RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	APPLIED MECHANICS
COURSE CODE	:	104
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 02
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 30

RATIONALE

In the wider sense “Applied Mechanics” may be defined as a science which deals with the problems related to objects in motion or in equilibrium.

Depending on the discipline of the technicians the depth of knowledge and extent of areas of mechanics will vary.

Only those topics which form common requirement of the different courses and those to, a depth required by all have been included in this subject. Further study of this subject in respect of topic/ depth is left out and could be integrated with their use in subjects like theory of structure, strength of materials, theory of mechanics and basic machine design.

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2014
NAME OF COURSE	:	APPLIED MECHANICS
COURSE CODE	:	104
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 02
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 30

S.No.	COURSE CONTENT	MARKS
1.	**COMPOSITION AND RESOLUTION OF FORCES**	07
1.1	Definition, Effects, Characteristics of Force	
1.2	System of Forces	
1.3	Principle of Transmissibility of Forces	
1.4	Concept of Resultant Force	
1.5	Law of ▪ Parallelogram of Forces ▪ Triangle of Forces ▪ Polygon of Forces	
1.6	Determination of Resultant of two or more concurrent forces (analytically and graphically)	
2.	**PARALLEL FORCES AND COUPLES**	07
2.1	Classification of Parallel Forces	
2.2	Methods of finding resultant force of parallel forces – analytically and graphically	
2.3	Position of resultant force of parallel forces	
2.4	Definition, Classification and characteristics of a force couple, moment of couple	
3.	**MOMENTS AND THEIR APPLICATIONS**	07
3.1	Definition, Types and law of moment	
3.2	Varignon's Principle of moment and its applications	
3.3	Lever and its Applications	
3.4	Types of supports and determination of support reactions of a simply supported beam subjected to point load and uniformly distributed load (UDL)	
4.	**EQUILIBRIUM OF FORCES**	07
4.1	Equilibrium of a system of concurrent forces	
4.2	Conditions and types of Equilibrium	
4.3	Lami's Theorem and its applications	

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5.	**CENTRE OF GRAVITY**	07
5.1	Difference between Centroid and Center of Gravity (CG)	
5.2	Centroid of standard plane figures and CG of simple solid bodies	
5.3	Method of finding out Centroid of composite plane laminas and cut sections	
5.4	Method of finding out CG of Composite solid bodies	
6.	**FRICTION**	07
6.1	Concept and types of friction	
6.2	Limiting Friction, coefficient of friction, angle of friction, angle of repose	
6.3	Laws of friction (Static and Kinetic)	
6.4	Analysis of equilibrium of Bodies resting on Horizontal and inclined Plane	
6.5	Utility / Nuisance value of friction	
7.	**SIMPLE LIFTING MECHINES**	07
7.1	Concept of lifting Machines	
7.2	Definition of Mechanical Advantage, Velocity Ratio and Efficiency of Machines and their relation	
7.3	Reversibility of Machines and condition for self locking machine	
7.4	Law of Machines, Maximum mechanical advantage and maximum efficiency of machine	
7.5	Friction in machine (In terms of Load and effort)	
7.6	Calculation of M.A., V.R. and efficiency of following machines ▪ Simple wheel and axle ▪ Differential Wheel and axle ▪ Single Purchase crab ▪ Double Purchase crab ▪ Simple Screw Jack ▪ Different System of Simple Pulley Blocks	
8.	**MOTION OF A PARTICLE**	07
8.1	Definition of speed, velocity, acceleration, uniform velocity, uniform acceleration and variable acceleration	
8.2	Motion under constant acceleration/ retardation (equations of motion)	
8.3	Motion under force of gravity	
8.4	Concept of relative velocity	
8.5	Definition of projectile, velocity of projection , angle of projection, time of light, maximum height, horizontal range and their determination	
8.6	Definition of angular velocity, angular acceleration and angular displacement	
8.7	Relation between linear and angular velocity of a particle moving in a circular path	
8.8	Motion of rotation under constant angular acceleration	
9.	**LAWS OF MOTION**	07

9.1	Newton's Laws of motion and their applications	
10.	**WORK, POWER AND ENERGY**	07
10.1	Definition unit and graphical representation of work	
10.2	Definition and unit of power and types of engine power and efficiency of an engine.	
10.3	Definition and concept of Impulse	
10.4	Definition, unit and types of energies	
10.5	Total energy of a body falling under gravity	

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	APPLIED MECHANICS
COURSE CODE	:	104
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 02
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 30

S.No.	LIST OF EXPERIMENTS
1.	Verification of laws of parallelogram of forces.
2.	Verification of laws of polygon of forces
3.	Verification of laws of moments
4.	Determination of forces in the members of Jib Crane
5.	Determination of Centroid of plane lemina by graphical method
6.	Determination of coefficient of friction for surfaces of different materials on horizontal plane
7.	Determination of coefficient of friction for surfaces of different materials on an inclined plane
8.	Determination of mechanical advantage, velocity ration and efficiency of the following lifting machines ▪ Simple wheel and axle ▪ Differential wheel axle ▪ Single purchase crab ▪ Double purchase crab ▪ Simple pulley block ▪ Simple screw jack
9.	Measurement of B.H.P. of an engine using roap break dynamometer

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	APPLIED MECHANICS
COURSE CODE	:	104
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 02
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 30

S.No.	Reference Books	Writer
1.	A Text Book of Applied Mechanics	R. S. Kurmi, S. C. Chand & Co.
2.	Applied Mechanics	I.B. Prasad, Khanna Publisher

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	ENGINEERING DRAWING
COURSE CODE	:	107
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

RATIONALE

Engineering Technician irrespective of his field of operation in an industry is expected to possess a thorough understanding of drawing which includes clear spatial visualization of objects and the proficiency in reading and interpreting a wide variety of engineering drawings. Besides this he is also expected to possess a certain degree of drafting skill, depending upon his job functions in his day to day activities. This course of engineering drawing for diploma courses in Engineering branches is aimed at developing basic knowledge and skill, of engineering drawing.

