

SVKM's Narsee Monjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering

Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: I	
Course/Module: Communication Skills				Module Code: BTIME01001, BTICI01001, BTICO01001, BTIET01001	
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	0	2	3	Marks Scaled to 50	Marks Scaled to 50

Course Objectives:

1. To equip students with basic concepts, theories and barriers of communication.
2. To build learners' confidence in interpersonal communication by reinforcing the basics of vocabulary building.
3. To enhance the learners' communication skills by giving adequate exposure in reading, writing, listening and speaking skills along with related sub-skills.
4. To strengthen their overall language and communication for better technical writing and presentation

Course Outcomes:

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

1. understand the basics of 'Communication', especially as expected and practised in the technical and business world; and improve upon listening, speaking, reading and writing skills so as to match the desired professional standards.
2. build and improve a set of professional vocabulary; and use the same aptly in presentations, e-mails, short compositions and technical descriptions.
3. understand and apply the nuances of formal letter writing and basic technical writing.

Detailed Syllabus: (per session plan)

Unit	Description	Duration
1.	<p>Understanding Communication:</p> <ul style="list-style-type: none"> • Communication-definition, meaning, importance and characteristics • Elements and Process of Communication • Methods of Communication (oral, written, formal, informal, verbal and non-verbal) • Networks of Communication (horizontal, vertical, diagonal and grapevine) • Barriers to Communication- Physical, mechanical, socio - psychological, linguistic, organizational and cultural barriers. 	10



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2.	Vocabulary Building <ul style="list-style-type: none"> • word formation process (prefix, suffix, acronyms) • Pairs of confused words • Antonyms and Synonyms • One word Substitutes • Proverbs 	03
3.	Techniques to Improve Communication <ul style="list-style-type: none"> • Reading and Comprehension Skills (strategies for rapid reading, skimming, scanning, paraphrasing, inferring meaning from contexts) • writing skills (7 Cs of effective Writing, development of paragraph, summary and précis writing, effective sentences) • Listening Skills (definition, process, benefits, types, poor listening habits, barriers, effective listening) • Speaking Skills(extempore and prepared speaking, basics of making an effective presentation) 	08
4.	Letter Writing <ul style="list-style-type: none"> • Importance of Formal Written Communication • Layouts (complete Block, modified Block, Semi Block) • Types (request, enquiry, order, complaint, claims and adjustments, replies to all of these) 	05
5.	Technical Writing <ul style="list-style-type: none"> • Technical Writing-meaning and importance • Framing Definitions; hazard notations • Technical Description of an object • Technical Description of a process 	04
Total		30

Text Books:

1. Dr. Meenakshi Raman and Dr. Sangeeta Sharma (2015 3rd Ed. 2017 Reprint), 'Technical Communication', *Oxford University Press*

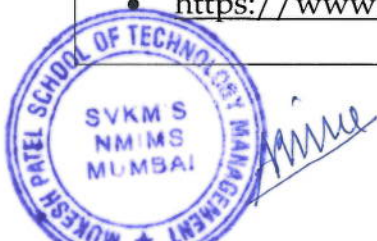
Reference Books:

1. Bovee, Thill and Chaturvedi (2017), 'Business Communication Today', *Pearson Education, 13th Edition*
2. M. Ashraf Rizvi (2017), 'Effective Technical Communication', *McGraw Hill Education, 2nd Edition*

Any other information:

1. Links to websites:

- <https://www.mindtools.com/>
- <https://www.pearsonmylabandmastering.com/northamerica/mybcommlab/>



2. Pedagogy:

- Classroom teaching
- classroom exercises and discussion
- case studies
- written assignments
- presentations and role play

Details of Internal Continuous Assessment (ICA)

Test Marks: 20

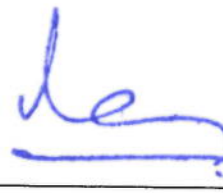
Term Work Marks: 30

Details of Term work:

- Group/Individual presentations
- Book review (prior reading lists to be given to students chosen by instructor)
- Letter writing
- Group Discussions
- Technical description writing
- Reading and listening comprehension



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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech Integrated (Mechanical, Civil, EXTC & Computer)				Semester: I	
Course/Module: Mathematics-I				Module Code: BTIME01002, BTICI01002, BTICO01002, BTIET01002	
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)
3	0	2	4	Marks Scaled to 50	Marks Scaled to 50
Course Objectives:					
<ol style="list-style-type: none"> 1. To familiarize students with the concept of functions, limits and continuity. 2. To provide an understanding of trigonometric and inverse trigonometric functions. 3. To introduce calculus and impart knowledge of basic techniques in differential and integral calculus. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Define and relate basic notions of sets and functions. 2. Apply basic facts, concepts and principles of trigonometry to solve physical problems. 3. Evaluate matrices, determinants, limits and examine continuity of a function. 4. Find derivatives of functions and also apply the knowledge of first and second order derivatives to analyse the function. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Sets and Functions: Definition of set and function, types of function.				05
2.	Trigonometry: Relation between degree and radian, trigonometric ratios of compound allied and multiples angles, factorization and defactorisation, inverse trigonometric functions.				10
3.	Limits and Continuity: Limits, method of factorization, rationalization, infinity type, limits based on formula, continuity.				07
4.	Derivatives and its applications: Derivatives for exponential, logarithmic, implicit, inverse, parametric, composite functions, increasing, decreasing functions, maxima and minima.				13



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5.	Matrices and determinants: Definition, Algebra of matrices, types of matrices, determinant, properties of determinant, minor and cofactors, adjoint and inverse of a square matrix, concept of elementary row and column operations, Inverse by row operations.	10
	Total	45

Text Books:

1. H. K. Dass, "Applied Mathematics for polytechnics", CBS Publishers & Distributors.

Reference Books:

1. S. P. Deshpande, Mathematics for polytechnic students, Pune Vidyarthi Griha Prakashan.
2. T. Veerarajan, Engineering Mathematics for first year, Tata McGraw-Hill.
3. H. R. Hass, C. E. Heil, M. D. Weir, Thomas' Calculus, Pearson.

