M.G. KASHI VIDYAPITH, VARANASI
DEPARTMENT OF PHYSICS
SYLLABUS
M. Sc. (PHYSICS)

Papers Name		Total
First Semester		
PHY-101 Mathematical Physics		100
PHY-102 Classical Mechanics		100
PHY-103 Electromagnetic Theory		100
PHY-104 Quantum Mechanics-I		100
Practical		100
	Total	**500**
Second Semester		
PHY-201 Quantum Mechanics-II		100
PHY-202 Condensed Matter Physics		100
PHY-203 Atomic and Molecular Physics		100
PHY-204 Electrodynamics and Plasma Physics		100
Practical		100
	Total	**500**
Third Semester		
PHY-301Lasers and Opto-electronics		100
PHY-302 Nuclear Physics-I		100
Special Papers		
PHY-303 (S) Electronics-I		100
PHY-304 (S) Electronics-II		100
Practical		100
	Total	**500**
Fourth Semester		
PHY-401 Statistical Mechanics		100
PHY-402 Nuclear Physics-II		100
Special Papers		
PHY-403 (S) Electronics-III		100
PHY-404 (S) Electronics-IV		100
Practical		100
	Total	**500**
	Grand Total	**2000**

M. Sc. (Physics) First Semester
PHY-101
MATHEMATICAL PHYSICS

Unit-1 Matrix Analysis

Definition of matrix, conjugate of a matrix, algebraic operation on matrices, rank of matrices , types of matrices, Hermitian and anti- Hermitian matrices, determinant of a square-matrix, inverse of a matrix, solution of linear equation, transformation matrices, diagonalization of matrix.

Unit-2 Complex Variables

Definition of complex number, analyticity of complex function, Cauchy-Riemann condition, Cauchy's Integral theorem and formula, Zeroes, poles and singular points. Residue Theorem, Contour Integration.

Unit-3 Tensors

Tensors, definition of a tensor in three dimensions and four dimensional space, rank of tensor addition, multiplication, contraction of tensors, Covariant and contra variant tensors. Pseudo tensors. Symmetry and anti-symmetric properties of tensor, tensors densities.

Unit-4 Fourier Transformation & Polynomials

Fourier Transformation: Definition**,** Fourier series, FS for arbitrary period, Fourier Sine and Cosine transform, Application of Fourier-Transform**.**

Polynomials: Bessel and Legendre functions and polynomials, Rodrigue's formula for Legendre polynomial Orthonormality and other properties of Legendre, Associated Legendre, Hermit, Laguerre and Associated Laguerre polynomial.

Text and Reference Book

1. Mathematical methods for Physicist: G. Artken
2. Mathematical Physics: Harper
3. Advanced Engineering Mathematics: Kreyazig
4. Elements of Complex variable: Churchill
5. Mathematical methods for Physicist and Engineers: K F Reilly, M P Hobsen

M. Sc. (Physics) First Semester
PHY-102
CLASSICAL MECHANICS

Unit – I

Mechanics of a system of particles, Generalized Co ordinates, D Alembert's principle. The Lagrangian formulation and equations of motion (with full derivation). The Hamiltonian formulation and equations of motion (with full derivation).

Unit – II

Calculus of variations and its application – Hamilton's principle. The modified Hamilton's principle and principle of least action, the rigid body motion – Euler angles, Motion of symmetrical top.

Unit – III

Canonical transformations, Poisson brackets, Equations of motion and infinitesimal canonical transformations in the Poisson bracket formulation, Liouville's theorem.

Unit – IV

Hamilton – Jacobi equations, Action angle variables, the connection between Hamilton-Jacobi theory and geometrical optics, Theory of small oscillations – Free vibrations of linear tri- atomic molecule.