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	ENGINEERING DRAWING
COURSE CODE	:	107
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

S.No.	COURSE CONTENT	MARKS
	NOTE: ONLY FIRST ANGLE PROJECTION METHOD IS TO BE FOLLOWED	
1.	**INTRODUCTION TO DRAWING INSTRUMENTS:** ▪ Introduction of drawing instruments, materials and their uses ▪ Applications of minidrafter ▪ Applications of compass and divider ▪ Applications of French curves and spline ▪ Pencils grades and their uses ▪ Designation and sizes of drawing sheet and drawing board	02
2.	**PLANNING AND LAYOUT OF DRAWING SHEET** Planning of drawing sheet as per I.S.: 696-1972 (SP 46: 1988) This should include Margin Title Block Zoning Revision Panel Folding Marks Numbering of Sheets	02
3.	**CONVENTIONAL REPRESENTATION :** Conventional representation of the following as per BIS practice Common Engineering materials **Electrical installations and fittings –** Main switches, (lighting and power), socket outlets (3 pin 5AMP, 3pin15AMP), bell, buzzer, loud speaker, Aerial, ceiling fan, exhaust fan, Bracket fan, fan regulator, battery and earth point. **ElectronicsComponent-** Diode : Zener, Varactor, Scotty, Step Recovery, Light Emitting Diode (LED), PNP and NPN transistors, resistance, capacitor, Inductors (fixed and variable both), IC (8pin and 14 pin) SCR, TRIAC, DIAC, UJT, FET, MOSFET, LOGIC GATES **Sanitary Fittings**- showerhead, wall lavatory basin, corner lavatory basin, urinal stall, kitchen sink, Indian type WC, water closets (Asian Pan, Urissapan, Anglo –	04

	Indian, European) **Building**- single and double swing doors and windows. **Mechanical Components**- Internal and External threads, slotted head, square end and flat, radial arms and ribs, serrated shaft, splined shaft, chain wheel, bearing, straight, and diamond knurling, compression and tension spring, leaf spring(with and without eye) spur and helical gear.	
4.	**LINES, LETTERING AND DIMENSIONING:** Introduction of types of lines and their applications Single stroke vertical, inclined letters (capital and lowercase) and numerals **DIMENSIONING** **Elements of Dimensioning** – dimension line, extension line, arrowhead and leader line **Dimensioning System** – Aligned and Unidirectional, Dimensioning of Arcs & Circle, Angular Dimensioning **Dimension of Counter sunk and Counter bore**.	04
5.	**METRICAL CONSTRUCTIONS AND ENGINEERING CURVES** Divide a line into any number of equal parts by parallel line method Bisecting of line and angle Construction of Triangles and Polygons Introduction of Conic Sections (CURVE) Construction of Ellipse by Eccentricity and Concentric circles methods Construction of Parabola by Eccentricity and Rectangle methods Construction of Hyperbola by Eccentricity method Construction of Cycloid Construction of Involutes of circle and polygon Construction of Archemedian spiral of any number of convolutions.	07
6.	**SCALES** Introduction of scales and their applications. Concept of reducing, enlarging and full size scale Classification of scales- plain, diagonal, vernier Scale of chord and comparative scales Definition of R.F. Construction of plain and diagonal scales	07
7.	**THEORY OF PROJECTION & PROJECTION OF POINTS, LINES & PLANES** Definition of various term associated with theory of projection Planes of Projection, Quadrants, first & third angle projection method Projection of Points in all the four quadrants **Projection of Lines**- 1. Parallel to HP and VP both 2. Perpendicular to one line and parallel to other	07

	3. Inclined to one Line and parallel to other 4. Knowledge of projection of line inclined to both the planes (No Practice required) **Projection of Planes**- 1. Perpendicular to HP and VP 2. Perpendicular to one plane and parallel to other 3. Inclined to one Line and parallel to other 4. Knowledge of projection of plane inclined to both the planes	
8.	**PROJECTIONS OF SOLIDS:** Projection of cylinder, cone, prism and pyramid. Under the following conditions: 1. Axis Parallel to HP and VP 2. Axis perpendicular to HP and parallel to VP 3. Axis perpendicular to VP and Parallel to HP 4. Axis inclined to HP and parallel to VP 5. Axis inclined to VP and parallel to HP 6. Axis inclined to both HP and VP	07
9.	**SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES:** Section of cone, cylinder, prism and pyramid (solid resting on its base in the HP i.e. the axis perpendicular to HP and parallel to VP) in the following cases: 1. Section plane parallel to HP and perpendicular to VP 2. Section plane parallel to VP and perpendicular to HP 3. Section plane inclined to HP and perpendicular to VP 4. Section plane inclined to VP and perpendicular to HP Drawing true shape of section **Introduction to development of lateral surface of solids**- Cone, cylinder, Prism and Pyramids (Simple & Truncated) Under the condition – solid resting on its base in the HP and axis perpendicular to HP and parallel to VP Development of funnel and elbow	10
10.	**INTERSECTION OF SURFACES** Intersection of following cases- Cylinder to cylinder and Prism to prism (with their axis intersecting and perpendicular to each other)	03
11.	**ORTHOGAPHIC PROJECTIONS & FREE HAND SKETCHING:** Principles of Orthographic projections Identification of necessary views and superfluous view Selection of front view Preparation of necessary orthographic views of simple objects from given pictorial views Dimensioning of orthographic views as per standard practice.	10

	Free hand sketches of simple objects (Using Pencil, Eraser & Paper only)	
12.	**ISOMETRIC VIEWS** Concept of isometric projection and isometric view (Isometric Drawing) Construction of isometric scale Construction of isometric view of polygon and circle Construction of isometric view of cone, cylinder, prism & pyramids Construction of isometric view of simple objects from given orthographic views	07

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	ENGINEERING DRAWING
COURSE CODE	:	107
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

S.No.	REFERENCE BOOKS	WRITER
1.	ENGINEERING DRAWING	N. D. Bhatt
2.	ENGINEERING DRAWING	R. K. Dhawan
3.	ENGINEERING DRAWING	P. S. Gill

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	ENVIRONMENTAL ENGINEERING & SAFETY
COURSE CODE	:	103
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

RATIONALE

Engineers and scientists from a number of related disciplines have been involved over years in the development of an academic basis for understanding and management of the environment. The purpose of keeping the Environment Engineering & Safety is to introduce a unique approach to the overall concept of environmental engineering an approach that emphasizes the relationship between the principles observed in natural purification processes and those employed in engineered processes.

RKDF UNIVERSITY, BHOPAL

SEMESTER : FIRST SEM

SCHEME : JULY-2013

NAME OF COURSE : ENVIRONMENTAL ENGINEERING & SAFETY

COURSE CODE : 103

LECTURES PER WEEK (in Hrs) : TH. 08

LECTURES PER SEMESTER (in Hrs) : TH. 120

S.No.	COURSE CONTENT	MARKS
1.	**INTRODUCTION TO ENVIRONMENT**	04
1.1	THE BIOSPHERE, biotic and abiotic	
1.2	An aquatic ecosystem	
1.3	Types of pollution	
1.4	Impact of human being on environment	
1.5	Impact of environment on human being	
1.6	Basic approach to improve environmental qualities	
1.7	Roll of an environmental engineer	
2.	**AIR POLLUTION SOURCES AND EFFECTS**	07
2.1	Standard definition of air pollution	
2.2	Composition of natural air	
2.3	Names of air pollutants	
2.4	Classification of air pollutants, primary and secondary pollutants	
2.5	Classification of source of air pollutants on different bases	
2.6	Definition of different types of aerosols	
2.7	Effect of air pollution on: human health, material properties, vegetation.	
2.8	Major toxic metals and their effects	
2.9	Major environmental phenomenon e.g., acid rain, global warming, green house effect, ozone layer depletion.	
2.10	Air quality standards	
2.11	Brief description of air pollution laws	
3.	**METEOROLOGICAL ASPECTS OF AIR POLLUTANT DISPERSION**	07
3.1	Meteorological parameters influencing air pollution	
3.2	Environment laps rate, temperature in version, atmospheric stability and adiabatic loss rate.	
3.3	Turbulence, topographical effects	
3.4	Plume behavior, looping, coning, fanning fumigation, lofting, trapping.	
4.	**AIR POLLUTION CONTROL METHODS AND EQUIPMENTS**	14
4.1	Natural purification processes of air	
4.2	Artificial purification methods of air	
4.3	Brief description of following control equipments along with sketch e.g,	

