

**Percentage of Revision of M.Sc. Physics
Syllabus Revised for the Academic Year - 2020-2021**

M.Sc Physics							
S. No	Course Code	Course Title	Change Details	% of Changes	Content Deleted	Content Updated	Reason for Change
1	20PPS102	Quantum Mechanics	Slightly Modified	5	Product of two linear transformations, Pauli's exclusion principle, Parity operator	Properties of unitary transformation, Degeneracy – the normal state of hydrogen atom, calculation of CG coefficients for $J_1 = \frac{1}{2}$ $J_2 = \frac{1}{2}$ Calculation CG for p state of electron	Feedback from Students
2	20PPS205	Advanced quantum Mechanics	Modified	20	– Dirac's equation of a central field force (H-Atom) – Solution of Dirac's equation of a central field force (H-Atom) – Hydrogen spectrum according to Dirac equation – Covariant formulation of Dirac equation -	Schrodinger equation – Symmetric and Antisymmetric wave function – construction of Symmetric and Antisymmetric functions from unsymmetrised functions: exchange degeneracy – Particle exchange	Feedback from University Nominee

					Properties of Gamma matrices	operator - Pauli's Exclusion Principle - spin angular momentum- experimental need for spin- Electron Spin Hypothesis : Stern Gerlach Experiment – limitations – Density operator and density matrix - The EPR Paradox – Quantum entanglement	
3	20PPS1E1	Applied Electronics	Slightly Modified	2	Typical stages of an Op Amp - Summing Op Amp circuits - Integrator using Op Amp	Characteristics of the nonideal Operational amplifier – Frequency compensation	Feedback from BoS member
4	20PPS207	Electronic Communications and Cyber security	No Change	-	-	-	-
5	20PPS2N1	Non Conventional Energy Sources	Modified	20	Biomass – Biofuels – Biomass Conversion Technologies: Wet processes – Dry	Fuel cells – Design, principle and operation of a fuel cell – Classification of fuel cells – Types	

					processes – Thermal gasification of Biomass – Classification of Biomass gasifiers.	of fuel cells – Advantages and disadvantages of fuel cell	
6	20PPS204	Statistical Mechanics	Modified	20 %	Unit II: Partition function for real gas	Unit I: Number of phase cells in given energy range of harmonic oscillator and three dimensional free particle Unit II: Division of phase space into cells Unit III: Maxwell Boltzmann statistics Unit V: Fluctuations in volume, enthalpy – phase transition – First and second order phase transitions	Recommendation by BOS members
7	19PPS310	Molecular Spectroscopy		-	Unit 1 Symmetry operations on	symmetry planes and reflections - the inversion	19PPS310

					molecular motions Reducible & Irreducible representations Number of normal modes of various symmetry types - <i>Symmetry of group vibrations</i> Unit IV Experimental techniques: Continuous & Pulse method - Applications Relaxation phenomenon- Experimental technique - <i>Applications</i> Unit V Applications of electronic spectra to transition metal complexes	centre - proper axes and proper rotations-improper axes and improper rotations A systematic procedure for symmetry classification of molecules Unit II intensities of spectral lines - effect of isotopic substitution –Non rigid rotator – spectrum of non rigid rotator NMR instrumentation- Applications : NMR imaging -	
8	19PPS4 12	Lasers & Non-Linear		-	-	-	-

		Optics					
9	20PPS208	General Physics Lab I		-	Study of Birefringence - channel spectrum method or diffraction-Hartmann's interpolation	e/m – Thomson's method	-
10	19PPS414	General Physics Lab II	Modified	6	Planck's constant- Photovoltaic cell and V-I characteristics of solar cell	Determination of Planck's constant and verification of Inverse Square law	Feedback from University Nominee
11	20PPS101	Classical Mechanics	Modified	10	Vth unit removed IVth unit splitted into IV and V	In UNIT IV Generalised co-ordinates for rigid body motion, Euler's equations: Langrange's method- Equation of motion about fixed axis, Force free motion of symmetrical rigid body In UNIT V Two coupled oscillators	Feedback from University Nominee
12	20PPS06	Electromagnetic Theory and Electro	Modified	10	Unit V is removed	Unit III is splitted into	Feedback from University

		dynamics				Unit III and IV for (20-22 batch) (19-21 batch) Unit IV is shifted into Unit V for (20-22) In (20-22 batch) unit III dynamic value of conductivity is added. Unit IV is changed as Interaction of EMW with matter on microscopic scale scattering and scattering parameters - scattering by a free electrons-Thomson	Nominee
13	19PPS311	Condensed Matter Physics	New/modified	Nil	Nil	Nil	
14	19PPS413	Nuclear and Particle Physics	New/modified	1%	Unit II: Optical model , Unit III: Half life and mean life of radioactive nuclei, Unit IV: String theory	Unit II: Weizacker semi empirical mass formula, superconductivity model Unit III: Helicity-Angular	Course Teacher

						momentum and Parity of excited levels Unit IV: Higgs Bosons	
15	20 PPS 415	Electronics lab II	No change				
16	20 PPS 416	Computer lab in C++	No change				
17	20 PPS 417	Project	No change				
18	19PPS3 E2	Thin film and Nanoscience	No change				
19	19PPS4 E3	Microproces sor & Object- Oriented Programmin g With C++	No change				



BoS Chairman