Text and Reference Book

1. Classical Mechanics: N C Rana & P S Joag, TMH 1991
2. Classical Mechanics: H Goldstein, Addison Wasley, 1980
3. Mechanics: A Sommerfield, Academic Press, 1952
4. Introduction to Dynamics: I Perceival & D Richards, Cambridge Univ Press, 1982

M. Sc. (Physics) First Semester
PHY-103
Electromagnetic Theory

Unit - I

Maxwell's Equations in vacuum and matter, Maxwell's correction to Ampere's law for non- steady currents and concept of Displacement current; Boundary conditions, Poynting's theorem, Conservation of Energy and momentum for a system of charged particles and electromagnetic field.

Unit – II

Vactor and scalar potentials, Maxwell's Equations in terms of Electromagnetic Potentials, Electromagnetic wave equation, Non-uniqueness of Electromagnetic Potentials and Concept of Gauge. Gauge Transformations: Coulomb and Lorentz Gauge; Green's Function for the Wave Equation; Transformation Properties of Electromagnetic Fields and Sources under Rotation, Spatial Reflection and Time-Reversal.

Unit – III

Propagation of Electromagnetic Plane Waves in Vacuum, Non-conducting Medium, Conducting Medium and Plasma; Reflection, Refraction and Polarization of Electromagnetic Waves, Stokes Parameters; Frequency Dispersion Characteristics of Dielectrics and Conductors; Normal and Anomalous Dispersion, Spreading of Pulse in Dispersive Media, Kramer-Kronig Relations.

Unit – IV

Propagation of Electromagnetic Waves in Rectangular Waveguides, TE and TM Modes, Cut off frequency, Energy Flow and Attenuation. Modal Analysis of guided modes in a cylindrical waveguide. Field and Radiation due to an Oscillating Electric Dipole. Magnetic dipole and electric quadrupole fields.

Text and Reference Book

1. electromagnetic Theory by Julius Adams Stratt
2. Electromagnetic Theory: A Critical Examination of Fundamentals (formerly titled: Electromagnetics) (1938) by Alfred O'Rahilly
3. Electromagnetic Field Theory by V.A.Bakshi, A.V.Bakshi

M. Sc. (Physics) First Semester
PHY-104
QUANTUM MECHANICS-I

Unit-1 Fundamentals

Uncertainty principle and applications, Schrödinger wave equation, normalization, probability current density, expectation values, Ehrenfest theorem, energy eigen function and eigen values, separation of time dependent wave equation, stationary states, boundary and continuity conditions, dynamical variables as operators, hermitian operators and their properties, Orthonormality, free particle solution. One dimensional step potential (finite and infinite) particle in one dimensional square potential well (finite and infinite) parity, linear harmonic oscillator, zero point energy, rectangular potential barrier.

Unit-2 Three Dimensional System

Particle in three dimensional box, Dirac delta functions, orbital angular momentum, commutation relations, central force problems, solution of Schrödinger equation for spherical symmetric potentials, Hydrogen atom- reduced mass, wave function, energy levels, degeneracy, Energy Eigen function and Eigen values of three dimensional harmonic oscillator, and rigid rotator.

Unit-3 Matrix Theory

Matrix, formulation of quantum theory, linear vector space, vector and operators and their matrix representation, bra and ket notations, projection operator, unitary transformation, matrix theory of linear harmonic oscillator, raising and lowering operators eigen values and eigen functions of L2 and Lx, spin, Pauli spin matrices, and their algebra, matrices for J2 and Jx, addition of two angular momenta, (elementary discussion).

Unit-4 Approximation Methods

Time independent perturbation theory for non degenerate case, formulation upto second order, perturbation of linear harmonic oscillator- (i) estimation of correction up to second order for perturbation term depending on x and x2 (ii) first order correction to energy by x3 and x4 type terms, Ground state of Helium atom, Stark effect of a plane rigid rotator.