4.4	gravitation settling chamber, cyclone, scrubber, bag house filter, electrostatic precipitator Brief description of following processes for the control of gaseous pollutants e. g., absorption, adsorption, condensation, combustion etc	
5. 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9	**WATER POLLUTION SOURCES AND CLASSIFICATION** Water resources Uses of water Classification of water Origin, composition and characteristics of domestic waste water as well as industrial waste water Biochemical oxygen demand Water pollution laws and standards Uses of waste water Classification of waste water Chemical oxygen demand	07
6. 6.1 6.2 6.3 6.4 6.5	**Waste water treatment method** basic processes of water treatment Meaning of primary, secondary and tertiary treatment Flow chart of a simple effluent treatment plant Theory of indusrial waste treatment Volume reduction, neutralization and proportioning	07
7. 7.1 7.2 7.3 7.4 7.5 7.6	**SOLID WASTE MANAGEMENT** Sources and classification of solid waste Public health aspects Disposal methods - open dumping , sanitary , land fill Incineration , compositing Potential methods of disposal Recovery and recycling of paper, glass, metal and plastic	10
8. 8.1 8.2 8.3 8.4 8.5	**NOISE POLLUTION AND CONTROL** Sources of noise pollution Units of Noise pollution measurement Allowable limits for different areas Problems of noise pollution and measures to control it Noise pollution control devices brief discussion	07
9. 9.1 9.2 9.3 9.4	**SAFETY PRACTICES** Responsibility of employees and employers regarding health and safety Fire hazards ,prevention and precautions Industrial hazards prevention and protection Protection from air and noise pollution	07

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	ENVIRONMENTAL ENGINEERING & SAFETY
PAPER CODE	:	103
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

S.No.	LIST OF EXPERIMENTS
1.	**GROUP A AIR POLLUTION (Any one experiment may be selected from this group)**
1.1	Air monitoring and determination of SPM , CO, Nox, SO2 with high volume sampler.
1.2	Monitoring of stack gases and determination of SPM , CO, Nox, SO2 with slack monitoring kit.
1.3	Determination of CO,HC, in exhaust gases from petrol vehicle
2.	**GROUP B NOISE POLLUTION**
2.1	Determination of sound pollution in (a) Auditorium (b) Factories (c) Busy roads (d) Theatre (e) TV rooms (select any three situations)
3.	**GROUP C INDUSTRIAL WASTE WATER (Any Two experiment may be selected from this group)**
3.1	Determination of BOD/COD ratio in industrial waste water.
3.2	Determination of Ph and alkanity/ acidity in industrial waste water.
3.3	Determination of solids in industrial waste water.
3.4	Determination of turbidity, colour, and temperature of industrial waste water.
4.	**GROUP D POLLUTION STANDARDS(Any Two experiment may be selected from this group)**
4.1	Study of drinking water standards.
4.2	Study of effluent standards for water disposal.
4.3	Study of air pollution standards

RKDF UNIVERSITY, BHOPAL

SEMESTER : FIRST SEM

SCHEME : JULY-2013

NAME OF COURSE : ENVIRONMENTAL ENGINEERING & SAFETY

COURSE CODE : 103

LECTURES PER WEEK (in Hrs) : TH. 06 PR. 02

LECTURES PER SEMESTER (in Hrs) : TH. 90 PR. 30

S.No.	REFERENCE BOOKS	WRITER
1.	Environmental pollution control Engineering	C. S. RAO
2.	Air pollution and control	Mr. SETH
3.	Air pollution	M. N. RAO
4.	Industrial waste and its treatment	Mr. SETH

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	INTRODUCTION TO PERSONAL COMPUTERS
COURSE CODE	:	105
LECTURES PER WEEK (in Hrs)	:	TH. 04 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 60 PR. 60

RATIONALE

This subject is design to make students aware of basic concepts of computers including operating systems. Studying this subject will make students acquainted with word processing, spread sheet and data base concepts and working. This subject also introduces computer communication and networks, including internet & E-mail. The basic objective is to make students excel with good knowledge about computers.

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	INTRODUCTION TO PERSONAL COMPUTERS
COURSE CODE	:	105
LECTURES PER WEEK (in Hrs)	:	TH. 04 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 60 PR. 60

S.No.	COURSE CONTENT	MARKS
1.	**Introduction to Computers**	20
1.1	**Basic Concepts** Generations of Computers Overview of Computer Systems Classifications of Computers Characteristics of Computers Applications of Computers	
1.2	**Number System & codes** Decimal, Binary, Octal, Hexadecimal, Conversions from one system to other Binary coded Decimal & ASCII Code	
1.3	**Computer Hardware** **Input Devices** : Keyboard, Mouse, Trackball, Joystick, Scanner, OMR OCR Bar – code Reader, MICR, Digitizer, Card Reader, Voice Recognition, Web Cam, Video Cameras Etc. **Output Devices** : Monitors, Printers (Dot Matrix, Inkjet & Laser) Plotters, Commuter, Output Micro Film (COM), Multimedia Projector, Speech Synthesizsr, Dumb, Smart & Intelligent Terminal. **Storage Devices** : Primary & Secondary Storage, Characteristics and Limitation, Floppy, Hard Disk, CD ROM DVD, Disk Cartidge. **Microprocessor** : Registers, Arithmetic Unit, Control Unit, Buses, Instruction Set, Processor Speed. **Memory Concepts** : Concept of Memory, Unit of Memory, Types of Memory, RAM, ROM, PROM, EPROM, EEPROM, Cache Memory.	
1.4	**Computer Software** Computer Software System Software v/s Application Software Operating System Programs	

