B.Tech (Printing, Graphics & Packaging)

Credit based system

Syllabus

Duration: Four year

w.e.f. Academic Session: 2017-2018

Institute of Mass Communication and Media Technology

KurukshetraUniversity

SCHEME OF STUDIES & EXAMINATIONS
1st semester

B. Tech. (Printing, Graphic & Packaging)

Subject Code	Subject area	subject Title	Teaching Schedule				Credits	Allotments of Marks				Duration of Exams(Hrs)
			L	T	P	Hours/Week		Major Test	Minor Test	Practical	Total	
PGP 101	PC	PRINTING PROCESS -I	4		0	4	4	60	40		100	3
PGP 102	HS	COMMUNICATIVE ENGLISH	4		0	4	4	60	40		100	3
PGP 103	AS	PHYSICS - I	3		0	3	3	60	40		100	3
PGP 104	AS	CHEMISTERY	4		0	4	4	60	40		100	3
PGP 105	AS	MATHEMATICS - I	3		0	3	3	60	40		100	3
PGP 106	CSE	FUNDAMENTALS OF COMPUTER	3		0	3	3	60	40		100	3
		LAB										
PGP 111	PC	PRINTING PROCESS-I LAB			2	2	1		30	45	75	3
PGP 112	HS	PHYSICS-I LAB			2	2	1		30	45	75	3
PGP 113	AS	CHEMISTERY LAB			2	2	1		30	45	75	3
PGP 114	CSE	FUNDAMENTALS OF COMPUTER LAB			2	2	1		30	45	75	3
		Total					25/25	360	360			

PRINTING PROCESS(PGP 101)

Note: The Examiners will set eight questions, taking two from each unit. The students are required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

Total Credit: 4 Max. External: 60
Internal: 40
Time Allowed: 3 Hrs.
Marks: 100

UNIT –I

History of printing: Woodblock printing in East Asia, Europe, Movable type printing, printing Press. Origin of printing processes- Intaglio, Lithography, Offset press, Screen printing, Flexography, Photocopier, Printers, Digital press, Frescography, 3D printing.

Scope of Indian Printing Industry Brief Introduction of scope of Printing Industry.Indian printing Industry- An emerging market, size of the industry, total contribution to the economy, employment opportunity, latest developments.

UNIT –II

Printing Processes: Introduction to conventional printing processes- Relief, Planography, Intaglio, Screen. With their basic principles, characteristics and identification.On Demand printing, Specialized printing. Basic operations in printing- Pre press, press and post press operations.Suitability & limitations and applications of various printing Processes.

UNIT –III

Screen Printing Process and machines: Introduction, Stencils - Their kinds and methods of preparation. Screen fabric –multifilament and mono filaments, stretching screen fabric to frame, Image transfer - The squeegee, Squeegee considerations, squeegee preparation, hardness categories of squeegee blades, Variety of blade, its shape and application. Method of halftone preparation for screen printing. Different types of inks an substrates used for screen printing,

Screen Printing Machines: Classification of Presses: Clamshell press, rotary screen printing press, carousal press. Manual, semiautomatic and fully automatic screen printing machines.Their operational and mechanical features.

UNIT –IV

Letterpress Printing Machines: Introduction to letter press printing machines, classification of letterpress printing machines, types of platen, cylinder and rotary machines; their mechanical and operational features and uses; merits and demerits of Letterpress printing machines.

Running Defects of different printing process: Common printing defects comes in various printing processes, causes and their remedies.

Recommended Book :

1. Letter Press Printing Part 1, 2, By C.S. Misra
2. Printing Technology By Adams, Faux, Rieber
3. Screen Printing Review ByBabett Magee
4. Screen Printing By John Stephens
5. Art and Print Production By N.N. Sarkar

PGP 102

Communicative English

Note: The Examiners will set eight questions, taking two from each unit. The students are required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

Total Credit: 4 Max. External:60
Internal: 40
Time Allowed: 3 Hrs.
Marks: 100

UNIT -I

Language
Main features of British, American and Indian English
Introduction to Formal and Informal English

UNIT -II

Vocabulary
Word meanings and their usage, using a dictionary
One word substitutes
Synonyms& Antonyms
Common errors in spellings and sentences

UNIT -III

Grammar
Active Voice and Passive Voice, Tag Questions
Subject-Verb agreement
Use of Articles and Prepositions
Idioms& phrases

UNIT -IV

Composition
Resume Writing
Letter writing (Formal and Informal Letters)
Paragraph Writing

Dialogue Writing

Essentials of different types of conversation (telephonic, e-mail, public speech, group discussion)

REFERENCES:

1. Communicative English, Dr. Jimmy Sharma, ArihantParkashan Pvt. Ltd.
2. Strengthen Your English, Bhaskaran and Horsburgh, Oxford University Press
3. Basic Communication Skills for Technology, and area J Rutherfoord, Pearson Education Asia.
4. Murphy's English Grammar with CD, Murphy, Cambridge University Press
5. English Skills for Technical Students by Orient Longman
6. Everyday Dialogues in English by Robert J. Dixson, Prentice-Hall of India Ltd., 2006.