Text and Reference Book

1. Quantum Mechanics: L I Schiff, TMH
2. Quantum Mechanics: S gasioriwiez, Wiley
3. Quantum Mechanics: J D Powell, Addision Wiley
4. Quantum Mechanics: Mathews and Ventesan
5. Modern Quantum Mechanics: J J sakurai

M. Sc. (Physics) Second Semester
PHY-201
QUANTUM MECHANICS-II

Unit-1

Variational method, Wentzel Kramer Brillouin (WKB) approximation, Time-dependent perturbation theory, Harmonic perturbation, Fermi's golden rule, Adiabatic and sudden approximation.

Unit-2

Collision in 3-D and scattering, Laboratory and CM reference frames, scattering amplitude, differential scattering cross section and total scattering cross section, scattering by spherically symmetric potentials, partial waves and Phase shifts, scattering by perfectly rigid sphere and by square well potential and absorption. Born approximation for scattering. Scattering by coulomb potential.

Unit-3

Identical particles, symmetric and antisymmetric wave functions, Collision of identical particles, Spin angular momentum, Spin function for a many electron system.

Unit-4

Semi classical theory of radiation, Quantum Theory of radiation, Relativistic theory, The Klein-garden equation, The Dirac equation, covariance of Dirac equation, energy level of hydrogen atoms, hole theory and positrons.

Text and Reference Book

1. L I Schiff, Quantum Mechanics (Mc Graw Hill)
2. S Gasiorowiez, Quantum Physics (Wiley)
3. B Craseman and J D Powell, Quantum Mechanics (Addison Western)
4. A P messiah, Quantum Mechanics
5. J J Sakurai, Modern Quantum Mechanics
6. Mathews and Venktesan, Quantum Mechanics

M. Sc. (Physics) Second Semester
PHY-202
CONDENSED MATTER PHYSICS

Unit-1 Crystal Physics

Crystalline solids, unit cell and direct lattice, Miller indices of planes and axes, two and three dimensional Bravais lattices, closed packed structures, Braggs law, experimental diffraction techniques, construction of reciprocal lattice, reciprocal lattice vector, Brillouin zone and atomic factor.

Unit-2 Point Defect and Imperfection

Point defect, line defect and planer stacking fault, the role of dislocation in plastic deformation and crystal growth, the observation of imperfection in crystal, X-ray and electron microscopic techniques.

Unit-3 Electronic Energy Bands

Electrons in periodic lattice, Bloch theorem, Band theory, classification of solids, effective mass, tight binding, cellular and pseudopotential method.

Unit-4 Superconductivity

Superconductivity: Critical temperature, persistent current, Meissner effect, type I and type II superconductors, heat capacity, energy gap, isotopic effect, London's equation, coherent length.

Text and Reference Book

1. Verma and Shrivastava: Crystallography for Solid State physics
2. Aschroff and Mermin: Solid State physics
3. Kittel: Solid State physics
4. Chaikin and Lubensky: Principles of Condensed Matter Physics
5. Dekker: Solid State physics

M. Sc. (Physics) Second Semester
PHY-203
ATOMIC AND MOLECULAR PHYSICS

Unit-1 Atomic Physics

Quantum states of one-electron atoms, atomic orbital, hydrogen spectrum, Pauli's principle, spectra of alkali elements, spin orbit interaction and fine structure in alkali spectra-equivalent, non-equivalent electrons.

Unit-2 Atomic Spectra

Normal and anomalous Zeeman effect, Paschen Back effect, stark effect, two electron system, interaction energy in LS and JJ coupling, hyperfine structure (qualitative).

Unit-3 Diatomic-Molecular Spectra

Rotational spectra of diatomic molecules as a rigid rotator, Energy levels and spectra of non-rigid rotator, Intensity of spectral lines.

Unit-4 Energy of Molecules

Vibrational energy of diatomic molecules, diatomic molecules as a simple harmonic oscillator, Energy level and spectrum, Mores potential energy curve, Molecules as vibrating rotator, vibrational spectrum of diatomic molecules, PQR branches.

