Homogeneous functions in two	
	or three variables, Euler's theorem, error and approximations,	
	Maxima and Minima in 2 variables by second derivative test.	
4.	Vectors:	10
	Scalar and vector triple products, Product of four vectors, curves	
	in space, Differentiation of a vector function of a single scalar	
	variable, Theorems on derivatives, concept of tangent vector,	
	scalar and vector point functions, gradient, directional derivative,	
	Curl and Divergence, Irrotational and Solenoidal Fields.	
	Total Hours	45

Text Book:

1. Erwin Kreyszig (2010), "Advanced Engineering Mathematics", Wiley Eastern Ltd, 10th edition.

Reference Books:

- 1. Andreescu Titu, Andrica Dorin (2014), Complex Numbers from A to ... Z, Birkhäuser Basel Publishers, 2nd edition.
- 2. Thomas, Calculus (2014), Pearson Education, 7th edition.
- 3. Howard Anton (2012), "Calculus", Wiley, 10th edition.
- 4. B. V. Ramana (2010), "Higher Engineering Mathematics", Tata McGraw Hill, 1st edition.
- 5. Alan Jeffrey (2003), Handbook of Mathematical Formulas and Integrals, *Academic Press*, 3rd edition.

Term Work:

As per institute norms.

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Mukesh Patel School of Technology Management & Engineering Integrated Electronics & Telecommunication (2019 – 2020)

Program: B. Tech Integrated (EXTC)				Semester:	Semester: III	
Course: Engineering Chemistry				Code: BTIE	Code: BTIET03005	
Teaching Scheme				Evaluation Scheme		
Lecture (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Internal Continuous Assessment (ICA) (Marks - 50)	Term End Examinations (TEE) (Marks - 100 in Question Paper)	
2	2	0	3	Marks Scaled to 50	Marks Scaled to 50	

Objectives

- 1. To introduce basic principles of chemistry such as functional group identification, properties of solutions, and reaction stoichiometry.
- 2. To familiarize the concepts and applications of fuels, polymers, and e-waste management.

Course Outcomes:

After completion of the course, students would be able to:

- 1. Identify different functional groups of compounds and various organic reactions associated with it.
- 2. Identify the importance of various classes of polymers and applications in daily life.
- Classify different types of fuels and lubricants based on their properties and applications;
- 4. Recognize the importance of e-waste management with respect to environment and health hazards and solve numerical problems based on atom economy and distinguish the various formula applied to different types of solutions; interpret reaction stoichiometry and solve numerical problems.

Detai	led Syllabus: (per session plan)	
Unit	Description	Duration
1.	Organic Reactions: Reactions of functional groups: those containing oxygen (-COOH, -OH, -CHO, -C=O); Nucleophilic substitution reaction, Elimination reaction Organic Name Reactions E.g. Aldol & related reactions.	06
2.	Solutions and Stoichiometry: Types of solutions and its characteristics, properties of aqueous solutions, different units for expressing concentration of solutions (ppm, ppb, normality, molarity, molality, mole fraction of solute, mass fraction of solute and solvent), empirical and molecular formula from elemental composition, numerical based on empirical formula, normality, molarity, molarity molarity.	06
3.	Fuels & Combustion:	06





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	Definition, Classification, characteristics. Calorific Value-Theoretical	
	& Experimental (Bomb calorimeter). Solid Fuels: Coal, proximate and ultimate analysis, Numerical based on analysis of coal. (Dulong formula) and bomb calorimetry. Liquid fuels: Mining of Petroleum, Cracking, Reforming, Knocking in IC engines, anti-knocking agents (TEL and MTBE),	
4.	Lubricants: Definition, Mechanism of lubrication, Properties- viscosity, viscosity index, flash & fire, cloud & pour points, oiliness, saponification & acid value (numericals based on saponification and acid value)	04
5.	Polymers: Introduction and definition of important terms – monomer, polymer, polymerization, degree of polymerization, tacticity, and melting-glass transition temperature. Some commercially important polymers (PP, PVC). Plastics: Thermosetting & Thermoplastics, Compounding of plastics, Preparation, properties and applications of commercial plastics (Rubber, Phenol formaldehyde resin).	05
6.	 Environmental Aspects of Chemistry: i) Green Chemistry: Principles of Green Chemistry with examples (Numerical Problems on Atom economy) ii) E-waste management: Definition, classification and management of e-waste. 	03
	Total	30

Text Books:

- 1. Abhijit Mallick; Chemistry for Engineers, Viva books, 2nd Edition 2017.
- 2. Palanna.O.G., Engineering Chemistry, Tata McGraw Hill Education. Pvt. Ltd, 2nd Edition 2017.
- 3. Samir Sarkar; Fuels & Combustion, Orient Longman Pvt. Ltd 3rd Edition 2009.

Reference Books:

- 1. R.T. Morrison & R. N. Boyd, Organic Chemistry, Prentice Hall, 8th Edition 2016.
- 2. Johrie. R.; E-waste, TERI Press, 2009.
- Paul C. Hiemenz & Timothy P. Lodge; Polymer Chemistry, CRC Press, 2nd Edition 2007.

Any other information:

Details of Internal Continuous Assessment (ICA)

Test Marks: 20

Term Work Marks: 30



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Details of Term work:

- 1. Minimum Eight Lab experiments to be taken.
- 2. Unit wise assignments to be taken.
- 3. Presentation/Viva-voce/Quiz to be conducted.

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Mukesh Patel School of Technology Management & Engineering Integrated Electronics & Telecommunication (2019 – 2020)

Program: B. Tech. Integrated (EXTC)			Semester: III	
Course: Constitution of India				Code: BTIET03006
	Teachin	g Scheme	Evaluation Scheme	
Lecture Hours per week	Practical Hours per week	Tutorial Hours per week	Credit	Internal Continuous Assessment (ICA) As per Institute Norms (50 Marks)
2	0	0	0	Scaled to 50 marks

Objective:

- 1. To understand the basic aspects of the constitution of India, the evolution, the directive principle & important provisions.
- 2. To understand the implications of important constitutional provision on Business and Professionals.

Outcomes:

After successful completion of this course, students will be able to

- 1. Learn basic aspects of constitution of India.
- 2. Apply Constitutional provision on Business and their Professionals.

Unit	Description	Duration
1.	The Constitution, its evolution and Preamble to the Constitution.	04
2.	Fundamental rights and duties, exceptions with examples, individual responsibilities and duties, application to business.	10
3.	Directive principles of State Policy, its emphasis and its impact as related to business.	04
4.	Indian Judiciary and LokAdalats.	06
5.	Emergency Provisions under Article 352 – 360.	04
6.	Voting behaviour in India and present political scene. Responsibility of Business in relation to the Constitution.	02
	Total Hours	30

Text Books:

1. Durga Das Basu (2009), "Indian Constitution", 20th Edition.

Reference Books:

- 1. N. A. Palkhiwala (2009), "We the People".
- 2. Justice Hidayatullah (2009), "Indian Constitution".





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Term work consists of the following:

- 1. Assignments / Case studies.
- 2. Two class tests.

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