	Language Processor, Assembler, Compiler & Interpreter **Application Software** Types of Application Software and their examples. High Level Language, Low Level Language, Assembly language	
1.5	**Multimedia** Basics of Multimedia Components – Tex, Graphics, Animation, Audio, Images & Video Multimedia Applications.	
2. **2.1**	**Operating System** **Overview of DOS** Internal and External Commands	**10**
2.2	**Windows Operating System** Overview of different versions of Windows Characteristics and Facilities of Windows Terminologies of Windows – Desktop, Icon, Menu etc Components of Desktop Working with files and folders. Windows Utilities and Accessories – Notepad, Wordpad, Paintbrush, Windows Explorer, Calculator.	
2.3	**Introduction to Linux** An overview of Linux Basic Linux elements System Features Software Features File Structure Linux H/w & S/w Requirements	
3.	**Word Processing** Saving, Closing, Opening of Documents Selecting Text Editing Text Finding and Replacing Text Printing Documents Character and Paragraph Formatting Page Design and Layout Spell Check Creating Tables and Charts Handling Graphics	**07**
4.	**Spreadsheet Package** Spreadsheet Concept – Need, Advantage Terminology like cell, row, column etc. Working with spreadsheet – Creating, Saving, Editing & Printing	**10**

	Entering data – Entering Number, text, date, time etc. Selecting cells – cut, copy, paste date Editing Worksheet data Formatting – Text & Cells, Applying border shading, background patterns, conditional formats, positioning cells, formatting numbers, text, date, time. Creating Formulas – Entering, Editing, Using Function, Controlling Calculation Working with Charts – Creating Charts, Adding & changing text, changing the view & display, types of Charts.	
5.	**Presentation Software** Introduction Presentation Design Tools Presentation Terminologies Creating, Opening & Saving Presentation Working with different views Creating & Organizing slides Adding and Formatting text in slides Formatting Paragraphs Adding drawings & Objects Creating special effects Working with table & charts Printing Presentation	**07**
6.	**Database** Introduction – Need, Characteristics & terminologies of Database Types of Database – Relational, Hierarchical & Network Basic Entities – Tables, Records, Data types, Data Validation and constraints, keys relationbetween tables. Query – Select, Insert, Update, Delete Forms – Creating Forms, Forms Control Report Designer – customize formats, grouping reports.	**10**
7. **7.1** **7.2** **7.3**	**Computer Communication & Networks** **Information Networks** The Technology of workgroup Computing Types of Network Network Topology Network Components **Data Communication** Introduction to Data Communication Types of Data Transmission Media **Internet and E-Mail**	**06**

	Internet Basics Websites – Applications, Terminologies, Naming Conventions. Web Browsers – Types, Navigation and tools E-mail – Concept, terminologies, mailing services provider, advantages comparison with conventional mailing. Search Engine – Concept, Search Engine websites, Searching Methods.	

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	INTRODUCTION TO PERSONAL COMPUTERS
COURSE CODE	:	105
LECTURES PER WEEK (in Hrs)	:	TH. 04 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 60 PR. 60

S.No.	LIST OF EXPERIMENTS
1.	Study of various components of computer like CPU, keyboard, mouse, monitor, printer, CVT and storage devices. Internal and external commands of DOS
2.	Using Windows operating system, study of desktop, control panel, accessories and settings
3.	File management in windows explorer, Study of WordPad, NotePad, PaintBrush, Calculator etc
4.	Study of Linux operating system
5.	Study of MS-word – opening and saving of documents, formatting, editing and spell check, find and replace, printing, merging, Creating Table, Charts and Graphics
6.	Study of Spreadsheet – creating, saving, editing and printing. Entering data, selecting cells, formatting text, applying border shades and backgrounds, creating formulas, creating charts
7.	Study of Power Point – creating, opening, editing and saving of slides. Adding and formatting text, creating animations, working with images and special effects. Printing presentation.
8.	Study of MS-ACCESS– creating, saving, editing and printing of tables. Managing relationships, writing queries e.g. SELECT, UPDATE, DELETE, INSERT. Forms designing and report printing.
9.	Study of Web Browser and mailing programs

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COURSE CODE	:	105
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 02
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 30

S.No.	REFERENCE BOOKS	WRITER
1.	A first course in Computers	S. JAISWAL
2.	Computers and Application	SLOTNICK, BUTTERFIELD
3.	Computer Today	SURESH K BASANDRA

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	WORKSHOP PRACTISE
COURSE CODE	:	109
LECTURES PER WEEK (in Hrs)	:	PR. 04
LECTURES PER SEMESTER (in Hrs)	:	PR. 60

RATIONALE

Work shop practice is the fundamental exposure to basic skill required for all students pursuing their studies in various diploma-engineering disciplines. The practice experience would help students to understand the intricacies of industrial. Working in relatively shorter period of time more over the contents of this Curriculam forms a basic link for higher studies of engineering programs.

The students are advised to undergo each skill experience with know-how approach giving special emphasis to know-why for the various instructions imparted to them in each shop.

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	WORKSHOP PRACTISE
COURSE CODE	:	109
LECTURES PER WEEK (in Hrs)	:	PR. 04
LECTURES PER SEMESTER (in Hrs)	:	PR. 60

S.No.	COURSE CONTENT
1.	**INTRODUCTION TO WORK SHOP:-**
1.1	General Safety rules of workshop
1.2	State the General SafetyMeasures to be observed in Workshop.
1.3	State the General house keeping activities
1.4	Prepare a list of general safety Rules to be followed in Workshop
2.	**FITTING SHOP**
2.1	Layout of Shop
2.2	Sketch & Label Details of shop Layout
2.3	Type of jobs produced in fitting shop
2.4	Understand the functions of fitting shop
2.5	Understand different Metals, Alloys & their Sections
2.6	List the Commonly used Metals, Alloys.
2.7	State at least Five Sections, Shape & Size of Metals, Alloys.
2.8	Use relevant IS Code for commonly used materials with their samples of different Cross sections.
2.9	Fitting tools
2.10	Know use of fitting tools, sketch various tools & label their parts.
2.11	Classify fitting tools as marking tools, Clamping devices, striking tools, cutting tools etc.
2.12	Know the marking out & inspection instruments such as surface plate, marking block, scriber, tri square, bevel protractor etc.
2.13	Fitting operation: -
2.14	Use of Various fitting tools, inspection & measuring Instruments. To produce given job.
2.15	Choose correct Shape & Size of Blank for a given drawing.
2.16	Marking as per drawing using correct method, tools & sequence.
2.17	Choose correct sequence of operations for the job viz. Sawing, filing, scraping, drilling & Tapping etc.
2.18	Select appropriate Tools, inspection and measuring instruments.
2.19	Clamping the job in correct position in an appropriate clamping device.
2.20	Perform the operation with appropriate body posture, method & precision, exercising personal judgment of need of the force.

