

MBA (Tech) IT, Telecommunication, Chemical, Manufacturing		Trimester I	
Sub: APPLIED SCIENCE I - APPLIED PHYSICS -I		Code: 501 PHS	
Periods per week	Lecture*	2.5	
	Practical	1.5 Hrs.	
	Tutorial	-	
		Hours	Marks
Evaluation system	Theory Examination	1.5	50 (scaled down to 25)
	Term work		25
*Each lecture of 1hr			
Objective: To develop understanding of the fundamentals of the subject and develop the ability to use it for various Engineering applications. To expose the students to relevant topics in the subject of Physics			
Prerequisite	Knowledge of HSC Level Physics		
Detailed syllabus			
Unit	Topics	Duration (Hr)	
1	Solid State Physics: Crystal Structure: Structure of cubic crystals, special form in cubic crystals, diamond structure, Barium Titanate, Miller indices, planes and direction, legancy and critical radius ratio in ionic crystal. Imperfections: point, line, surface & volume (Introductory); Formation of energy bands and classification of solids, conductors, semiconductors, insulators. Physics of semiconductor junction. Fermi levels in semiconductor, energy gap and its temperature dependence.	10	
2	Electricity and Magnetism: Motion of charges in electric field and magnetic field. Application of electric and magnetic field to determine e/m and cyclotron. Electrostatic focusing system, C.R.O. (concept, theory) and uses.	7	
3	Thermo-electricity: See back effect, Peltier effect, Thomson effect, thermo-electric power, law of successive temperature, law of intermediate metals, application of thermodynamics on thermocouple. Thermopile	4	
4	Sound Waves: Audible, ultrasonic and infrasonic wave propagation, peizo-electric effect, production of ultrasonic waves. Applications of ultrasonic waves, echo sounding, thickness measurement, cavitation and non-destructive testing and flow detection.	4	
Total			25

Books:

Reference books:

Concept of Modern Physics; Arthur Beiser TMH
Engineering Physics; R.K. Gaur and S. L. Gupta; S.Chand Co.
Engineering Physics; A. S. Vasudeva
Nuclear Physics; Cohen.

Internet references: Nil

Term work:

Report on experiments performed (at least 5) based on syllabus
Assignment consisting of numerical problems (at least 20)
Two Written Test during the term.

SVKM's NMIMS (University)
Mukesh Patel School of Technology Management & Engineering

MBA (Tech) IT, Telecommunication, Chemical, Manufacturing		Trimester I	
		Code: 502 CHS	
Sub: APPLIED SCIENCE - I - Applied Chemistry - I	Periods per Week	Lectures *	2.5
		Practical	1.5 Hrs.
Evaluation system	Theory Examination	Hours	Marks
		1.5	50 (scaled down to 25)
	Term work	-	25
*Each lecture of 1hr			
Objective: To understand and explain the applications of core chemistry to the materials. To understand the gravity of the air and water pollution and implement the safety measures to overcome the problems due to pollution.			
Prerequisite	1. Brief Knowledge of environmental cycles 2. Use of formulae for the calculations. 3. Chemistry of functional groups – hydroxy compounds and hydrocarbons		
Detailed syllabus			
Unit	Topics		Duration (Hr)
1	Environmental Chemistry: Natural cycles of the Environment		05
2	Pollution: Air Pollution, Control of Air Pollution, Water, Water pollution.		07
3	Polymers: Polymerisation, Classification of Polymers, Methods of Polymerisation, Commercial polymers, Elastomers, Commercial Elastomers		07
4	Lubricants: Importance, classification of lubricants, Testing of Liquid Lubricants		06
Total			25

Books:

Reference books:

1. Engineering Chemistry – B.K. Sharma
2. Engineering Chemistry – Jain & Jain (Dhanpat Rai Publishing Company)
3. Applied Science – I - Dr. (Mrs.) J.A. Parikh & Dr. I.S. Sheikh (Nanddu Publishers & Pvt. Ltd)
4. Polymer Science – V.R. Gowariker, Wiley Eastern Ltd.