PGP 103

PHYSICS-I

Note: The Examiners will set eight questions, taking two from each unit. The students are required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

Total Credit: 3 Max. External: 60
Internal: 40
Time Allowed: 3 Hrs.
Marks: 100

UNIT-I

PHYSICAL OPTICS

Interference: Division of wave front-Fresnel's biprism, Division of amplitude–Newton's rings, Michelson interferometer, applications.

Diffraction: Difference between Fraunhofer and Fresnel diffraction. Fraunhofer diffraction through a slit. Plane transmission diffraction grating, its dispersive and resolving powers.

Polarization: Polarised and un-polarized light, double refraction; Nicol prism, quarter and half wave plates, Polarimetry; Biquartz and Laurent's half-shade polarimeters, Simple concepts of photoelasticity.

UNIT-II

LASER: Spontaneous and stimulated emissions, Laser action, characteristics of laser beam-concepts of coherence, He-Ne and semiconductor lasers (simple ideas), applications.

FIBRE OPTICS: Propagation of light in fibres, numerical aperture, single mode and multi modefibers, applications.

UNIT-III

WAVE AND OSCILLATIONS: Simple concepts of Harmonic Oscillator, resonance, quality factor. E.M. wave theory-review of basic ideas, Maxwell's equations, simple plane wave equations, simple concepts of wave guides and co-axial cables, Poynting vector. **DIELECTRICS:** Molecular theory, polarization, displacement, susceptibility, dielectric coefficient, permittivity & various relations between these, Gauss's law in the presence of a dielectric, Energy stored in an electric field. Behaviorof dielectrics in a.c. field-simple concepts, dielectric losses.

UNIT-IV

SPECIAL THEORY OF RELATIVITY: Michelson-Moreley experiment, Lorentz transformations, variation of mass with velocity, mass energy equivalence.

NUCLEAR PHYSICS: Neutron Cross-section, Nuclear fission, Moderators, Nuclear reactors, Reactor criticality, Nuclear fusion. Interaction of radiation with matter, basic

concepts, radiation detectors-ionisation chamber, G.M.Counter, Scintillation and solid state detectors, cloud chamber and bubble chamber.

TEXT BOOKS:

1. Physics of the Atom - Wehr, Richards & Adair (Narosa)
2. Perspectives of Modern Physics - Arthur Beiser (TMH)
3. Modern Engineering Physics – A.S. Vasudeva (S. Chand)

REFERENCE BOOKS:

1. Electricity and Magnetism – F.W. Sears (Narosa)
2. Physics Vol-I & II – Resnick&Halliday (Wiley Eastern)
3. A Text Book of Optics – BrijLal&Subramanyam

PGP **104**

CHEMISTRY

Note: The Examiners will set eight questions, taking two from each unit. The students are required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

Total Credit: 3 Max. External: 60
Internal: 40
Time Allowed: 3 Hrs.
Marks: 100

Unit-1

Thermodynamics - Second law, concept of Entropy, Entropy change for an ideal gas, free energy and work functions, Free energy change, Chemical Potential, Gibb's Helmholtz equation, Clausius - Clapeyron equation, Related numerical problems with above topics. Phase-Rule - Terminology, Derivation of Gibb's Phase Rule Equation, One Component System (H_2O System), Two Components systems, Eutectic system (Pb-Ag), system with congruent m.pt. (Zn-Mg), systems with incongruent m.pt. (Na-K), Applications of above Systems.

Unit-2

Water & its treatment : Part I – Sources of water, impurities in water, hardness of water and its determination, units of hardness, alkalinity of water and its determination, Related numerical problems, scale and sludge formation (composition properties and methods of prevention). Water and its treatment : Part II – Treatment of water for domestic use, coagulation, sedimentation, filtration and dis-infection, water softening, Ion-exchange process, mixed bed demineralisation, Desalination (reverse osmosis) (electro-dialysis).

