**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) |
| Major Test | Minor Test | Practical | Total |
|  |  |  | L | T | P | Hours/Week |  |  |  |  |  |  |
| 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)

1. 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 (H2O 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.

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**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.

**SCHEME OF STUDIES & EXAMINATIONS**

**2nd semester**

**B. Tech. (Printing, Graphic & Packaging)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Subject Code | Subject area  | subject Title | Teaching Schedule | Credits | Allotments of Marks | Duration of Exams(Hrs) |
| Major Test | Minor Test | Practical | Total |
|  |  |  | L | T | P | Hours/Week |  |  |  |  |  |  |
| PGP 201 | PC | FUNDAMENTAL OF PACKAGING | 4 |  | 0 | 4 | 4 | 60 | 40 |  | 100 | 3 |
| PGP 202 | HS | SCIENCE OF COMMUNICATION  | 4 |  | 0 | 4 | 4 | 60 | 40 |  | 100 | 3 |
| PGP 203 | CSE | GRAPHICS | 3 |  | 0 | 3 | 3 | 60 | 40 |  | 100 | 3 |
| PGP 204 | AS | PHYSICS - II  | 3 |  | 0 | 3 | 3 | 60 | 40 |  | 100 | 3 |
| PGP 205 | AS | MATHEMATICS -I I | 3 |  | 0 | 3 | 3 | 60 | 40 |  | 100 | 3 |
| PGP 206 | ME | ENGINEERING DRAWING | 4 |  | 0 | 4 | 4 | 60 | 40 |  | 100 | 3 |
|  |  | LAB |  |  |  |  |  |  |  |  |  |  |
| PGP 211 | PC | PRINTING PROCESS-II LAB  |  |  | 2 | 2 | 1 |  | 30 | 45 | 75 | 3 |
| PGP 212 | HS | SCIENCE OF COMMUNICATION- LAB |  |  | 2 | 2 | 1 |  | 30 | 45 | 75 | 3 |
| PGP 213 | CSE | GRAPHICS LAB |  |  | 2 | 2 | 1 |  | 30 | 45 | 75 | 3 |
| PGP 214 | AS | PHYSICS-II LAB  |  |  | 2 | 2 | 1 |  | 30 | 45 | 75 | 3 |
|  |  |  TOTAL |  |  | 25/25 | 360 | 360 |  |  |  |

**PGP 201**

**FUNDAMENTALS OF PACKAGING**

**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: 70 Internal: 30

 Time Allowed: 3 Hrs.

Marks: 100

**Unit - I**

**Basics of Packaging:**

 Introduction, Function of a package, Factors influencing design of a package, Computer Aided Package Design, Packaging Cycle, Product Package Relationship, Product life curve, Elements of Package Design. Classification of Packaging - Flexible package type, Rigid package types. Hazards on package - Mechanical, Climatic, Biological and other hazards.Markings on package - Handling marks, routing marks, information marks. Tests on Package- Mechanical test - Drop test, Vibration test, Compression test, Inclined impact test, Rolling test, Climatic tests - Rain test, Sand and dust test, Salt spray test, Fungus resistance test. Shelf life, Cushioning Materials - Functions, properties. Classifications - space fillers, resilient cushioning materials, non-resilient cushioning materials.

**Unit - II**

**Packaging Media:**

 Effect of moisture on wood, preservation of wood, advantages.Boards-types, paper-types. Glass properties, advantages, types, basic approaches to designing a bottle, thermal shock test, pressure test, impact test, density test. Plastics-BOPP, HDPE, LDPE, LLDPE, PVC, PP, PET, Polyolefin, Cellulosic, Polyimides, advantages, functions & applications.Tests on plastics, Metals - functions, uses. Aluminium foils - Manufacturing of foil, properties, applications, methods of laminating foil to film or paper.

**Unit - III**

**Carton Production & Innovative Packaging Techniques/Processes:**

 Carton styles.Folding cartons - Production steps, types. Corrugated containers - classifications, components in a corrugated board, flutes, stages in preparation in corrugated boards. Plastic corrugated boards - features & advantages.