Text and Reference Book

1. Introduction to atomic spectra, H E White (T)
2. Fundamental of molecular spectroscopy, C W Banwell (T)
3. Spectroscopy Vol I II III, Walker and Straughen
4. Introduction to molecular spectroscopy, G M Barrow
5. Spectra of diatomic molecules, Herzberg

M. Sc. (Physics) Second Semester
PHY-204
ELECTRODYNAMICS AND PLASMA PHYSICS

Unit-1 Retarded Potentials

Retarded potential and Lienard-Wiechert potential, electric and magnetic fields due to a uniformly moving charge and an accelerated charge, Linear and circular acceleration and angular distribution of power radiated Bremssahlung, synchrotron radiation and cerenkov radiation, reaction force of radiation.

Unit-2 Motion of Charged Particles

Motion of charged particles in electromagnetic field: Uniform E and B fields, non- uniform magnetic fields, diffusion across magnetic field, time varying E and B fields, adiabatic invariants: first, second and third adiabatic invariants.

Unit-3 Basics of Plasma

Elementary concepts: Devation of moment equations from Boltzmann equation, plasma oscillations, Debye shielding, plasma parameters, magnetoplasma, plasma confinement, hydro dynamical description of plasma, fundamental equations, hydromagnetic waves, magnetosonic and Alfven waves.

Unit-4 Wave Propagation

Wave phenomena in magnetoplasma: Polarization, phase velocity, group velocity, cutoffs, resonance for electromagnetic wave propagating parallel and perpendicular to the magnetic field, Appleton-Hanree formula.

Text and Reference Book

1. Panofsky & Phillips: Classical electricity and magnetism
2. Bittencourt: Plasma Physics
3. Chen: Plasma Physics
4. Jackson: Classical electrodynamics

M. Sc. (Physics) Third Semester
PHY-301

Lasers and Opto-Electronics

Unit I

Laser theory, Einstein Coefficients, Light Amplification, threshold condition, Laser Rate Equations-two, three and four level systems.

Unit II

Laser power around threshold, optimum output coupling, Line Broadening Mechanisms – Natural, Collision and Doppler, Optical Resonators – Modes of a rectangular cavity and open planar resonator, Modes of a Confocal resonator system, General Spherical resonator, Higher order modes.

Unit III

Essential criterion to observe non linear optical effects. First experimental demonstration of non-linear phenomena. Classical theory of non-linear response in one dimension. Generalization to 3 dimensions.

Unit IV

Non-linear coupling of 3 waves to produce sum and difference frequencies. Manley Rowe relations and their significance. Sum and difference frequency generation when both input frequencies are lasers. Parametric conversion and amplification.

Text and Reference Book

1. Svelto: Lasers
2. Yariv: Optical Electronics
3. Demtroder: Laser Spectroscopy
4. Latekhov: Non linear Spectroscopy
5. Robert Boylested and Louis Nashdsky: Electronic devices and circuit theory, PHI, New Delhi
6. Ramakanth A Gayakwad: OP amps & linear integrated circuits, PHI second addition, 1991
7. Jacob Millman: Microelectronics, Mc-Hill international book co, New Delhi, 1990
8. Alien Chappa

M. Sc. (Physics) Third Semester
PHY-302

Nuclear Physics-I

Unit – I

Basic facts about nuclei, Mass and binding energy, Semi-empirical mass formula, Nuclear size determination using mu-mesic X-rays and scattering of fast electrons, Nuclear spin and magnetic moment of nuclei, Molecular beam resonance method, Nuclear resonance absorption and induction method, Electric quadrupole moment

Unit – II

Alpha decay, Experimental results on alpha decay-Alpha spectra and Geiger- Nutall relation, Theory of alpha decay. Beta-spectra, Fermi's theory of beta decay, Sergeant's law, Kurie Plot, Allowed and forbidden transitions, Parity violation in beta-decay, Detection of neutrino.

Unit III

Gamma emission, Multipolarity of gamma rays, Selection rules, Theoretical prediction of decay constants, Estimation of Transition probabilities, Internal conversion, Angular correlation, Nuclear isomerism, Mossbauer Effect.