5. Fundamentals of Engineering Chemistry – Theory & Practice – S.K. Singh (New Age Industrial Publishers)

Internet references: www.chemweb.com

Term work:

1. Experiment based on above syllabus.
2. Minimum two class tests.
3. Any assignment given by the Faculty.

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MBA (Tech) IT, Telecommunication, Chemical, Manufacturing		Trimester I	
Sub: BASIC ELECTRICAL ENGINEERING		Code: 505 EES	
Periods per week	Lecture*	5	
	Practical	3 Hrs	
	Tutorial	-	
		Hours	Marks
Evaluation system	Theory Examination	3	100 (scaled down to 50)
	Term work		50
*Each lecture of 1hr			
<p>Objective: At the completion of this course, student becomes familiar to fundamentals of electrical engineering. Machines and transformers form the major component of electrical engineering discipline and understanding their principles and technicality is the prime objective of this course. No enterprises engaged in any activity do away with machines, motors and transformers either as tools.</p>			
Prerequisite	Knowledge of HSC level Physics.		
Detailed syllabus			
Unit	Topics	Duration (Hr)	
1	Units of work , power and energy. Effect of temperature on resistance. Series parallel circuits.	4	
2	Concept of linear & nonlinear circuit. Kirchoff's law, Superposition theorem, Thevenin's theorem & Norton's theorem. Max Power Transfer theorem	13	
3	DC Transients: R-L & R-C transients, time constant, expression for energy stored for inductance & capacitance.	4	
4	AC Fundamentals: Alternating quantities, RMS & Avg values, form factor, frequency, crest factor, series combination of R-L, R-C & R, L, C (with resonance) & parallel circuits (with resonance). Three phase circuit. Concept of balanced & unbalanced tools. Expression for total power, KW, KVAR & KVA.	16	
5	Single-phase transformer , emf equation, determination of efficiency & regulation by direct loading.	4	
6	Basic principles of measurement of electrical quantities voltmeter, ammeter, wattmeter, energy meter.	4	
7	DC & AC Machines: Working principles, speed control. Three phase induction motor, single-phase motor, working, applications of motors.	5	
Total			50

Books:

Reference books:

1. Electrical Engineering Fundamentals; Vincent Del Toro, Prentice Hall Pvt. Ltd.
2. Electrical Technology “Cotton”; Wheeler Pub.
3. Electrical Technology; B. L. Theraja
4. A course in Electrical & Electronics Measurement & Instrumentation; A. K. Shawney, Dhampat Rai & Sons.
5. Basic Electrical Engineering; V. N. Mittle; Tata McGraw Hill.

Internet references: [www.electric circuit.com](http://www.electriccircuit.com)

Term work:

1. The term work shall comprise of at least six laboratory experiments and assignments based on the whole syllabus, duly recorded and graded.
2. Minimum two class tests.

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MBA (Tech) IT, Telecommunication, Chemical, Manufacturing		Trimester I	
Sub: Applied Mathematics - I		Code: 503 MAS	
Periods per week	Lecture*	6	
	Practical		
	Tutorial	-	
		Hours	Marks
Evaluation system	Theory Examination	3	100 (scaled down to 50)
	Term work	-	50
*Each lecture of 1hr			
Objective: To provide an understanding of the basic concept of Applied Mathematics at post secondary level			
Prerequisite	Knowledge of HSC level mathematics		
Detailed syllabus			
Unit	Topics	Duration (Hrs)	
1	Applications of Derivatives: Curve Sketching; maxima and minima; increasing and decreasing functions; concavity and points of inflection; asymptotes; and symmetry; related rates; mean value theorems; Taylor's formula; Maclaurin series; l'Hospital's rule; linear and quadratic approximations; arc-length in Cartesian coordinates.	15	
2	Partial Derivatives: Level curves and level surfaces; chain rule; homogeneous functions in 2 or 3 variables; Euler's theorem; examples linear approximations and bounds on the error; gradient, directional derivative, tangent plane and normal line to a level surface.	15	
3	Lagrange Multiplier Method: Maxima and minima in 2 variables; constrained maxima with one or two constraints; least squares method for fitting a straight line or a parabola.	15	
4	Vectors: Scalar and vector triple products; equation of a line and a plane; angle between 2 planes; distance of a point from a line or plane; plane determined by 2 lines.	15	
Total			60

Note: Proofs and theorems are not expected.

Books:

Reference books:Advanced Engineering Mathematics; Erwin Kreyszig, Wiley Eastern Limited. Calculus and Analytic Geometry; G. B. Thomas and R. L. Finney, Narosa Publishing House.