 Gas packaging - MAP & CAP, Vacuum packaging, shrink packaging, stretch wrapping, blister packaging, skin packaging, strip packaging, Aerosol packaging container, working principle. Injection Blow Moulding, Extrusion blow Moulding, Extrusion. Injection Moulding, Compression moulding, Thermo forming. Vacuum forming, Pressure forming, Matched mould forming.

**Unit -I V**

**Future Trends:**

 Futuristic trends in packaging. Advancements in food packaging.Environmental implications of packaging - recycling, Legal aspects in packaging.Designing-Cans, metal tubes, Plastic tubes. Closures-Screw caps, Snap-on caps, Plug closures, Lids, Threaded closures, Crowns. Adhesive tapes - Fabric tapes, Paper tapes, Film tapes, Foil tapes, Foam tapes, Two faced tapes. Labels - Basic elements of correct labelling, Purpose, Types. Ancillary Materials : Sealing tapes Strapping and strapping labels and labelling, Adhesives and packaging.

**Recommended Books:**

Packaging design and performance - **Frank Paine**

Advances in plastic packaging technology - **John Briston**.

Packaging design an introduction - **Laszlo Roth**.

Packaging Technology - Volume I, II, III - IIP

**PGP 202**

**SCIENCE OF COMMUNICATION**

**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: 70 Internal: 30

 Time Allowed: 3 Hrs.

Marks: 100

**UNIT –I**

Definition, Nature and Scope of Communication.

Function of Communication,

Elements and Process of Communication.

**UNIT –II**

 Essentials in Language and Communication of good communication,

Barriers in Language and Communication.

**UNIT –III**

 Forms of Communication: Verbal and Non verbal, Intra Personal,

 Interpersonal, Group Public and Mass Communication

**UNIT –IV**

Introduction to Print Media: News papers- Magazines

Introduction to Electronic Media: Radio -Television

Introduction to New Media: Interment and Mobile Telephony

Convergence of Information, Communication and Telecom technologies.

**PGP203**

**GRAPHICS**

**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: 70 Internal: 30

 Time Allowed: 3 Hrs.

Marks: 100

**UNIT –I**

Introduction to “Graphic Design” : What is design, Graphic design, printer’s design.

Fundamentals of design : line, tone , value, weight, texture, shape, size, space, etc. Principles of design- balances, proportion, rhythm, unity, contrast, simplicity, fitness.

**UNIT –II**

Color theory: dimension of color, color schemes, color symbolism, emotional effects of color. Division of design: natural, conventional, decorative, geometrical and abstract.

**UNIT –III**

Type: Methods of type arrangement, classification of typeface of font designing.

Printing planning: rough layout, comprehensive, artwork, type of originals, sizing, mashing and cropping.

**UNIT –IV**

Design management: Definitions in advertising art, modern art abstract art, applied art, advertising, publicity, public relations, sale promotion, sales manager

Design with D.T.P.: Various softwares used for designing.

**Recommended Books :-**

1. The Designer’s Handbook by Alistair Campbell

2. Design & Technology by Van No strand

3. Handbook of Advertising Art Production by schelmmer.

4. Art & Production by Sarkar.

5. Advertising, Art & Production by J. Nath.

6. A.C. Book (C.D.) so hick, Fundamental of copy and layout ,Crair Book.

**PGP204**

**PHYSICS-II**

**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: 70 Internal: 30

 Time Allowed: 3 Hrs.

Marks: 100

**UNIT-I**

**CRYSTAL STRUCTURE:** Space Lattice, unit cell and translation vectors, Miller indices, simple crystal structure, Bonding in solids, Experimental X-ray diffraction method, Laue method, Powder Method, Point defects in solids, Elementary idea of quarks and gluons.

**UNIT-II**

**QUANTUM PHYSICS:** Difficulties with Classical physics, Introduction to quantum mechanics-simple concepts, discovery of Planck's constant, Group velocity and phase velocity, Schrodinger wave equations - time dependant and time independent Schrodinger equations, Elementary ideas of quantum statistics.