2.21	Inspect the job as and when necessary.
2.22	Introduction to screw threads.
2.23	Know common types of screw threads & the terminology used.
2.24	Sketch and label details of Metric &Whitworth thread.
3.	**CARPENTRY SHOP**
3.1	Carpentry shop lay out.
3.2	Sketch & Label Details of shop Layout.
3.3	Type of jobs produced in carpentry shop.
3.4	Understand the functions of carpentry shop.
3.5	Introduce type of jobs produced by carpenter.
3.6	Commonly used raw materials:
3.7	Know commonly used raw materials &their commercially available size.
3.8	Name various type of raw materials used such as Timber: - logs, planks, battens etc. Ply, Teak ply, block board, sun mica, Formica etc.
3.9	Carpentry tools: - Know various carpentry tools with their specifications and uses e.g. Different saws, chisels, gauges, scales, hammers, tri squares, planners ,vice etc.
3.10	**Carpentry Joints:-** Introduction of various joints like T, corner, mortise & tennon joints, dovetail, pin, cross half lap joint, etc.
3.11	**Choose correct shape & size of timber blank for a given job drawing**.
3.12	Do marking as per drawing using correct method, tools & sequence.
3.13	Identify correct operations e.g. sawing, chiseling, planning, grooving etc.
3.14	Select appropriate Tool , Inspection & measuring Instruments.
3.15	Clamping the jobs in correct position in an appropriate clamping device.
3.16	Perform the operation with appropriate body posture, method & precision,exercising personal judgment of need of the force.
3.17	Inspect for size & quality of finish as and when necessary.
3.18	Assemble the components produced. Inspect for proper joint quality & take remedial steps.
4.	**BLACK SMITHY SHOP**
4.1	Understand the function of black smithy & forging shop.
4.2	Layout of Shop.
4.3	Sketch & Label Details of shop lay out.
4.4	Know the different jobs produced in smithy shop e.g. round to hexagonal shapes or vice versa J -hook, S- hook, circle, chain etc.
4.5	Commonly used raw materials: - M.S. Bars of different shapes and size.
4.6	Smithy Tools: - Know various smithy tools with their specifications e.g.different type of hammers, hot / cold chisel, flatters, tongs, leg vice, swage, block, anvils, open hearth and furnaces etc.
4.7	Preparation of job (any three) J-hook, S-hook, chain, circle, tong, chisel etc.
4.8	Safety measures: - Know the safety regulation in black smithy shop.
5.	**SHEET METAL SHOP**
5.1	Layout of Shop

5.2	Sketch & Label Details of shop lay out.
5.3	Know the different jobs produced in sheet metal shop e.g. Open tray, cylinder, prism, Funnel etc.
5.4	Commonly used raw materials: -M.S. sheet (black), G.I., M.S.rivets, and aluminum rivet
5.5	Understand foil, sheet and plate.
5.6	Tools used
5.7	Different snips, shears, stacks, latter punch, figure punch, Solid punch, hollow punch, mallet, soft hammers, channel, Square bars, std. Sheet gauge.
5.8	Type of joints and operations
5.9	Introduction of various sheet metal operations & joints e.g. seaming, single seam , double seam, Grooved seam, corner joint, cap joint etc.
5.10	Preparation of job (any two): - Open tray, cylinder, prism, Funnel etc.
5.11	Choose correct shape &size of sheet for a given job drawing considering allowances for joint or seam.
5.12	Do marking as per drawing using correct method, tools and sequence.
5.13	Identify correct operation e.g. shearing, punching, bending, debarring, folding, strengthening, stamping, riveting, etc.
5.14	Select appropriate Tool , inspection & measuring Instruments.
5.15	Holding the job in correct position.
5.16	Perform the operation with appropriate body posture, method & precision, exercising personal judgment of need of the force.
5.17	Inspect for proper joint quality and take remedial steps.
6.	**WELDING SHOP** **Layout of Shop**
6.1	Sketch & Label Details of shop lay out.
6.2	Know the different jobs produced in Welding shop e.g.Lap joint, single butt, double butt, corner, T joint, etc.
6.3	Tools & equipments used:-Specifications & use of various tools and equipments used in Welding shop e.g. . A.C. welding transformer, Gas welding set, electrode used, chipping hammer, wire brush, shield, gloves, apron etc.
6.4	Preparation of job: - (any two) Lap joint, single butt, double butt, corner, T joint, etc.
6.5	Safety measures:- Know the safety regulation in Welding shop.
7.	**PLASTIC MOULDING:-** Know the commonly used plastic materials i.e. Thermosetting, Thermo plastic. Sketch & label various parts of bench molding m/c. Production of any product on bench molding m/c.
8.	**REVISION** Understand the difference in theory and practice. Explain the importance of skills in production of quality jobs

NOTE:-

1. **Theoretical inputs will be provided on shop floor during workshop Practice.**
2. **Shop safety would include First Aid training for each shop.**

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	WORKSHOP PRACTISE
COURSE CODE	:	109
LECTURES PER WEEK (in Hrs)	:	PR. 04
LECTURES PER SEMESTER (in Hrs)	:	PR. 60

S.No.	REFERENCE BOOKS	WRITER
1.	Production Technology	R. C. PATEL & C.G. GUPTA
2.	Workshop Technology	RAGHUWANSHI
3.	Workshop	P. N. VIJAYVARGIYA

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	COMMUNICATION SKILLS
COURSE CODE	:	102
LECTURES PER WEEK (in Hrs)	:	TH. 06
LECTURES PER SEMESTER (in Hrs)	:	TH. 90

RATIONALE

The wide range of communicative and functional need of English in the evolving global and technical professional environment has more than ever imposed a demand of acquiring proficiency in communication skills in our technicians and diploma pass outs. Besides being a professional language, it also acts as a window to technical and scientific knowledge. Diploma pass outs are required to communicate with personnel belonging to different echelons of authority. Therefore, acquiring proficiency in listening, speaking, reading and writing English is an integral part of professional and technical competence.

Enabling Objectives

The students, after completing the course, will be able to

- Understand slowly delivered spoken material in Indian English.
- Understand general purpose words of English.
- Use general purpose words of English to express himself in speaking reasonably clearly and correctly on routine matters.
- Write reasonably and grammatically correct English.
- Develop a habit of reading with comprehension to achieve an optimum speed of 75 WPM.
- Communicate effectively in a professional environment through speaking and writing to achieve desired objectives.