Any other information

Details of Internal Continuous Assessment (ICA):

Test Marks: 20

Term Work Marks: 30

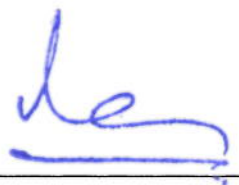
Details of Term work:

Tutorial/ Assignments/Presentation/Viva-voce/Quiz



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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: I	
Course/Module: Physics-I				Module Code: BTIME01003, BTICI01003, BTICO01003, BTIET01003	
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)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Course Objectives:					
<ol style="list-style-type: none"> 1. To enable the students to understand the basic principles of Physics. 2. To enhance the students ability to meet the needs of engineering applications. 3. To impart training to help the students develop skill sets for creating entities from basic and applied sciences. 					
Course Outcomes:					
After successful completion of the course the students will be able to					
<ol style="list-style-type: none"> 1. Develop conceptual competence to realize the laws of nature and appreciate the interface of physics with other disciplines. 2. Interpret the relationship and interaction between nature and matter with a scientific outlook, develop scientific aptitude and appreciate the role of physics in improvement of human life and welfare of the society. 3. Explain different processes of physics that have wide applications in industrial and technological sectors. 4. Develop considerable problem solving abilities and scientific skills, viz. experimental, observational, manipulative, decision making and investigatory etc. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Physical World and Measurement: Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. Dimensions of physical quantities, dimensional analysis and its applications.				07



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2.	Laws of Motion: Force: Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces. Friction: Static and kinetic friction, laws of friction, rolling friction, lubrication.	08
3.	Gravitation: Kepler's laws, Newton's law of gravitation, acceleration due to gravity, gravitational potential energy, escape speed and satellites.	06
4.	Rotational Motion: Vector product of two vectors, angular velocity, period and frequency of revolution, relation between linear and angular velocity, angular acceleration, angular momentum and torque, centripetal and centrifugal force, Centre of mass, Moment of inertia and theorems of perpendicular and parallel axes.	08
5.	Fluid friction: Pressure, pressure-depth relation ($P = \rho h g$), atmospheric pressure, Pascal's law, Archimedes' principle. Viscous force, definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its SI unit. Streamline and turbulent flow with examples, critical velocity, Reynold's number and its significance. Up thrust force, terminal velocity, Stokes law, and derivation of coefficient of viscosity by Stoke's method, effect of temperature and adulteration on viscosity of liquid, Bernoulli's principle.	08
6.	Surface tension: Cohesive and adhesive force, Laplace's molecular theory of surface tension, Surface Tension: definition and unit, effect of temperature on surface tension. Angle of contact, Capillarity and examples of capillary action, derivation of expression for surface tension by capillary rise method, applications of surface tension.	08
Total		45

Text Books:

1. David Halliday, Robert Resnick, Jearl Walker (2015), Principles of Physics, Wiley, New Delhi, 10th edition.
2. Paul G. Hewitt (2015), Conceptual Physics, Pearson education.

Reference Books:

1. R. K. Gaur and S. C. Gupta (2008), Engineering Physics, Dhanpat Rai & Co., New Delhi.



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2. Verma, H. C. (2010), Concepts in Physics, *Bharti Bhawan Ltd., New Delhi, 3rd edition.*

Any other information:

Details of Internal Continuous Assessment (ICA)

Test Marks: 20


Term Work Marks: 30

Details of Term Work:

1. Report of minimum ten experiment
2. Report of minimum two assignment covering the prescribed syllabus

List of Experiments:

1. To find the thickness of wire using a screw gauge.
2. Experiment of spherometer.
3. To find volume of solid cylinder and hollow cylinder using a Vernier caliper.
4. To find out retarding force for a simple pendulum using graphical method.
5. To determine acceleration due to gravity using simple pendulum.
6. To measure the coefficients of static and kinetic friction between a wooden block and a wooden plane.
7. Determination of Coefficient of restitution for rubber and sponge
8. To find the surface tension of a liquid by capillary rise method.
9. Determination of coefficient of viscosity using Stokes' method.
10. Measure the angle of rotation vs. time for a disc and bar. Also calculate the rotational energy and the angular momentum of the disc over the time.
11. (A) To understand the rotational motion of a rigid body. (B) To study properties of the moment of inertia and its effect on rotational motion. (C) To explore the use of least-squares fitting procedures in analyzing a dynamical system.



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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: I	
Course/Module: Chemistry-I				Module Code: BTIME01004, BTICI01004, BTICO01004, BTIET01004	
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)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Prerequisite: 10 th Standard Science					
Course Objectives:					
<ol style="list-style-type: none"> 1. To introduce basic principles of chemistry- atom structure, mole concept, acid-base theories and electrochemistry. 2. To familiarize with the concepts and applications of water technologies, engineering materials like metals, alloys and understand corrosion. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Understand water technologies applied in industries. 2. Apply principles of engineering materials like metals and alloys, corrosion theories and various methods to control corrosion in various real time problems. 3. Develop interest in the fundamental structure of matter, which governs the properties of matter and mole concept. 4. Interpret the acid-base theories for solving various chemical reactions and apply principles of electrochemistry in various real time problems. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Atom Structure: Dalton's Atomic Theory, Rutherford's Scattering Experiment, Bohr's Theory of an atom, Orbits and orbitals, shapes of s, p, d orbitals, Pauli's exclusion principle, Hund's rule, Aufbau principle, Electronic configuration of first twenty elements, Definition and types of valency - electrovalency, covalency, co-ordinate valency.				07
2.	Mole Concept: Avogadro's number, molecular and equivalent weight, molar mass, Numericals based on the mole concept, concentration and its units, dilution of solutions and numerical based on it, determining the weight of substance present from the given volume and concentration of the solution containing the substance.				06
3.	Water: Sources of water, Impurities in water, hardness of water, causes of hardness, Numerical problems based on hardness calculations,				08