**FREE ELECTION THEORY:** Elements of classical free electron theory and its limitations, Drude’s Theory of Conduction, quantum theory of free electrons, Fermi level, Density of states, Fermi-Dirac distribution function, Thermionic emission, Richardson's equation.

**UNIT-III**

**BAND THEORY OF SOLIDS:** Origin of energy bands, Kronig, Penney Model (qualitative), E-K diagrams, Brillouin Zones, Concept of effective mass and holes, Classification of solids into metals, Semiconductors and insulators, Fermi energy and its variation with temperature. Hall effect and its Applications.

**UNIT-IV**

**PHOTOCONDUCTIVITY AND PHOTOVOLTAICS:** Photoconductivity in insulating crystals, variation with illumination, effect of traps, applications of photoconductivity, photovoltaic cells and their characteristics.

**MAGNETIC PROPERTIES OF SOLIDS:** Atomic magnetic moments, orbital diamagnetism, Classical theory of paramagnetism, ferro magnetism - molecular fields and domains.

**SUPER CONDUCTIVITY:** Introduction (experimental survey), Meissner effect, London equation.

**TEXT BOOKS:**

1. Introduction to Solid State Physics (VII Ed.) - Charles Kittel (John Wiley).
2. Quantum Mechanics – Powell and Crasemann (Oxford & IBH)
3. Fundamentals of Solid State Physics – B.S.Saxena, R.C.Gupta and P.N.Saxena (PragatiPrakashan).

**REFERENCE BOOKS:**

1. Sold State Physics – Pillai (New Age).

2. A text book of Engg. Physics – Avadhanulu and Kshirsagar (S.Chand)

3. Quantum Mechanics – Ghatak&Loknathan.

**PGP205**

**MATHEMATICS-II**

**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: 70 Internal: 30

 Time Allowed: 3 Hrs.,Marks: 100

**UNIT-I**

Matrices & its Applications : Rank of a matrix, elementary transformations, elementary matrices, inverse using elementary transformations, normal form of a matrix, linear dependence and in dependence of vectors, consistency of linear system of equations, linear and orthogonal transformations, eigen values and eigen vectors, properties of eigen values, Cayley - Hamilton theorem and its applications.

**UNIT-II**

Ordinary Differential Equations & its Applications : Exact differential equations. Equations reducible to exact differential equations. Applications of Differential equations of first order & first degree to simple electric circuits, Newton's law of cooling, heat flow and orthogonal trajectories.

Linear differential equations of second and higher order. Complete solution, complementary function and particular integral, method of variation of parameters to find particular Integral, Cauchy's and Legender's linear equations, simultaneous linear equations with constant co-efficient. Applications of linear differential equations to simple pendulum, oscillatory electric circuits.

**UNIT-III**

Laplace Transforms and its Applications : Laplace transforms of elementary functions, properties of Laplace transforms, existence conditions, transforms of derivaties, transforms of integrals, multiplication by tn, division by t. Evaluation of integrals by Laplace transforms. Laplace transform of Unit step function, unit impulse function and periodic function. Inverse transforms, convolution theorem, application to linear differential equations and simultaneous linear differential equations with constant coefficients.

**UNIT-IV**

Partial Differential Equations and Its Applications : Formation of partial differential equations, Lagrange’s linear partial differential equation, First order non-linear partial differential equation, Charpit’s method. Method of separation of variables and its applications to wave equation and one dimensional heat equation, two dimensional heat flow, steady state solutions only.

**REFERENCE BOOKS :**

1. Differential Equations – H.T.H. Piaggio.

2. Elements of Partial Differential Equations – I.N. Sneddon.

3. Advanced Engineering Mathematics – R.K. Jain, S.R.K.Iyengar.

 **PGP206**

**ENGINEERING DRAWING**

**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: 70 Internal: 30

 Time Allowed: 3 Hrs.,Marks: 100

**Unit I**

**Introduction to Engineering Graphics and Drawing**

Importance of engineering graphics and drawing, introduction to drawing instruments, types of lines, dimensioning, lettering, types of projections, theory of orthographic projections, first angle and third angle projections, projection of points.