Internet references: Nil

Term work:

1. At least 2 written test shall be given during the trimester.
2. Any assignment given by the Faculty

MBA (Tech) IT, Telecommunication, Chemical, Manufacturing		Trimester I	
Sub: COMPUTER FUNDAMENTALS		Code: 506 CCS	
Periods per week	Lecture*	5	
	Practical	3 Hrs.	
	Tutorial	-	
		Hours	Marks
Evaluation system	Theory Examination	3	100 (scaled down to 50)
	Term work		50
*Each lecture of 1hr			
Objective: To give basic idea of operating environment and the system oriented languages and the in-depth understanding of “C” programming language. This will help in learning the various techniques to be covered in future trimester.			
Prerequisite	Basic knowledge of Computers		
Detailed syllabus			
Unit	Topics	Duration (Hr)	
1	Computer Basics: Organization of a computer, characteristics of a computer, Central Processing Unit (CPU), input/output devices, computer memory, primary memory and secondary memory, memory organization, backup devices.	08	
2	Data Representation: Representation of characters, integers and fractions, binary and hexadecimal representations.	03	
3	Computer Languages: Assembly language and characteristics of high-level language.	03	
4	Operating System Basics: Multiprogramming and time-sharing operating systems.	04	
5	C Fundamentals: Character Set, Identifiers and Keywords, Data types, Constants, Variables and Arrays, Declarations, Operators & Expressions, Library functions, Statements, Symbolic Constants, Preprocessor directives.	04	
6	Data Input and Output: getchar(), putchar(), scanf(), printf(), gets(), puts() functions	02	
7	Control Statements: if-else, while, do-while, goto, for statements, nested control structures, switch, break, continue statements, comma operator.	07	
8	Functions: Function prototypes, passing arguments to a function by value, recursion, storage classes, automatic, external, static, register variables in single file environment.	07	
9	Arrays: Defining – processing array, passing arrays to functions. Introduction to multidimensional arrays, arrays and strings.	04	
10	Pointers: Declarations, Referencing and de-referencing, passing pointers as functions, pointer to array.	04	

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	Structures and Unions: Defining and processing a structure.	04
Total		50

Books:

Reference books:

V. Rajaraman; Fundamentals of computers; PHI
Balaguruswamy; Programming in C; TMH
Ram Kumar & R. Aggarwal; Programming in ANSI C; TMH
Schaum Outline Series; Programming in C
Y. Kanetkar; Let us C; BPB

Internet references: As given by the faculty

Term work:

Each student has to appear for three-class test & clear at least two.
Programs based on above Syllabus.
Any assignment given by the Faculty.

MBA (Tech) (Common for all)		Trimester I	
Sub: Basic Engineering Drawing		Code: 504 MES	
Periods per week	Lecture*	2	
	Practical	5	
	Tutorial		-
Evaluation system	Theory Examination	Hours	Marks
		4	100 (scaled down to 50)
	Term work		50
*Each lecture of 1hr			
Objective: To develop skill in reading & understanding of drawings used in engineering industries. Students should be conversant with the use of code of practice used in Engineering Drawing. This will develop proficiency in use of drawing as a medium of communication and information document between a designer, manufacturer & end user.			
Prerequisite	Nil		
Detailed syllabus			
Unit	Topics	Duration (Hr)	
1	Introduction to Engineering Drawing.		
	Engineering Curves	2	
	Projections of lines (only first quadrant)	2	
	Sections of Solids & development.	3	
	Multi view orthographic projections of machine parts by first angle and third angle method of projections. Sectional views to be included.	4	
	Reading and interpretation of orthographic projections (Missing views)	3	
	Isometric View		
	Free hand sketches	3	
	Bolts: - Hexagonal, Square and Cylindrical heads. Nuts: - Hexagonal, Square, Wing and Capstan. Set screws.	1	
2	Preparation of three views of 2 D drawings using computer	2	
Total			20

Books:

Reference books:

1. Engineering drawing By N D. Bhatt
2. Engineering drawing By P.J.Shah

References: Engineering drawing By N H. Dubey

Internet references: Nil

Term work:

1. Single drawing sheet per topic – 10 Drawing sheets
2. 3 Test of which best two will be considered.