Unit-3

Corrosion and its prevention - Galvanic & concentration cell, Dry and wet corrosion, Electrochemical theory of corrosion, Galvanic corrosion, pitting corrosion, water-line corrosion, differential aeration corrosion, stress corrosion, factors affecting corrosion, Preventive measures (proper design, Cathodic protection, protective coatings).

Lubrication and Lubricants-Friction, mechanism of lubrication, classification and properties of lubricants, Additives for lubricants, synthetic lubricants, Greases – Preparation & properties (consistency, drop point) and uses.

Unit-4

Polymers and Polymerization-Organic polymers, polymerisation, various types of polymerisation, effect of structure on properties of polymers, preparation properties and technical applications of thermo-plastics (PVC,PVA), thermosets (PF,UF), and elastomers (SBR,GR-N), Silicones, Introduction to polymeric compsites. Analytical methods; its needs and different methodes;Spectroscopy; its definition and scope; salient features of spectrophotometer, brief introduction of titrimetric methods, Elementary discussion on flame photometry

REFERENCE BOOKS:

1. Engineering Chemistry, P.C. Jain, Monica Jain (DhanpatRai& Co.).
2. Chemistry in Engineering & Tech., Vol.I& II, Rajaram, Kuriacose (TMH).
3. Instrumental methods of Chemical Analysis, MERITT & WILLARD (East-West Press).
4. Physical Chemistry, P.W. Atkin (ELBS, Oxford Press).
5.Physical Chemistry, W.J. Moore (Orient-Longman).

PGP 105

MATHEMATICS-I

Note: The Examiners will set eight questions, taking two from each unit. The students are required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

Total Credit: 3 Max. External: 60
Internal: 40
Time Allowed: 3 Hrs.
Marks: 100

UNIT-I

Applications of Differentiation : Taylor's &Maclaurin's series, Expansion by use of known series, Expansion by forming a differential equation, Asymptotes, Curvature, Radius of Curvature for Cartesian, Parametric & polar curves, Centre of curvature & chord of curvature, Tracing of Cartesian & polar curves (standard curves).

UNIT – II

Partial Differentiation & its Applications : Functions of two or more variables Partial derivatives, Total differential and differentiability, Derivatives of composite and implicit functions, change of variables.

Homogeneous functions, Euler's theorem, Jacobian, Taylor's &Maclaurin's series for functions of two variables (without proof), Errors and approximations, Maxima-minima of functions of two variables, Lagrange's method of undetermined multipliers, Differentiation under the integral sign.

UNIT – III

Multiple Integrals and their Applications : Double integral, change of order of integration Double integral in polar coordinates, Applications of double integral to find area enclosed by plane curves and volume of solids of revolution.

Triple integral, volume of solids, change of variables, Beta and gamma functions and relationship between them.

UNIT – IV

Vector Calculus : Differentiation of vectors, scalar and vector point functions Gradient of a scalar field and directional derivative, divergence and curl of a vector field and their physical interpretations, Del applied twice to point functions, Del applied to product of point functions.

Integration of vectors, line integral, surface integral, volume integral, Green's, Stoke's and Gauss divergence theorems (without proof), and their simple applications.

REFERENCE BOOKS:

1. Advanced Engineering Mathematics : F. Kreyszig.
2. Higher Engineering Mathematics : B.S. Grewal.
3. Engineering Mathematics Part-I : S.S. Sastry.
4. Differential and Integral Calculus :Piskunov.
5. Advanced Engineering Mathematics : R.K. Jain and S.R.K. Iyengar
6. Advanced Engg. Mathematics : Michael D. Greenberg

PGP 106
FUNDAMENTALS OF COMPUTER

Note: The Examiners will set eight questions, taking two from each unit. The students are required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

Total Credit: 4 Max. External: 60
Internal: 40
Time Allowed: 3 Hrs.
Marks: 100

UNIT – I

Computer function and components – Labeling standards – software applications, utilities, Applets, operating systems. Linking hardware and software, device interfaces, BIOS, device drivers. I/O ports, USB Buses, Bluetooth. Logic Gates- AND, OR, NOT, NOR, NAND, XOR.

UNIT – II

Motherboard components–nomenclature, tech., Microprocessor– basics, Memory – RAM, ROM, DRAM, EDO, SDRAM (only usage and speca basis) BIOS. BIOS compatibility, Flash memory, Expansion slots, parallel serial port power supply SMPS – specialization, Bus- AT bus, PCI, ISA bus.