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	COMMUNICATION SKILLS
COURSE CODE	:	102
LECTURES PER WEEK (in Hrs)	:	TH. 06
LECTURES PER SEMESTER (in Hrs)	:	TH. 90

S.No.	COURSE CONTENT	MARKS
1.	**Communication Process and its Needs**	
1.1	(a) How to make communication effective (b) Barriers in communication, Removal of barriers	**07**
1.2	**Grammar and vocabulary for correct English usage**. (a) Determiners, Prepositions, Auxiliary verbs and subject verb agreement (b) Rewrite as directed (change voice, correct form of verbs/tenses) (c) Vocabulary – One word substitution, words often misused and wrongly spelt	**14**
2.	**Passages of Comprehension**	
2.1	**Prescribed passages (six from existing syllabus)** (a) Language of Science (b) Desalination or Desalting Process (c) Safety Practices (d) Non-conventional Sources of Energy (e) Our Environment (f) Entrepreneurship	**14**
2.2	Writing summary, moral and characterization of any one story from the book prescribed.	**07**
3.	**Business Communication (one question with internal choice)**	**07**
3.1 3.2 3.3 3.4 3.5 3.6	Principles of effective business correspondence Its parts, mechanics, styles and forms Application for job, Bio-Data and C.V. Letter of Enquiry Placing order Complaint	
4.	**Composition & Translation**	
4.1	Writing paragraphs of 150 words on topics of general interest i.e. pollution, ragging in college, importance of computers, importance of communication skill, importance of science and technology etc.	**07**
4.2	Translation (Hindi to English and vice-versa).	**07**

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5.	**Unseen passages & Precis writing** A. Answer the questions based on the passage. B. Give suitable title OR C. Writing Precis	**07**

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	COMMUNICATION SKILLS
COURSE CODE	:	102
LECTURES PER WEEK (in Hrs)	:	TH. 06
LECTURES PER SEMESTER (in Hrs)	:	TH. 90

S.No.	REFERENCE BOOKS	WRITER
1.	Communication Skill for Technical Students	M/S SAMAIYA
2.	Essentials of Business Communication	Dr. RAJENDRA PAL
3.	Practical English Grammer	THOMSON & MARTINET

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	COMMUNICATION SKILLS
COURSE CODE	:	102
LECTURES PER WEEK (in Hrs)	:	TH. 06
LECTURES PER SEMESTER (in Hrs)	:	TH. 90

S.No.	SUGGESTED READINGS
1.	**To enhance the reading skills and generate interest** ▪ A Brief History of Time: - Stephan Hawking, Bentham Books, Great Britain ▪ Cosmos: - Carl Sagan, Bentham Books, Great Britain. ▪ Ignited Minds: - A.P.J. Abdul Kalam, Penguin Books. ▪ India 2020: - A.P.J. Abdul Kalam, and Y.S. Rajan Penguin Books. ▪ Beyond the Last Blue Mountain: - J.R.D. Tata, Penguin Books ▪ Life and Times: - Albert Einstein, Bentham Books. ▪ Power of Oration: - Abraham Lincoln.
2.	**Faster reading for deriving Pleasure.** ▪ Interpreter of Maladies: - Jhumpa Lahiri.,Harper & Collins. ▪ Short stories by R.K.Narayan,Tagore,Tolstoy,Mulkraj Anand,O.Henry.
3.	**For Vocabulary Building.** ▪ Word Power made Easy: - Norman Lewis, Bloomsbury ▪ Reading, Spelling, Vocabulary, Pronunciation, Book 1,2 &3: - Norman Lewis. ▪ The Joy of Vocabulary: - Levine, Levine & Levine. ▪ Roget's Thesaurus of Synonyms and Antonyms. ▪ Cambridge English Pronouncing Dictionary: - Danial Jones . ▪ Audio- Visual learning resources and multimedia learning material for pronunciation improvement and listening skills.

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	PHYSICS
COURSE CODE	:	101
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

RATIONALE

Curriculum revision needs to be updated and revised in the light of the changes occurring in the life so that they fulfill the objectives.

1. To minimize the poor technical knowledge in the basics of his / her discipline.
2. To improve practical skill on the basis of theoretical knowledge imported.
3. To improve the problem solving skill.

Physical science forms the foundation of engineering, the subject of physics has its importance amongst all the physical sciences, therefore, it is to be taught exclusively to the students of diploma in engineering.

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	PHYSICS
COURSE CODE	:	101
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

S.No.	COURSE CONTENT	MARKS
1.	**UNITS & MEASUREMENT**	**04**
1.1	Fundamental and derived units	
1.2	Scalar and vector, Basic requirements to represent vector	
1.3	Symbols, abbreviation, and proculation	
1.4	Linear measurement by vernier calipers, screw gauge and spherometer	
1.5	Angular measurement by angular vernier	
2.	**MOTION**	**04**
2.1	Motion and its type	
2.2	Linear motion (laws and equation)	
2.3	Circular motion	
2.3.1	Angular velocity and relation with linear velocity	
2.3.2	Centripetal acceleration, Centripetal and Centrifugal forces	
2.4	Rotatory motion	
2.4.1	Axis of rotation	
2.4.2	Moment of Inertia, Radius of gyration	
2.4.3	Kinetic energy of rotation	
2.5	Numerical problems and solution on the topic	
3.	**MOLECULAR PHENOMENON OF SOLIDS, LIQUIDS AND GASES**	**04**
3.1	Postulates Of Molecular Kinetic Theory Of Structure of matter	
3.2	Brownian motion	
3.3	Kinetic and Potential energy of molecules	
3.4	Kinetic theory of gases	
3.4.1	Postulates	
3.4.2	Calculation of pressure by Kinetic theory	
3.4.3	Prove of different gases law by Kinetic theory.	
4.	**PROPERTIES OF MATTER**	**10**
4.1	Elasticity: Meaning, definition, stress, stain, Hook's law and elastic limit	
4.2	Surface Tension : Meaning, definition, molecular forces, cohesive and adhesive forces, surface energy, capillary rise and capillary rise method.	
4.3	Viscosity : Meaning, definition, stream line and turbulent flow, critical velocity, Stock's law.	