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	Estimation of hardness of water by EDTA method, Numerical problems based on EDTA method. Disadvantages of hard water - for domestic and industrial purposes, Steam generation in Boilers - Boiler Corrosion, Scales & Sludges, Caustic Embrittlement, Priming & Foaming.	
4.	Electrochemistry: Nernst theory, Mechanism of electrolysis, degree of ionization. Faraday's Laws of Electrolysis-Statements and numerical problems. Electroplating-Theory and applications.	06
5.	Metals and Alloys: Types of metals, properties of metals-Hardness, Ductility, Malleability, Tensile Strength, Machinability, Weldability, Soldering. Alloys: Introduction, Alloys of Al, Cu (brass, bronze) (Composition, properties and uses)	06
6.	Corrosion: Introduction, Dry or Chemical corrosion, Wet or Electro chemical corrosion. Types of corrosion: concentration cell corrosion, galvanic corrosion, differential aeration, waterline, stress corrosion. Factors influencing rate of corrosion. Corrosion control: i. Cathodic protection techniques. ii. Protective coatings: Metallic coatings (galvanizing, tinning, sherardizing).	06
7.	Acids and Bases: Theories of Acids and bases-Arrhenius theory, Bronsted-Lowry concept, Lewis theory, advantages of Lewis concept, Concept of pH, pH scale, buffers. Numerical problems based on hydrogen ion and hydroxyl ion concentration.	06
Total		45

Text Books:

1. Jain.P.C & Jain.M, Engineering Chemistry, Dhanpat Rai Publishing Co. New Delhi, 17th Edition, 2017.
2. Rao.A.A, Polytechnic Chemistry (Theory and Practical), New Age International, 2010.
3. Shete.S.D, Applied Chemistry, S.Chand & Co, 2018.

Reference Books:

1. Ball. D, Physical Chemistry-, Cengage Learning Inc, 2nd edition, 2015.
2. Weiner.S.A, Harrison.B, Introduction to Chemical Principles-A Laboratory Approach, 7th edition, Cengage Learning, 2010

Any other information:

Details of Internal Continuous Assessment (ICA)



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Test Marks: 20

Term Work Marks: 30

Details of Term Work:

1. Two class tests.
2. Minimum eight lab experiments.
3. Viva-voce to be conducted.



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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: I	
Course/Module: Basics of Computer System				Module Code: BTIME01005, BTICI01005, BTICO01005, BTIET01005	
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	--
Course Objectives:					
<ol style="list-style-type: none"> 1. To create awareness of computer system functions along with the Hardware and Software. 2. To get familiarize with data representation in computer systems and computer networking. 3. Learn various utility application to create documents, presentations and Ms- Excel to manage information. 					
Course Outcomes:					
After successful completion of this course, students will be able to:					
<ol style="list-style-type: none"> 1. Understand the basic concepts of computer systems, types of hardware and software. 2. Understand basic concepts of networks, operating systems and data representation. 3. Use MS-Office application to create documents, ppt. presentations and data management. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Introduction to Computer: Introduction, Digital and Analog computers, Characteristics of Computer, History of computer, Generation and classification of computers, The computer system, Applications of computer				02
2.	Computer System: Hardware: Introduction, CPU, Memory representation, Memory Hierarchy, CPU registers, Cache memory, Primary memory, Secondary Memory, Magnetic Tapes, Magnetic Disks, Optical Disks, Magneto-Optical Disk, Input Devices and Output Devices. Software : Types of Software, Application Software, System Software, Operating system, Types of Operating Systems, Functions of OS, Examples of Operating Systems				06
3.	Data Representation: Introduction, Number System, Conversion from decimal to binary, hexadecimal.				03
4.	Computer Network and Internet: Introduction, Network Types - LAN, MAN, WAN, Network topologies, Network Devices, Wireless Networking, History of Internet, Connecting to Internet, Internet Connections, Internet Address, Internet Services, Use of Internet				04



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5.	Introduction to Application Software: MS-Word: Word Basics, Work with Text, Format Documents, Work with Text Objects, Work with References, Work with Illustrations, Specialized Documents, Collaborate with Others Web Pages, Mail Merge.	04
6.	MS-Excel: Introduction, worksheets and workbooks, Entering Information: Entering data: Entering Labels and Values, Filling Cells with a Series of Data, Editing Cell Data, Find and Replace, Go To Cell Data, Go To Locking Rows and Columns By Splitting Panes, Locking Rows and Columns by Freezing Panes, Spell Check, AutoCorrect, Track Changes, Accept or Reject Changes, Comments, Adding Elements to worksheet : Images, Embedding object, Charts, Formulas and Calculations	06
7.	MS-PowerPoint: Introduction, Create new presentations from scratch and by using templates Add text, pictures, sounds, movies, and charts to presentations, Format the objects, Design slides using themes, colors, and special effects, Animate objects on slides to bring them to life, Use of Master Slides	05
Total		30

Text Books:

1. Anita Goel, "Computer Fundamentals", Pearson Publication, First Edition, 2010.

Reference Books:

1. V. Rajaraman, "Fundamentals of Computers", PHI, Fifth Edition, 2010.

Any other information:

Details of Internal Continuous Assessment (ICA)

Test Marks: 20

Term Work Marks: 30

Details of Term Work:

1. Minimum 10 experiments covering all syllabus
2. Practical Test
3. Minimum two assignments

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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: I	
Course/Module: Engineering Drawing-I				Module Code: BTIME01006, BTICI01006, BTICO01006, BTIET01006	
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
* Practical Examination conducted by school level.					
Course Objectives:					
<ol style="list-style-type: none"> 1. To describe scientific facts, principals and technique of drawing in order to visualize and express the ideas. 2. To know different curves used in engineering 3. To acquire the concepts of projections of an object 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Draw the different curves used in engineering. 2. Draw the projections of points and lines. 3. Draw the projections of solids and Orthographic Projection of machine component. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Introduction: Importance of Engineering Drawing for the study of technical course, Types of lines and dimensioning, Geometric construction. Curves: Conics-Parabola, Ellipse (<i>Oblong method, General method</i>), Hyperbola and Parabola (<i>Rectangle, General method</i>). Cycloidal Curves: Cycloid, Epicycloid & Hypocycloid.				08
2.	Projection of Lines: Inclined to both the reference planes (No traces and both ends of lines in one quadrant only). Projection of Planes: Inclined to both the reference planes for regular polygons and circles.				08
3.	Projections of Solids: Projection of solids like Prism, Pyramid, Cylinder and Cone inclined to both the reference Planes.				08