**Unit II**

**Projection of Lines and Planes**

Projection of lines parallel to one or both planes, contained by one or both planes, perpendicular to a plane, inclined to one and parallel to the other, inclined to both the planes, true length of the line and its inclinations to the reference planes, Traces of line.

Introduction, types of planes, Projection of planes by change of position method only, projection of plane perpendicular to a plane, with axis parallel to both planes, with axis parallel to one plane and inclined to the other plane

**Unit III**

**Projection of Solids and Their Development**

Types of solids, polyhedra and solids of revolution, projection of solids with axis perpendicular to a plane(Solids in simple position) , axis parallel to both the planes, axis parallel to one and inclined to the other

Development of surface of various simple solids such as cubes, cylinders, prisms, pyramids etc.

**Unit IV**

**Isometric Projection**

Introduction, isometric scale, Isometric views of plane figures, prisms, pyramids and cylinders. Orthographic drawings of Bolts and Nuts, Bolted Joints, Screw threads.

**Reference Books**

1. Engineering Graphics using AUTOCAD 2000, T. Jeyapoovan, First Edition 2002, Vikas publishing House.

2. Engineering Drawing : Plane and Solid Geometry : N.D. Bhatt and V.M.Panchal, Forty-Fourth Edition 2002, Charotar Publishing House.

3. Engineering Graphics and Drafting : P.S. Gill, Millennium Edition, S.K. Kataria and Sons.

4. A Text Book of Engineering Drawing : S.B. Mathur, Second Revised and Enlarged Edition 2000, Vikas Publishing House.

5. A Primer on Computer aided Engineering Drawing-2006, published by VTU, Belgaum

**PGP211**

**FUNDAMENTALS OF PACKAGING (LAB)**

Total Credit: 1 Max. External: 45

Internal: 30

 Time Allowed: 3 Hrs.,Marks: 75

**LIST OF EXPERIMENTS**

1. Designing and preparation of various flexible packages.

2. Designing and preparation of various rigid packages.

3. Preparation of Jigged die & unit die for a package design.

4. Study and operation of various packaging machines.

5. Manufacturing of various types of corrugated boards.

6. Cutting, creasing and building up corrugated boxes.

7. Designing & preparation of various designs of paper bags.

8. Testing of raw materials like wood, paper, plastic.

9. Test conducted on Cartons, Corrugated packages, wooden packages.

10. Drop test,Vibrationtest,Inclined impact test, Compression test.

**PGP212**

**SCIENCE OF COMMUNICATION LAB**

Total Credit: 1 Max. External: 45

Internal: 30

 Time Allowed: 3 Hrs.,Marks: 75

**LIST OF EXPERIMENTS**

1. Public speeches
2. Power point presentations
3. Group discussions
4. Interviews

5 .Designing poster

6. Designing pamphlets

**PGP213**

**GRAPHICS LAB**

Total Credit: 1 Max. External: 45

Internal: 30

 Time Allowed: 3 Hrs. ,Marks: 75

**LIST OF EXPERIMENTS**

1. Stationary and small scales literature.

2. Folders -

3. Sticker

4. Label designing

5. Introduction to computers, various softwares used for designing purpose – Demonstration ( Manipulation of same design)

6. Logo designing

7. Color wheel

8. Designing of visiting card. Letterhead, Envelop, Bill form, Receipt, Invitation card, Posters, Title page of a Book, Magazine Cover page.

**PGP214**

 **PHYSICS-II LAB**

Total Credit: 1 Max. External: 45

Internal: 30

 Time Allowed: 3 Hrs.

Marks: 75

**LIST OF EXPERIMENTS**

The experiments in Second semester will be based upon electricity, Magnetism, Modern Physics and Solid State Physics, which are the parts of theory syllabus.

1. To study He Ne laser
2. Tofind the frequency of ultrasonic waves by piezoeletric methods
3. To find the value of e/m for electrons by Helical method.
4. To find the ionisation potential of Argon/Mercury using a thyratron tube.
5. To study the variation of magnetic field with distance and to find the radius of coil by Stewart and Gee's apparatus..
6. To find the band gap of intrinsic semi-conductor using four probe method.
7. To calculate the hysteresis loss by tracing a B-H curve.

**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).