4.4	Numerical problems and solution on the topic.	
5.	**HEAT**	**07**
5.1	Heat and temperature, concept of heat as molecular motion	
5.2	Transmission of heat, study state and variable state.	
5.3	Concept of heat capacity, specific heat and latent heat.	
5.4	Calorimeter and its uses	
5.5	Thermodynamics	
5.5.1	Relation between heat and work	
5.5.2	Mechanical equivalent of heat	
5.5.3	First law of thermodynamics and its application	
5.5.4	Second law of thermodynamics and its application	
5.5.5	Carnot cycle	
5.5.6	Numerical problems and solution on the topic.	
6.	**HEATING EFFECT OF CURRENT AND THERMOELECTRICITY**	**07**
6.1	Heating effect of electric current: Joule's law, work energy and power in electric circuit, calculation of electric energy.	
6.2	Thermo electricity	
6.2.1	Seeback effect and thermoelectric power.	
6.2.2	Neutral temperature, temperature of inversion and relation between them	
6.23	Thermo electric thermometer and thermo couples.	
6.3	Numerical problems and solution on the topic.	
7.	**SOUND**	**07**
7.1	Production of sound waves(Longitudinal and transverse waves)	
7.2	Progressive and stationary waves	
7.3	Basic knowledge of refraction , reflection, interference and diffraction.	
7.4	Ultrasonic	
7.4.1	Audible range, Production of ultrasonic, properties and uses	
8.	**OPTICS AND OPTICAL INSTRUMENTS**	**10**
8.1	Refraction, critical angle and total internal reflection, refraction through lenses and problems	
8.2	Power of lenses	
8.3	Spherical and chromatic aberrations	
8.4	Simple and compound microscope, telescope and derivation for their magnifying power	
8.5	Numerical problems and solution on the topic.	
9.	**ELECTROSTATICS AND ELECTROMAGNETIC INDUCTION**	**07**
9.1	Coulomb's law, Electric field intensity, potential.	
9.2	Capacity, principle of capacitor, types of capacitor, combination of capacitors	
9.3	Electromagnetic Induction:	
9.3.1	Faraday's law, Lenz's law	
9.3.2	Self and mutual inductance	
9.3.3	Transformer and electric motor, Induction coil	
10.	**MODERN PHYSICS, BASIC ELECTRONICS**	**10**

10.1	Photoelectric effect, threshold frequency, Einstein- equation,Photo electric cells	
10.2	Radioactivity : decay constant, Half life, mean life	
10.3	Properties of nucleus, nuclear mass, mass defect	
10.4	Production of x-rays, properties and its uses	
10.5	Thermal emission, semiconductors,	
10.6	Types of semiconductors	
10.7	Explanation of conductor, semiconductor and insulators onthe basis of band theory	
10.8	P-N junction, diode as rectifier.	

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	PHYSICS
COURSE CODE	:	101
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

S.No.	LIST OF EXPERIMENTS
1.	Refractive index of prism (I-d) curve
2.	Refractive index of prism (spectrometer)
3.	Focal length of a convex lens by u-v method
4.	Focal length of a convex lens by displacement method
5.	Verification of Ohm's law
6.	To find out unknown resistance by meter bridge
7.	To find out internal radius of hollow tube by vernier calipers
8.	To find out volume of given cylinder by screw gauge
9.	Surface tension by Capillary rise method
10.	Coefficient of viscosity
11.	Coefficient of Thermal conductivity by searl’s method.
12.	Verification of Newton’s cooling law.

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	PHYSICS
COURSE CODE	:	101
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

S.No.	LIST OF EQUIPMENTS
1.	VERNIER CALIPER
2.	SCREW GUAGE
3.	OPTICAL BENCH
4.	SEARLS APPRATUS FOR "Y"
5.	SEARLS APPRATUS FOR "K"

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	PHYSICS
COURSE CODE	:	101
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

S.No.	REFERENCE BOOKS	WRITER
1.	APPLIED PHYSICS	SAXENA AND PRABHAKAR
2.	ENGINEERING PHYSICS	GAUR AND GUPTA
3.	PHYSICS FOR TECHNICAL EDUCATION	LS ZEDNOV

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	CHEMISTRY
COURSE CODE	:	106
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

RATIONALE

As the knowledge of chemistry is essential for a technician, the syllabus of chemistry for the student of first year diploma in all branches of Engg. has been developed in the view of the following abilities required to developed in the students.

- To develop habit of scientific enquiry.
- Understand the changes in the structure, properties of matter and process involved.
- Unable student to develop essential ability to investigate cause and effect relationship.
- Develop ability to predict results in different applications under given conditions.
- Understand the chemistry of essentials for various Engg. Materials
- Comprehend the required prerequisite knowledge for understanding technical subjects.
- Topic like alloy, polymers, lubricants, corrosion, surface chemistry , catalyst have been incorporated with special reference to the requirement of all Engg. Branches.

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	CHEMISTRY
COURSE CODE	:	106
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

S.No.	COURSE CONTENT	MARKS
1.	**ATOMIC STRUCTURE AND RADIOACTIVITY** : Discovery of electron, proton ,neutron and nucleus. Ruther ford's and Bohr's model of an atom. Bohr Burry scheme of filling the electrons in various orbits. Idea of s,p,d,f orbital .Alfa, Gamma and Beta rays, theory of radio activity, half life period, fission and fusion.	07
2.	**SURFACE CHEMISTRY AND ITS APPLICATION** True solution, colloidal solution and suspension, lyophobic and lyophillic colloids, optical and electrical properties of colloids, coagulation, coagulants.	07
3.	**ELECTROCHEMISTRY** Electrolysis, Faraday's laws of electrolysis, Numerical problems on Faradays Law, electroplating of copper and nickel.	04
4.	**COLLIGATIVE PRPOPERTIES** Osmosis & osmatic pressure, Relative vapour pressure and Routls law. Internal energy (enthalpy) Entrophy, Entrophy fusion free energy, Effect of change in temperature catalysis.	07
5.	**CHEMICAL BONDING AND CATALYSIS** **(A) Bonding**: Nature of bonds- Electrovalent, Co-valent, co-ordinate and hydrogen bond. **(B) Catalysis** : Types , theory characteristic, positive , negative, auto and induced catalyst. Catalytic Promoter, and catalytic inhibitors. Industrial Application of catalysis.	06
6.	**WATER :** Sources of water, types of water, hardness of water, its causes, types and removal, Boiler feed water, harmful – effects of hard water in boiler. Municipal water supply. Numerical on soda lime process. Determination of hardness of water by O. Hener's, EDTA and soap solution method	07
7.	**METALS AND ALLOYS :** Physical and chemical properties of metals, copper, iron, aluminum, tin, nickel. General principal of metallurgy, minerals/ ores, ore dressing, roasting, smelting, bassemerisation, fluxes, purification . Explanation of alloying purposes, methods of alloying, composition and uses of alloy like brass,	06