Unit – IV

Nuclear reactions, Conservation laws, The Q-equation and deduction of nuclear energy levels, Compound nucleus, Bohr hypothesis, Resonance phenomena, Breit- Wigner one level formula, Optical model, Simple discussion of direct reactions, Nuclear fission, Bohr-Wheeler theory of nuclear fission, Controlled chain reaction, Nuclear reactors.

Text and Reference Book

1. Ghosal: Atomic and Nuclear physics, vol 2
2. D Griffiths: Introduction to elementary particles, Harper and Row, New York, 1987
3. H A Enge: Introduction to nuclear physics, Addison Wesley, 1975
4. S de Benedeti: Nuclear interaction, John Wiley & Sons, New York, 1955
5. M K Pal: Theory of nuclear structure affiliated East- West, Madras, 1982.

M. Sc. (Physics) Third Semester
PHY-303 (S)
ELECTRONICS-I

Unit I: Linear Wave Shaping

High Pass and Low Pass RC Networks, Response to Sinusoidal, Step, Pulse, Square wave, Exponential and Ramp Inputs. High pass RC circuit as a differentiator, Criterion for good differentiation, Double Differentiation, Low Pass RC circuit as an Integrator. Laplace Transforms and their application to circuit elements.

Unit II: Amplifiers

Difference Amplifiers, Broadband Amplifiers, Methods for achieving Broadbanding, Emitter Follower at High Frequencies, Operational Amplifiers and its Applications, IC 741, Active Filters.

Unit III: Power Supplies

Electronically Regulated Power Supplies, Converters and Inverters, High and Low Voltage Supplies, Switched Mode Power Supply (SMPS).

Unit IV: Integrated Circuit Fabrication Technology

Basic Monolithic Integrated Circuits, Steps involved in the Manufacture of Monolithic ICs: Epitaxy, Masking, Etching, Diffusion, Metallization, Bonding, Assembling, Package types. Introduction to VLSI techniques.

Text and Reference Book

1. Robert Boylested and Louis Nashdsky: Electronic devices and circuit theory, PHI, New Delhi
2. Ramakanth A Gayakwad: OP amps & linear integrated circuits, PHI second addition, 1991
3. Jacob Millman: Microelectronics, Mc-Hill international book co, New Delhi, 1990
4. Alien Chappal: Optoelectronics- theory and practice, Mc-Hill international book co, New York

M. Sc. (Physics) Third Semester
PHY-304(S)

Electronics-II

Unit I: Logic Hardware

Transistor as a Switch, Switching times: Definition and Derivation, Storage Time, Delay Time, Turn On Time, Turn Off Time, Charge Control Analysis. Logic Specifications: Fan In, Fan Out, Noise Immunity, Noise Margin, Propagation Delay, Power Dissipation. Logic Families: DTL, DCTL, I2L, ECL, TTL, CMOSL,CML, HTL.

Unit II: Number Systems and Boolean Algebra

Binary, Octal and Hexadecimal Number Systems. Binary Arithmetic. Arithmetic Circuits. Binary Codes: Gray, 8421, 2421, 5211. Boolean Variables and Operations, Simplification of Boolean Expressions. Karnaugh Maps.

Unit III: Multivibrators

Astable, Monostable and Bistable Multivibrators. Schmitt Trigger. 555 Timer. SR, JK, T and D, J Master Slave Flip flops, Race problem and Edge Trigger JK Flip flop, Preset and Clear Functions.

Unit IV: Counters and Registers

Binary Counters:. Modulus of Counters: Asynchronous and Synchronous Counter Reset Method, Logic Gating Method. Ring Counter. Shift Registers: SISO, PIPO, SIPO, PISO. Universal Shift Register. Tristate Switches, Tristate Registers.