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4.	Section of Right regular Solids: Sections of solids cut by inclined planes (Prism, Pyramid, Cone and Cylinder) With its true shape of section. Development of Surfaces: Development of Lateral surfaces of solids cut by inclined plane (Prism, pyramid, cone and cylinder)	06
	Total	30
Text Books:		
1. M. B. Shah and B. C. Rana (2010), "Engineering Drawing", <i>Pearson Education</i> .		
Reference Books:		
1. N. D. Bhat (2016), "Elementary Engineering Drawing", <i>Charotar Publishing House</i> .		
2. K. Venugopal (2007), "Engineering Drawing and Graphics", <i>New Age International Publishers</i> .		
3. Giesecke, Mitchell, Spencer and Hill (2008), "Technical Drawing", <i>Macmillan Publishing Co. Inc. New York</i> .		
Any other information:		
Details of Internal Continuous Assessment (ICA)		
Test Marks: 20		
Term Work Marks: 30		
Details of Term Work:		
1. A2 size drawing sheets having 02 to 03 problems on each unit (Total 4 Sheets).		

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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: I	
Course/Module: Workshop Practice-I				Module Code: BTIME01007, BTICI01007, BTICO01007, BTIET01007	
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)
0	2	0	1	Marks Scaled to 50	--
Course Objectives:					
<ol style="list-style-type: none"> To impart hand on safety precaution of different workshop practices on various trades. To impart knowledge of basic tools used for different workshop jobs. To familiarize students with assembling and troubleshooting of PC. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> Differentiate various tools used in workshop for fitting, welding and sheet metal fabrication. Follow the appropriate safety methods for handling of tools in workshop. Assemble all components to build the Personal Computer functional. Troubleshoot problems of computer system. Maintain Personal Computer system. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Introduction to various workshop trades, layout. General instructions for safety in various Workshop Trades. Common accidents- causes and preventive measures. First Aid.				04
2.	Safety Measures for Workshop Trades: Fitting Shop: Introduction to fitting shop tools, common materials used in fitting shop. Description and demonstration of various types of safety precaution while work on benches, holding devices, files and hack-sawing. Welding Shops: Introduction to welding and its importance in engineering practice; Welding screens and other welding related equipment, accessories and gloves. Safety precautions during welding. Hazards of welding and its remedies. Precautions while				14



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	using electric arc welding, Practice in setting current and voltage for striking proper arc. Earthling of welding machine. Sheet Metal Fabrication: Use of hand tools for sheet metal fabrication. Sheet metal fabrication of jobs involving cutting, shearing, bending, edge folding, soldering, brazing etc. Demonstration of modern tools.	
3.	Assembling and Configuring PC: Introduction, Components of PC, Caution and safety, Setting up the cabinet, Installing power supply unit, Installing CPU, Installing heat sink and cooling fan, Installing memory module, Mounting motherboard, Installing hard disk, Installing optical drive, Connecting motherboard power supply cables, Connecting to front panel, Connecting mouse, keyboard and monitor, Switching on the computer, Configuring BIOS, Installing operating system, Installing device drivers, Installing ad-on cards, Study of different types of network cables, Study various network connecting devices: Hub, Switches, build a small LAN network	07
4.	Troubleshooting and Maintenance: Safety precautions, Configuring using BIOS parameters, Power on self test, Devices and drivers, Working with windows registry, Performance improving steps, Overclocking the system, Diagnosing general problems, Computer system: common problems and solutions, Preventive maintenance, Replacing CMOS battery, Clearing BIOS password, Flashing BIOS	05
	Total	30

Text Books:

1. K. C. John (2010), "Mechanical Workshop Practice", Edition-2, *PHI Learning Pvt. Ltd.*
2. K. L. Jame (2013), "Computer Hardware": Installation, Interfacing, Troubleshooting and Maintenance, *PHI Publication.*

Reference Books:

1. Hajra Choudhary S. K., Bose S. K., Hajra Choudhary A. K., Roy Nirjhar (2013), "Elements of Workshop Technology-I", *Media promoters and Publications.*
2. Anita Goel (2010), "Computer Fundamentals", *Pearson Publication First Edition.*

Any other information:

Details of Internal Continuous Assessment (ICA)

Test Marks: --



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Term Work Marks: 50

Details of Term Work:

1. Demonstration and study on safety measures on various workshop trades like fitting, welding and sheet metal fabrication.
2. Demonstration and study on Assembling of components of PC with proper configuration.
3. Report on industry / Safety Training Institute visit conducted in relevance with syllabus.



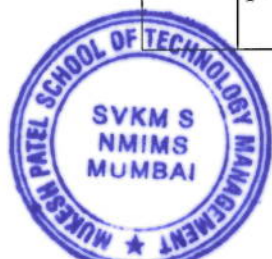
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Program: B. Tech Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Mathematics-II				Module Code: BTIME02001, BTICIO2001, BTICO02001, BTIET02001	
Teaching Scheme			Evaluation Scheme		
Lecture (Hours per week)	Practical (Hours per week)	Tutorial (Hours per week)	Credit	Internal Continuous Assessment (ICA) (Marks - 50)	Term End Examinations (TEE) (Marks- 100 in Question Paper)
3	0	2	4	Marks Scaled to 50	Marks Scaled to 50
Course Objectives:					
<ol style="list-style-type: none"> 1. To provide an understanding and use of vectors and integration. 2. To develop knowledge of co-ordinate geometry, probability and statistics. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Identify different types of conics and solve related problems. 2. Demonstrate understanding of the fundamental concepts of Vector Algebra 3. Solve problems related to permutation, combination and probability using suitable techniques. 4. Apply Calculus techniques and Algebraic skills to solve real life problems. 					
Detailed Syllabus:					
Unit	Description				Duration
1.	Co-ordinate Geometry: Straight line: slope and intercept of a line, equations of straight lines, perpendicular distance between a point and a straight line, perpendicular distance between two straight lines. Conic sections: circle, parabola, ellipse and hyperbola.				10
2.	Integration: Integration Basic formulae, Integration using LIATE rule, partial fraction method, trigonometric functions, substitution method. definite integrals, relationship between definite integrals and derivatives, application of definite integration- area under the curve.				14
3.	Permutations and Combinations: Fundamental principle of counting, Factorial n, Permutations and combinations formulae, simple applications.				04
4.	First order and first degree differential equations: Concept of differential equations, order, degree and formation of differential equation, solution of differential equation - variable separable, homogeneous differential equation, linear differential equation, and applications of differential equations related to real problems.				07