	bronze, duralium, German silver, gun metal, solder, stainless steel, casting and bearing alloy.	
8.	**Ionization, Ph value corrosion and protection** Arhenius theory of ionization, factors affecting ionization. pH meaning (numerical), Buffer solutions and Buffer actions, choice of indication (acidimetry and alkalimetry). Explanation of corrosion, types of corrosion, factors effecting corrosion, corrosion control (protection against corrosion), metal and organic coating for corrosion control.	04
9.	**Glass, Cement and Refractory:** **Glass**: Basic raw materials for glass, composition and manufacture of glass, varieties of glass and annealing of glass. **Cement** : Constituting compounds in cement, Composition of Portland Cement, its manufacture, setting and hardening of cement. **Refractories** : Meaning, characteristics , use of common refractory materials.	04
10.	**HIGH POLYMERS, RUBBER AND INSULATORS:** Polymerization and condensation, classification of plastics, Compounding and Moulding constituents of plastics. Preparation Properties and uses of PVC, polyethene, polystyrene, polyamides, polyesters , Bakelite. Synthetic fibers – nylon, rayon, decron, and polyesters. Definition characteristics , classification and properties of insulators. Glass, wool and thermocole. Idea about rubber and vulcanization .	04
11.	**Lubricants, Paints and Varnishes**: **Lubricants**: Meaning , type and theory of lubricants, properties of a good lubricants, Flash and fire point and cloud point, emulsification number, viscosity. **Paints and Varnishes** :Meaning, ingredients and characteristics of good paints and varnishes, their engineering applications	04
12.	**FUELS, FIRE EXTINGUISHERS AND EXPLOSIVES :** Classification of fuel, gross and net calorific value, Determination of a solid fuel by bomb calorimeter , octane and octane number. Proximate analysis of fuel, its utility, crude petroleum, products of fractional distillation . Fire extinguishers – Description and use. Explosives – Meaning, types, characteristic and use of explosives. Name Dynamite, lead azide, T.N.T., Picric acid, R.D.X.	04
13.	**Pollution and control** : Introduction and chemical toxicology, air and water pollution, control of air and water pollution. Harmful effect of different gases like carbon mono-oxide, carbon dioxide, sulphur dioxide, nitric oxide, nitrous and lead.	06

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	CHEMISTRY
COURSE CODE	:	106
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

S.No.	LIST OF EXPERIMENTS
1.	To identify one Anion and Cation in a given sample.
2.	Determination of flesh point and fire point of a given sample of oil by Abel's apparatus.
3.	Determination of viscosity by Red Wood Viscometer no. 1 and no.2.
4.	Redoximetry Titration : a. Percentage of Iron in given sample of alloy. b. Determination of strength of ferrous ammonium sulphate. c. Determination of strength of anhydrous ferrous sulphate and ferrous sulphate.
5.	Determination of hardness of water by : EDTA Method and Soap Solution Method
6.	Determination of solid content in the given sample of water.
7.	Determination of percentage of moisture in the given sample of coal by proximate analysis.

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SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	CHEMISTRY
COURSE CODE	:	106
LECTURES PER WEEK (in Hrs)	:	TH. 06 PR. 04
LECTURES PER SEMESTER (in Hrs)	:	TH. 90 PR. 60

S.No.	REFERENCE BOOKS	WRITER
1.	ENGINEERING CHEMISTRY	UPPAL
2.	ENGINEERING CHEMISTRY	RAO and AGARWAL
3.	ENGINEERING CHEMISTRY	P.C. JAIN
4.	APPLIED CHEMISTRY	H.N. SAHNI

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	MATHEMATICS
COURSE CODE	:	108
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

RATIONALE

Mathematics forms backbone for all technologies and hence occupies an important place in the curriculum of polytechnic education. The subject is equally important for the future self development of Polytechnic students. In designing the curriculum for foundation course the admission level to Polytechnics has been considered as 10th Board examination and mathematical needs of Technical subject have been given due consideration. To understand difficult concepts in higher engineering courses and to solve many problems of design and development a good background in mathematics is necessary. Keeping in view this requirement for engineering diploma programmes.

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	MATHEMATICS
COURSE CODE	:	108
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

S.No.	COURSE CONTENT	MARKS
1.	**ALGEBRA :**	**10**
1.1	**Permutation** Meaning of factorial n Permutation of 'n' dissimilar thing taken 'r' at a time,	
1.2	**Combination** Combination of n dissimilar things taken 'r' at a time,	
1.3	**Binomial Theorem** Statement of the theorem for positive integer General Term, Middle term, Constant term	
1.4	**Partial Fractions** Define a proper-improper fraction Break a fraction into partial fraction whose denominator contains Linear, Repeated linear and Non repeated quadratic factors.	
1.5	**Determinant** Concept & principles of determinants Properties of determinant Simple examples.	
1.6	**Complex Numbers** Algebra of Complex Numbers Polar form	
2.	**TRIGONOMETRY :**	**07**
2.1	Allied angles.	
2.2	Trigonometrical ratios of sum and difference of angles (Only statement)	
2.3	Sum and difference of trigometric ratios (C-D formula)	
2.4	Multiple angles (Only double angle and half angle)	
2.5	Properties of triangle (without proof)	
3.	**MATRIX :**	**07**
3.1	Definition of Matrix.	
3.2	**Types of Matrix**. Row, Column, Square, Unit, Upper and lower triangular, Symmetric & Skew Symmetric, Singular and non Singular Matrices.	

3.3 3.4	Adjoint of a Matrix. Inverse of a Matrix.	
4. 4.1 4.2 4.3 4.4 4.5	**CO-ORDINATE GEOMETRY :** Co-ordinate System : Cartesian and Polar. Distance, Division, Area of a triangle. Locus of a point and its equation. **Slope of St. Line** Angle between two St. lines. Parallel and perpendicular St. lines. **Standard and general equation of St. line**. Point of intersection of two st lines.	**06**
5. 5.1 5.2	**STATISTICS :** Measures of Central tendency (Mean, Mode, Median) Measures of Dispersion (Mean deviation, standard deviation)	**10**
6. 6.1 6.2 6.3 6.4 6.5 6.6 6.7 6.8 6.9 6.10	**DIFFERENTIAL CALCULUS :** Define constant, variable, function. Value of the function Concept of limit of a function. Definition and concept of differential coefficient as a limit. Standard results. Derivatives of sum, difference, product, quotient of two functions. Diff. coeff. of function of a function. Diff. coeff. of implicit function. Logarithmic Differentiation. Differential coeff. of Parametric function.	**10**
7. 7.1 7.2 7.3 7.4	**INTEGRAL CALCULUS** : Definition as a inverse process of differentiation Standard Results (including inverse function) **Methods of Integration** Substitution Integration by parts Breaking up into partial fraction Concept of Definite Integral	**10**
8. 8.1 8.2 8.3 8.4 8.5 	**VECTOR ALGEBRA** : Concept of Vector and Scalar Quantities. Different types of vectors. Addition and subtraction of vectors. Components of a vector **Multiplication of two vectors** Scalar Product Vector Product Applications (Work done, power & reactive power)	**10**

RKDF UNIVERSITY, BHOPAL

SEMESTER	:	FIRST SEM
SCHEME	:	JULY-2013
NAME OF COURSE	:	MATHEMATICS
COURSE CODE	:	108
LECTURES PER WEEK (in Hrs)	:	TH. 08
LECTURES PER SEMESTER (in Hrs)	:	TH. 120

S.No.	REFERENCE BOOKS	WRITER
1.	Mathematics for Polytechnics	TTTI Bhopal
2.	Engineering Mathematics	Dr. S. K. Chouksey
3.	Higher Engineering Mathematics	B. S. GREWAL