Text and Reference Book

1. Barrey B Brey: The internal microprocessors 8086/8088, 80186, 80286, 80386, 80486 pentium and Pentium processors architecture, programming interfacing, IVth edn. 1999.
2. Douglas V Hall: Microprocessors and interfacing, programming and hardware, IInd edn. Mc-Graw Hill, 1992.
3. M A Maxidi and J G Mazidi: The 80x86 IBM PC and compatible comp. (Vol. I & II), IInd edn. Prentiee-Hall international, 1998.

M. Sc. (Physics) Fourth Semester
PHY-401
STATISTICAL MECHANICS

Unit-1 Basics of Statistical Mechanics

Foundation of statistical mechanics, specification of states of a system, contact between statistics and thermodynamics, classical ideal gas, entropy of mixing and Gibb's paradox, phase space, trajectories and density of states, Liouville's theorem.

Unit-2 Ensemble Theory

Micro-canonical, canonical and grand canonical ensembles, partition functions, calculation of statistical quantities.

Unit-3 Statistics

Density matrix, statistics of ensembles, statistics of indistinguishable particles, Maxwell Boltzmann, Fermi-Dirac and Bose Einstein statistics, properties of ideal Bose and Fermi gases, Bose-Einstein condensation.

Unit-4 Isling Model

Cluster expansion for a classical gas, virial equation of state, isling model, mean field theories of isling model in one, two and three dimensions, exact solution in one dimension.

Text and Reference Book

1. F Rief: Statistical and Thermal physics
2. K Huang: Statistical mechanics
3. R K Patharia: Statistical mechanics
4. R Kubo: Statistical mechanics
5. Landau and Lifshitz: Statistical mechanics

M. Sc. (Physics) Fourth Semester
PHY-402

Nuclear Physics-II

Unit I

Nuclear two-body problem, Simple theory of deuteron, Spin dependence and noncentral feature of nuclear forces, Partial wave analysis, Low energy n-p scattering, Scattering length and effective range theory, Low energy p-p scattering, Charge symmetry and charge independence of nuclear forces, Meson theory of nuclear forces.

Unit II

Nuclear models, Evidence of shell structure, magic numbers and spin-orbit coupling, extreme single particle model. Predictions of spin, parity and electromagnetic moments, Collective model-Vibrational and rotational spectra.

Unit III

Classification of elementary particles, Exact conservation laws, Approximate conservation laws: isospin and isospin wave functions for pion-nucleon system,strangeness, parity, time reversal and charge conjugation, CP violation.

Unit IV

Eight fold way, Quarks, Quark-Quark interaction, SU (3) quark model, Magnetic dipole moment of baryons, Masses of hadrons, Basic ideas about the standard model.

M. Sc. (Physics) Fourth Semester
PHY-403(S)
ELECTRONICS-III

Unit I: Amplitude Modulator

Amplitude Modulation, Spectrum of the modulated signal, Square law Modulator, Balanced Modulator, DSBSC, SSB and vestigial sideband modulation. Limitations of Amplitude Modulation. AM Receiver.

Unit II: Frequency Modulator

Analysis and frequency Spectrum, Generation and Detection of FM. Comparison of AM and FM. Pre-emphasis and De-emphasis. Reactance Modulator. Capture Effect. Varactor Modulator. Amplitude Limiter. FM Receiver. Foster Seely Discriminator. Ratio Detector.

Unit III: Radar & Television

Radar: Principle of radar, Elements of radar system, Peratind characteristics and maximum range of radar set, Duplexer, Radar beacons.
Television: General principle of image transmission scanning sequence and synchronization, Television camera tubes, elements of color television.

Unit IV: Microwave and Digital Communication

Microwave Generator: High frequency generation problems, Klystron amplifier and oscillators, Gunn oscillator and microwave components.
Digital Communication: Sampling theorem, Pulse Modulation: Pulse Code, Pulse Amplitude, Pulse Position Pulse Width Modulation. Differential PCM, Delta Modulation. Digital Communication System. Digital Carrier System. Frequency Shift Keying. Phase Shift Keying. Differential Phase Shift Keying. Division Multiplexing.