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5.	Vector Algebra and Three Dimensional Geometry: Definition, scalar product, vector product, algebra of vectors., relation between direction cosines of a line, equations of lines - passing through a given point and parallel to the given vector, passing through two given points, equations of plane in normal form, equation of a plane passing through a given point and perpendicular to a given vector, distance of a point from a plane and line in space, angle between the planes.	10
	Total	45

Text Books:

1. H. K. Dass, "Applied Mathematics for polytechnics"

Reference Books:

1. S. P. Deshpande, Mathematics for polytechnic students, *Pune Vidyarthi Griha Prakashan.*
2. T. Veerarajan, Engineering Mathematics for first year, *Tata McGraw-Hill.*
3. H. R. Hass, C. E. Heil, M. D. Weir, Thomas' Calculus, *Pearson.*

Any other information:

Details of Internal Continuous Assessment (ICA)

Test Marks: 20

Term Work Marks: 30

Details of Term work : Tutorial/ Assignments/Presentation/Viva-voce/Quiz

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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Physics-II				Module Code: BTIME02002, BTICI02002, BTICO02002, BTIET02002	
Teaching Scheme			Evaluation Scheme		
Lecture (Hours per week)	Practical (Hours per Week)	Tutorials (Hours per Week)	Credit	Internal Continuous Assessment (ICA) (Marks - 50)	Term End Examinations (TEE) (Marks - 100 in Question Paper)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50
Course Objectives:					
<ol style="list-style-type: none"> 1. To enable the students to understand the basic principles of Physics. 2. To enhance the student's ability to meet the needs of engineering applications. 3. To impart training to help the students develop skill sets for creating entities from basic and applied sciences. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Develop conceptual competence to realize the laws of nature and appreciate the interface of physics with other disciplines. 2. Interpret the relationship and interaction between nature and matter with a scientific outlook, develop scientific aptitude and appreciate the role of physics in improvement of human life and welfare of the society. 3. Explain different processes of physics that have wide applications in industrial and technological sectors. 4. Develop considerable problem solving abilities and scientific skills, viz. experimental, observational, manipulative, decision making and investigatory etc. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	ELECTRICITY AND MAGNETISM: Electric charge and fields: Electric charge, conservation of charge Coulomb's law between two points charges multiple charges. Electric field, electric field due to point charge, electric dipole and field due to dipole. Electric potential and potential difference. Magnetic effects and magnetism: Concept of magnetic field, magnetic dipole and magnetic dipole moment. Biot-Savart's Law, Ampere's Law, Lorentz's force, Faraday's law. Thompson e/m experiment. Electrostatic and Magnetostatic focusing CRT and application of CRO.				10
2.	WAVE MOTION: Definition of a wave, wave motion, wave velocity, wave period, wave frequency, wave length, vibratory motion, periodic motion, amplitude of a vibrating particle, derivation of $v = n \lambda$. Simple harmonic motion				10



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	(SHM), examples of SHM, equation of SHM, Types of progressive waves: transverse and longitudinal waves with Examples. Stationary wave, formation of stationary wave, examples of stationary wave, characteristics of stationary waves, free and forced vibrations with examples. Simple pendulum derivation of expression for its time period. Resonance: definition of resonance, examples of resonance, formula to calculate velocity of sound by resonance tube method. Acoustics: Reverberation time, Sabin's formula, conditions for good acoustics. Ultrasonics: Frequency of ultrasonic waves, principle of generating ultrasonic waves (Magnetostriction and piezoelectric), application of ultrasonic waves.	
3.	SEMICONDUCTOR PHYSICS: Intrinsic semiconductors, Concept of holes, Doping, Extrinsic semiconductors. Concept of Fermi level: P type and N type semiconductors with Fermi level concept, Formation of PN junction with band theory and Fermi level concept. Hall Effect and Applications	09
4.	LASER AND FIBER OPTICS: Lasers, spontaneous and stimulated emission, population inversion, pumping and active system. Types of laser: solid laser, gas laser, semiconductor laser, Applications of lasers. Fibre optics, principles of fibre, structure and classification of optical fibres, The numerical aperture, applications and use.	08
5	CRYSTAL STRUCTURE: Lattice, basis, crystal structure, unit cell, Structure of cubic crystals (SC, BCC, FCC). Ligancy and critical radius ratio for ionic crystals. Imperfections: point, line, surface & volume (introductory).	08
	Total	45

Text Books:

1. David Halliday, Robert Resnick, Jearl Walker (2015), Principles of Physics, Wiley, New Delhi, 10th edition.
2. Dattu R Joshi (2010), "Engineering Physics", Tata McGraw Hill 1st Edition.

Reference Books:

1. Arther Beiser (2009), "Concept of Modern Physics", Tata McGraw Hill, 6th edition.
2. R. K. Gaur and S. C. Gupta (2008), Engineering Physics, Dhanpat Rai & Co., New Delhi.
3. H. C. Verma (2010), Concepts in Physics, Bharti Bhawan Ltd., New Delhi, 3rd edition.

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 Ten experiments.
2. Minimum two assignment covering the prescribed syllabus.

Experiments:

1. Study of CRO.
2. Determination of e/m ratio using Thompson's experiment.
3. Verification of Faraday Effect.
4. Verification of Ampere's law.
5. To find the velocity of sound using Resonance method.
6. To find the frequency of sound waves using Sonometer.
7. Determination of the position of flaw using ultrasound flaw detector.
8. Determination of velocity of sound in air using Kundt's tube.
9. To determine the energy gap of a semiconductor.
10. To determine the Hall coefficient of the given specimen.
11. Determination of angle of deviation of He- Ne laser.
12. Determination of numerical aperture of fibre optic cable.
13. To study different types of cubic lattices.