UNIT – III

Mass storage technology – data organization – cache operation, FDD, HDD, SCSI driver their storage capacity drives, CD-ROM, CD-Recordable, CD-Rewritable, DVD-ROM, DVD-Video.

Display devices – CRT displays – display adapter CGA, VGA SVGA- Resolutions (application oriented discussion)

Input /Output devices Keyboard, mouse, Electronic Pen, scanners, printers, dot matrix, ink jet, laser, Thermal printer, CCD Camera, Digital Camera.

UNIT – IV

Introduction to DTP, trends in printing technology, usage of computers in printing. DTP printing technology, Introduction to DTP softwares, Use of Text tool Adobe Photoshop, Corel Draw, Quark Express, DTP hardware, Cost estimation of DTP.

Working with graphics: using different graphic tools, importing graphics, working with colour, table editing. Electronic Image, BMP, TIFF, GIF, PNG, PDF, JPEG file formats. Image compression-Lossy and Lossless technique

Recommended Books :

1. Hardware Bible : Winn IL RochTechmedia.
2. Desk Top Typography :Qukarkx Press
3. Page Maker 6.0 : BPB Publication.

PGP 111

PRINTING PROCESS - I LAB

Total Credit: 1 Max. External: 45
Internal: 30
Time Allowed: 3 Hrs.
Marks: 75

LIST OF EXPERIMENTS

1. Identification of different tools &equipment used in letterpress.
2. Schematic diagram of different Printing Processes.
3. Printing of line & half tone block in single & multi color.
4. Operational and mechanical features of different letter press Printing Machines.
5. Study of Running & printing faults on letter press machine.
6. Identification of different printing processes.

PGP 112
PHYSICS-I LAB

Total Credit: 1 Max. External: 45
Internal: 30
Time Allowed: 3 Hrs.
Marks: 75

LIST OF EXPERIMENTS

The experiments in Ist semester will be based mainly upon optics, electrostatics, wave and oscillations which are the parts of the theory syllabus of Ist semester.

1. To find the wavelength of sodium light by Newton's rings experiment.
2. To find the wavelength of sodium light by Fresnel's biprism experiment.
3. To find the wavelength of various colours of white light with the help of a plane transmission diffraction grating.
4. To verify Newton's formula and hence to find the focal length of convex lens
5. To find the wavelength of sodium light by Michelson interferometer.
6. To find the resolving power of a telescope.
7. To find the specific rotation of sugar solution by using a polarimeter.
8. To compare the capacitances of two capacitors by De'sauty bridge and hence to find the dielectric constant of a medium.

RECOMMENDED BOOKS:

1. Advanced Practical Physics – B.L. Worshnop and H.T. Flint (KPH)
2. Practical Physics – S.L.Gupta&V.Kumar (PragatiPrakashan).
3. Advanced Practical Physics Vol.I& II – Chauhan&Singh (PragatiPrakashan).

PGP 113
CHEMISTRY LAB

Total Credit: 1 Max. External: 45
Internal: 30
Time Allowed: 3 Hrs.
Marks: 75

LIST OF EXPERIMENTS

1. Determination of Ca^{++} and Mg^{++} hardness of water using EDTA solution.
2. Determination of alkalinity of water sample.
3. Determination of dissolved oxygen (DO) in the given water sample.
4. To find the melting & eutectic point for two component system by using method of cooling curve.
5. Determination of viscosity of lubricant by Red Wood viscometer (No. 1 & No. 2).
6. To determine flash point & fire point of an oil by Pensky -Marten's flash point apparatus.
7. To prepare Phenol-formaldehyde and Urea formaldehyde resin.

.

SUGGESTED BOOKS :

1. A Text Book on Experimental and Calculation – Engineering Chemistry, S.S. Dara, S. Chand & Company (Ltd.)
2. Essential of Experimental Engineering Chemistry, ShashiChawla, DhanpatRai Publishing Company.
3. Theory & Practice Applied Chemistry – O.P. Virmani, A.K. Narula (New Age)

PGP 114

FUNDAMENTALS OF COMPUTER LAB

Total Credit: 1 Max. External: 45
Internal: 30
Time Allowed: 3 Hrs.
Marks: 75

LIST OF EXPERIMENTS

1. Introduction to Computer Terminologies.
2. Use of different Hardware devices.
3. Word-Processing Softwares.
4. DTP and its features.
5. Softwares used in Printing.
6. Page set-up with different sizes and margins.
7. Different kinds of Scanners, their working and uses.
8. Image and Text merging.
9. Modifications and Editing of Illustrations and Text.
10. Working of Printers.