Text and Reference Book

1. Wayne Tomasi: Advanced electronics communications systems, Phi. Edn.
2. Taub and Schilling: Principles of communication systems, second edition TMH, 1990
3. Simon Haykin: Communication systems, third edition, John Wiley and sons, Inc., 1994

M. Sc. (Physics) Fourth Semester
PHY-404 (S)
ELECTRONICS-IV

Unit I: Combinational Logic Circuits

Pin out Diagrams, Truth Table and Working. Decoders: 1-of-4 IC 74AS139, 1-of-16 IC 74154 BCD to Decimal Decoder IC 7445, BCD to Seven Segment Decoder Driver: IC 7447A, 7448.Encoders: Decimal Priority Encoder IC 74147 Multiplexers, Implementation of Boolean Function using multiplexer, Demultiplexers: Demultiplexeral Decoder.

Unit II: Memories

Memory Devices: Read Only Memories, Masked Memory, ROM, Programmable ROM, EPROM. Random Access Memory: Static and Dynamic, Bipolar Ram Cell, Static RAM cell.

Unit III: A/D and D/A Converters

Binary weighted Resistor D/A Converter, Ladder Network D/A Converter. D/A Converter Specifications: Resolution, Accuracy, Linearity, Settling Time, Temperature Sensitivity. Flash A/D Converter, Ramp A/D Converter, Successive Approximation A/D Converter.

Unit IV: Microprocessors and Displays

LED Displays: Common Anode Display FND 507, FND 567.Common Cathode Display FND 500, FND 560. Flat Panel Displays (LCD, Plasmas etc.) and their addressing techniques. Smart Windows. Intel Microprocessors: Historical Perspective. Architecture of Microprocessor 8085: Addressing modes and Instruction Set of 8085. Programming examples.

Text and Reference Book

1. Barrey B Brey: The internal microprocessors 8086/8088, 80186, 80286, 80386, 80486 pentium and Pentium processors architecture, programming interfacing, IV$_{th}$ edn. 1999.
2. Douglas V Hall: Microprocessors and interfacing, programming and hardware, II$_{nd}$ edn. Mc-Graw Hill, 1992.
3. M A Maxidi and J G Mazidi: The 80x86 IBM PC and compatible comp. (Vol. I & II), II$_{nd}$ edn. Prentiee-Hall international, 1998.

M.Sc. Physics, Semesters I/II Practical
(List of Experiments)

1. Hysteriris Curve (a) by Ballistic method
   (b) by Oscillograph
2. FET/MOSFET
3. Ultrasonic Diffraction
4. Michelson Interferometer
5. Elastic constant by Newton's Ring
6. Hall Effect
7. Use of constant deviation spectrograph
8. Q of coil
9. Planck's constant
10. Richardson Equation
11. GM Counter
12. Energy band gap of semiconductor
13. Fourier analysis by CRO
14. Experiment on Laser

M.Sc. Physics, Semesters III/IV Practical
(List of Experiments)

1. Study of Characteristic of Amplifier
2. Negative Feedback Amplifier
3. Study of Multivibrator
4. Study of Oscillators
5. Amplitude Modulation & Demodulation
6. NAND and NOR gate as universal gate.
7. D/A and A/D Convertor
8. Characteristics of Operational Amplifier
9. Operational Amplifier as inverting, non-inverting, D-summing Amplifier
10. Study of time 555
11. Series regulated power Supply
12. Multiplex & Demultiplexs,
13. Study Incoders and decoders and BCD to saving segment.
14. Microprocessor
15. Use of Computers

Note:
At least five (05) experiments in each semester. Total experiment must be minimum twenty (20) in four semester. Addition and deletion of experiment based on the syllabus may be done by the respective department.

Candidate must obtain minimum pass marks in Theory and Practical Examinations separately.

One experiments		50 marks
Viva		30 marks
Record		20 marks
	Total	**100 marks**

in each Semester.

Time for experiment is 6 Hours.