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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Chemistry-II				Module Code: BTIME02003, BTICI02003, BTICO02003, BTIET02003	
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)
3	2	0	4	Marks Scaled to 50	Marks Scaled to 50

Prerequisite: Chemistry-I

Course Objectives:

1. To familiarize with the treatment of water for human consumption & industrial applications.
2. To learn ore extraction process and understand the importance of alloying and use the knowledge of properties of steel for industrial applications.
3. To comprehend the importance of heat capacity and heats of reactions.
4. To understand the importance of pollution free environment.
5. To get acquainted with the different gas laws, IUPAC nomenclature of organic compounds and nanomaterials.

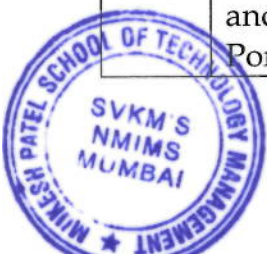
Course Outcomes:

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

1. Understand the various water treatment methods applied in industries; basic principles of Organic chemistry and interpret IUPAC names of organic compounds.
2. Discuss the different effects of environmental pollution and derive relationships between the pressure, volume, temperature and number of moles of a gas.
3. Understand the industrial application of general chemistry with reference to refractories and cement and important engineering materials.
4. Apply the principles of chemical energetics to determine the heat of a reaction

Detailed Syllabus:

Unit	Description	Duration
1.	Water Technology: Softening Methods: Different methods of water hardness removal (lime-soda method, zeolite method, ion-exchange method) and their numerical problems. Drinking water purification: Removal of microorganisms- Bleaching powder treatment, UV treatment, chlorination, ozonization, Desalination by Reverse Osmosis, Ultrafiltration.	08
2.	Industrial Chemistry: Cement: Manufacture of Portland Cement, Chemical Composition and Constitution of Portland Cement, Setting and Hardening of Portland Cement.	06



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	Refractories: Preparation, properties and uses of Silica bricks, Dolomite bricks, Silicon Carbide (SiC).	
3.	Chemical Energetics: System and surroundings, reversible and irreversible processes, exothermic and endothermic reactions, Internal energy, first law of thermodynamics, enthalpy, heat of the reaction, Hess's law and numericals based on heat of the reaction, heat capacity.	07
4.	Basic Principles of Organic Chemistry: General introduction to naming organic compounds-trivial names and IUPAC nomenclature (aliphatic C ₁ -C ₄ , aromatic C ₆ - mono & disubstituted). Tetravalence of carbon, hybridization (sp ³ , sp ² , sp hybridization with one example each).	07
5.	Environmental Chemistry: Air pollution - Greenhouse effect, acid rain and depletion of ozone layer, smog, photochemical smog - control of air pollution. Water pollution - pollutants from dyeing industries and Tanneries, BOD and COD- waste water treatment (primary and secondary treatment-activated sludge method).	06
6.	Gases: Ideal and real gases, Gas pressure units, and numericals based on it, Gas laws-Boyle's Charles, Ammonton's law, Avogadro's law-numericals based on it, ideal gas equation, determining density and molecular weight of a gas, volume of gases in chemical reactions.	06
7.	Important Engineering Materials: i) Nanomaterials: Structure, properties, application of CNT's, Fullerenes, graphite ii) Liquid crystals: Definition, classification, properties with applications.	05
	Total	45

Text Books:

1. Krishnamurthy N, *et al*, Engineering Chemistry, Prentice Hall of India Pvt. Ltd, New Delhi, 2014.
2. Palanna.O.G., Engineering Chemistry, Tata McGraw Hill Education. Pvt. Ltd, 1st Edition 2009.
3. Jain.P.C & Jain.M, Engineering Chemistry, Dhanpat Rai Publishing Co. New Delhi, 17th Edition, 2017.

Reference Books:

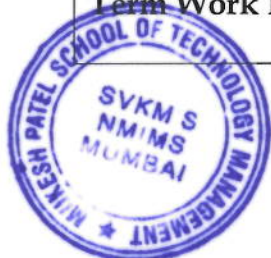
1. De. A. K, Environmental Chemistry, John Wiley & Sons. Inc, 2018.
2. Barrow. G, Physical Chemistry, Tata McGraw Hill, 2007.

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. Two class tests.
2. Minimum eight lab experiments.
3. Viva-voce to be conducted.



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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Workshop Practice-II				Module Code: BTIME02004, BTICI02004, BTICO02004, BTIET02004	
Teaching Scheme				Evaluation Scheme	
Lecture (Hours per week)	Practical (Hours per week)	Tutorials (Hours per week)	Credit	Internal Continuous Assessment (ICA) (Marks - 50)	Term End Examinations (TEE) (Marks - 100 in Question Paper)
0	2	0	1	Marks Scaled to 50	--
Course Objectives:					
<ol style="list-style-type: none"> 1. To impart hand on plumbing operation by handling various plumbing tools. 2. To impart knowledge of basic tools used for plumbing jobs. 3. To introduce basic concepts of electrical and electronic instruments and its applications. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Differentiate various tools used in workshop for plumbing operation in G.I. and PVC pipe. 2. Perform plumbing operation in G.I. and PVC. 3. Carry out electrical wiring. 4. Prepare PCB layout. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	<p>Descriptions and drawing of various plumbing shop tools such as Pipe Dies, Wrenches, Threading dies and Pipe Vices. Safety precautions while handling plumbing tools.</p> <p>Demonstration and practice of Pipe Fittings such as Sockets, Elbow, Tee, Reducer, Nipple, Union coupling, plug, Bend, Float valves and Taps</p>				04
2.	<p>List different sizes of Galvanized Iron (G.I.) and flexible pipe used for fitting. List different adhesive solvent used for fitting.</p> <p>Introduction to various types of threads (internal and external)-single start, multi-start, left hand and right hand threads. Observe the operation threading to G.I. pipe with jointing & jointing of PVC pipe.</p> <p>Practice for actual pipe line by using PVC pipe and accessories without using adhesive.</p> <p>Practice for actual G.I. pipe with socket, plug, and elbow, with operation of cutting, threading and fitting.</p>				10



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3.	PCB Laboratory Exercises: Layout drawing, positive and negative film making, PCB etching and drilling, tinning and soldering techniques	08
4.	Wiring: Study of cables used in Electrical & Electronic transmissions. Study of Electrical Fittings - Switches, Plugs, Holders, Connectors, Earthing. Electrical Wiring for lighting and appliances Series & Parallel Connections.	08
Total		30

Any other information:

Details of Internal Continuous Assessment (ICA)

Test Marks: --

Term Work Marks: 50

Details of Term Work:

1. Making internal and external threads on a job by tapping and dieing operations (manually)
2. Preparation of job involving thread on GI pipe/ PVC pipe and fixing of different types of elbow, tee, union, socket, stopcock, taps etc.
3. Prepare printed circuit board for small circuits.
4. Classify and summarize different types of cables, connectors and switches.
5. Wiring practice of different types of household wiring.



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**SVKM's Narsee Monjee Institute of Management Studies
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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Computer Programming-I				Module Code: BTIME02005, BTIC102005, BTICO02005, BTIET02005	
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
Pre-Requisite:- Knowledge of Basic Computer Systems					
Course Objectives:					
1. The course will enable the students to understand the computer programming language, develop and apply logic to solve engineering problems.					
Course Outcomes: After completion of the course, students would be able to:					
1. Understand problem statement and draw flowchart with algorithm					
2. Develop and execute C programs using basic programming constructs.					
3. Implement C programs using Arrays, Strings and Structures.					
4. Implement C programs using pointers and functions					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Introduction to Algorithm & Flowchart : Properties of algorithm, Developing an algorithm and Flowcharts				02
2.	Basics of C-programming Language: History of C, Program Development Life Cycle, Compiling and executing C Program				01
3.	The Components of a C Program: Program's Components, Variables, Numeric Data Types, Constants, Statements, Expressions and Operators, Fundamentals of I/O, Formatted Input and Formatted output.				04
4.	Basic Program Control: Decision Making and branching, Looping: For, While, Do-While, Nested Loops.				04
5.	Arrays: One Dimensional Array, Declaration and Initialization, Multidimensional Array.				04
6.	Program Decomposition in to modules: Defining functions in C, Functions & Parameters, and Introduction to recursive functions.				05
7.	Understanding Pointers: What is Pointer?, Pointers and Simple Variables, Pointers and Array				04



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8.	Strings: Introduction to strings, string. h header functions, Displaying & Reading strings, String operations without using string. h header functions.	04
9.	Structures: Introduction to Structures and Unions	02
	Total	30

Text Book:

1. E. Balaguruswamy, "Programming in ANSI C", Tata McGraw Hill, 6th Edition, 2012.

Reference Books:

1. Ashok N Kamthane, "Programming in C", Pearson Educations, 2nd Edition, 2011.
2. K. R. Venugopal, S. R. Prasad, "Mastering C", Tata McGraw Hill, 2nd Edition, 2015.

Any other information:

Details of Internal Continuous Assessment (ICA)

Term Test Marks: 20

Term Work Marks: 30

Details of Term Work:

1. At least 10-Experiments covering the entire syllabus.
2. Minimum 3 class assignments.
3. Practical examination

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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Engineering Drawing-II				Module Code: BTIME02006, BTICI02006, BTICO02006, BTIET02006	
Teaching Scheme			Evaluation Scheme		
Lecture (Hours per week)	Practical (Hours per week)	Tutorials (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
Course Objectives:					
<ol style="list-style-type: none"> 1. To get acquainted with the use of drafting software (CAD) in engineering drawing. 2. To acquire the concepts of orthographic projections. 3. To know the concepts of isometric projections. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Generate orthographic projections of machine components with the help of computer aided drawing (CAD) software. 2. Generate isometric projections of machine components with the help of computer aided drawing (CAD) software. 3. Generate free hand drawings of machine elements. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Orthographic projections: Projections of various objects having flat and curved surfaces using 1 st angle projection method only, Concept of Missing views.				08
2.	Sectional views of Orthographic Projections: Conversion of pictorial view with sectional orthographic projection (Full Section Only)				08
3.	Isometric Projections: Isometric view and projection of linear and curvilinear features.				08
4.	Introduction to machine parts: Types of nuts, bolts, screws, studs and riveted joints.				06
	Total				30
Text Books:					
<ol style="list-style-type: none"> 1. N. D. Bhatt (2016), "Elementary Engineering Drawing", Charotar Publishing House. 2. M. B. Shah and B. C. Rana (2010), "Engineering Drawing", Pearson Education. 					



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Reference Books:

1. K. Venugopal (2007), "Engineering Drawing and Graphics", *New Age International Publishers.*
2. D.M.Kulkarni., A.P. Rastogi, A.K.Sarkar., "Engineering graphics with Autocad", *Printer Hall India Publisher.*
3. Giesecke, Mitchell, Spencer and Hill (2008), "Technical Drawing", *Macmillan Publishing Co. Inc. New York.*

Any other information:

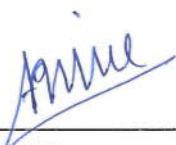
Details of Internal Continuous Assessment (ICA)

Test Marks: 20

Term Work Marks: 30

Details of Term Work:

1. A3 size drawing sheet (AutoCAD) and Class assignments having 2 to 3 problems on each unit. (Min 4 Sheets)



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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Fundamentals of Engineering Mechanics				Module Code: BTIME02007, BTICI02007, BTICO02007, BTIET02007	
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
Course Objectives:					
<ol style="list-style-type: none"> 1. To develop thorough understanding of centroids of area 2. To get acquainted with the various systems of forces 3. To understand the concept of friction 4. To get acquainted with velocity and acceleration of moving particles 5. To inculcate the ability to conduct experiments for better understanding of various principles of mechanics 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> 1. Determine centroid of irregular shape areas 2. Determine the resultant / equilibrant of various coplanar force systems. 3. Analyse the system of forces in equilibrium with and without friction. 4. Determine velocity and acceleration of moving particles at any instance 5. Conduct experiments for better understanding of various principles. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Centroid of plane areas and wires: Application to simple geometrical shapes and wires bent into circular arcs.				06
2.	System of Coplanar forces: Introduction to coplanar & non-coplanar force system. Forces and their components. Resultant of coplanar force system -concurrent forces, parallel forces, non-concurrent non-parallel system of forces. Moment of force about a point, couple, Varignon's theorem.				06
3.	Equilibrium of coplanar force system: Meaning of equilibrium, free body diagrams, equilibrium of concurrent, parallel and non-concurrent non-parallel (general) system of forces and couples. Types of supports, determination of reactions at supports for various types of determinate beams.				06
4.	Friction: Laws of friction, angle of friction, angle of repose, cone of friction, Equilibrium of bodies on rough horizontal and inclined plane, application to problems involving blocks, wedges and ladder.				06



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5.	Kinematics of Particle: Velocity and acceleration in terms of rectangular coordinate system, rectilinear motion, acceleration - time, velocity- time graphs and their uses, relative velocity, projectile motion.	06
	Total	30
Text Book:		
<ol style="list-style-type: none"> N. H N. H. Dubey (2014), "Engineering Mechanics", <i>Tata McGraw Hill</i> R. C. Hibbler (2004), "Engineering Mechanics", <i>McMillan Publishers</i> 		
Reference Books:		
<ol style="list-style-type: none"> F F. L. Singer (1954), "Engineering Mechanics", <i>Harper & Raw Publication</i> Beer & Johnson (2011), "Engineering Mechanics", <i>Tata McGraw Hill</i> D. S. Kumar (2009), "Engineering Mechanics", <i>Tata McGraw Hill</i> Macklin & Nelson (2012), "Engineering Mechanics", <i>Tata McGraw Hill</i> A. K. Tayal (2008), "Engineering Mechanics", <i>Umesh Publication</i> E. W. Nelson, Charles L. Best, W.G. Mclean, Merle Potter (2010), "Schaum's outlines on Engineering Mechanics -Statics", <i>Tata McGraw Hill</i> E. W. Nelson, Charles L. Best, W.G. Mclean, Merle Potter (2010), "Schaum's outlines on Engineering Mechanics -Dynamics", <i>Tata McGraw Hill</i> 		
Any other information:		
Details of Internal Continuous Assessment (ICA)		
Test Marks: 20		
Term Work Marks: 30		
Details of Term Work:		
<ol style="list-style-type: none"> Minimum five assignments covering the prescribed syllabus. Report of minimum six experiments performed from the list given below. 		
List of Experiments:		
<ol style="list-style-type: none"> To find reactions of simply supported beam (Parallel force system) To verify polygon law of forces (Concurrent & non-concurrent force system) To verify Lami's theorem using simple jib crane Equilibrium of non-concurrent non parallel force system To verify moment equilibrium condition using bell crank lever To determine coefficient of friction using friction plane To determine coefficient of friction using angle of repose method Simple Screw Jack 		

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Program: B. Tech. Integrated (Mechanical, Civil, Computer & EXTC)				Semester: II	
Course/Module: Elements of Electrical Engineering				Module Code: BTIME02008, BTICI02008, BTICO02008, BTIET02008	
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
Course Objectives:					
<ol style="list-style-type: none"> Understand the concept of Electro Motive Force (EMF), potential difference, current, ohm's law, resistivity, power dissipation in resistance, effect of temperature on resistance. Understand the concepts of magnetic field, Faraday's laws of electromagnetic induction and magnetic circuits. Analyze and solve simple ac and dc electrical and magnetic circuits using different theorems and laws. To impart hands-on experience in assembling and testing circuits. 					
Course Outcomes:					
After completion of the course, students would be able to:					
<ol style="list-style-type: none"> Analyze dc and ac circuits using network theorems & ac fundamentals. Determine the resonant frequency of any given series or parallel RLC circuit. Compare electric and magnetic circuits. Analyze simple and composite magnetic circuits. 					
Detailed Syllabus: (per session plan)					
Unit	Description				Duration
1.	Resistance and DC Network: The idea of Electrical Potential, Work, Power, Energy, Resistance, Unit of Resistance, Law of Resistance, Units of Resistivity, Effect of Temperature on Resistance, Ohm's Law, Resistance in Series, Voltage Divider Rule, Resistance in Parallel, Types of Resistors, Nonlinear Resistors, Division of Current Parallel Circuits, Equivalent Resistance, Electric Circuits, Kirchhoff's Law, Maxwell's Loop Current Method, Nodal Analysis				10
2.	Capacitance: Capacitor, Capacitance, Parallel-plate Capacitor, Capacitor in composite medium, Capacitors in Series, Capacitors in Parallel, Energy Stored in Capacitor, Current-Voltage Relationships in a Capacitor, Charging of a Capacitor, Time Constant, Discharging of a Capacitor.				06



Anime

**SVKM's Narsee Monjee Institute of Management Studies
Mukesh Patel School of Technology Management & Engineering**

3.	Magnetic Circuit: Laws of magnetic force, Definitions of field Intensity, Magnetic potential, Flux & flux density, Permeability, Intensity of magnetization & susceptibility, comparison between electric and magnetic circuits, leakage flux, Faraday's laws of electromagnetic induction, Induced E.M.F., Inductance: self-inductance, mutual inductance, coefficient of magnetic coupling, Inductances in series and parallel.	08
4.	AC Fundamentals: Alternating quantities, RMS & Average values, form factor, frequency, crest factor, series combination of R-L, R-C & RLC (with resonance) & parallel circuits (with resonance).	06
	Total	30
Text Books:		
1. B. L. Theraja (2012), Fundamentals of Electrical Engineering and Electronics, S. Chand & Co., 6 th Edition.		
Reference Books:		
1. Vincent Del Toro (2010), Electrical Engineering Fundamentals, Prentice Hall India Learning Pvt. Ltd, 2 nd Edition.		
Any other information:		
Details of Internal Continuous Assessment (ICA)		
Test Marks: 20		
Term Work Marks: 30		
Details of Term Work:		
1. At least ten laboratory experiments based on above mentioned units.		
2. Minimum 3 assignments based on the prescribed syllabus.		



Signature
(Prepared by Concerned Faculty/HOD)





Signature
(Approved by Dean)