PROGRAME B.Sc(MPCs)-STRUCTURE- (WITH EFFECT FROM 2022-2023)

FIRST SEMESTER

Subject Code	Course Type	Course Title	Hours/ Week		Credits	Max. Marks		Total Marks	Duration of Exam
			L	P/T		Int	Ext		
BIC-1-CS-22T	AECC1	Basic Computer Skills	2	--	2	20	30	50	2
ENG-1-EN-22T	CC 1A	English - I	4	1	5	40	60	100	3
AR-1-SL-22T FR-1-SL-22T HI-1-SL-22T SK-1-SL-22T TE-1-SL-22T	CC 2A	Second language	5	--	5	40	60	100	3
DIC-1-MM-22T	DSC 1A	Mathematics-I: Differential & Integral Calculus (Theory)	4	-	4	40	60	100	3
DIC-1-MM-22P	DSC 1AP	Mathematics-I: Differential & Integral Calculus (Practical)	-	3	1	20	30	50	3
MEO-1-PH-22T	DSC 2A	**Mechanics & Oscillations** (Theory)	4	--	4	40	60	100	3
OOP-1-CS-22T	DSC 3A	Computer Science: Object Oriented Programming Using C++ (Theory)	4	--	4	40	60	100	3
MEO-1-PH-22P	DSC 2AP	**Mechanics & Oscillations** (Practical)	--	3	1	20	30	50	3
OOP-1-CS-22P	DSC 3AP	Computer Science: Object Oriented Programming Using C++ Lab (Practical)	--	3	1	20	30	50	3
		Total	**24**	**9**	**27**	280	420	700	

(280) (420)

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SECOND SEMESTER

Subject Code	Course Type	Course Title	Hours/Week			Max marks			Duration of Exam
			L	P/T	Credits	Int	Ext	Total Marks	
EVS-2-EN-22T	AECC 2	Environmental Studies	2	--	2	20	30	50	2
ENG-2-EN-22T	CC 1B	English - II	4	1	5	40	60	100	3
AR-2-SL-22T FR-2-SL-22T HI-2-SL-22T SK-2-SL-22T TE-2-SL-22T	CC 2B	Second language	5	--	5	40	60	100	3
DE-2-MM-22T	DSC 1B	Mathematics-II :Differential Equations (Theory)	4	-	4	40	60	100	3
DE-2-MM-22P	DSC 1BP	Mathematics-II: Differential Equations (Practical)	-	3	1	20	30	50	3
THP-2-PH-22T	DSC 2B	**Thermal Physics**(Theory)	4	--	4	40	60	100	3
DS-2-CS-22T	DSC 3B	Computer Science: **Data Structures (Theory)**	4	--	4	40	60	100	3
THP-2-PH-22P	DSC 2BP	**Thermal Physics** (Practical)	--	3	1	20	30	50	3
DS-2-CS-22P	DSC 3BP	Computer Science: **Data Structures** (Practical)	--	3	1	20	30	50	3
		Total	24	9	27	280	420	700	

Total No of Credits by the end of First Year : 54

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THIRD SEMESTER

Subject Code	Course Type	Course Title	Hours/Week L	Hours/Week P/T	Credits	Max marks Int	Max marks Ext	Total Marks	Duration of Exam
HVGS-3-EN-22T LS-3-EN-22T	SEC 1	UGC Specified – SEC Human Values and Gender Sensitization or Leadership Skills	2	--	2	20	30	50	2
ENG-3-EN-22T	CC 1C	English - III	4	1	5	40	60	100	3
AR-3-SL-22T FR-3-SL-22T HI-3-SL-22T SK-3-SL-22T TE-3-SL-22T	CC 2C	Second Language	5	--	5	40	60	100	3
RA-3-MM-22T	DSC 1C	Mathematics-III Real Analysis (Theory)	4	-	4	40	60	100	3
RA-3-MM-22P	DSC 1C	Mathematics-III Real Analysis (Practical)	-	3	1	20	30	50	3
EMT-3-PH-22T	DSC 2C	**Electromagnetic theory** (Theory)	4	--	4	40	60	100	3
RD-3-CS-22T	DSC 3C	Computer Science: Relational Database Management System (Theory)	4	--	4	40	60	100	3
EMT-3-PH-22P	DSC 2CP	**Electromagnetic theory** (Practical)	--	3	1	20	30	50	3
RD-3-CS-22P	DSC 3CP	Computer Science: Relational Database Management System - SQL (Oracle 10g XE) (Practical)	--	3	1	20	30	50	3
		Total	24	9	27	280	420	700	

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FOURTH SEMESTER

Subject Code	Course Type	Course Title	Hours/ Week		Credits	Max Marks		Total Marks	Duration of Exam
			L	P/T		Int	Ext		
BE-4-EN-22T EOE-4-EN-22T	SEC 2	UGC Specified – SEC Business English Or English for Employability	2	--	2	20	30	50	2
ENG-4-EN-22T	CC 1D	English - IV	4	1	5	40	60	100	3
AR-4-SL-22T FR-4-SL-22T HI-4-SL-22T SK-4-SL-22T TE-4-SL-22T	CC 2D	Second Language	5	--	5	40	60	100	3
ALG-4-MM-22T	DSC 1D	Mathematics-IV Algebra (Theory)	4		4	40	60	100	3
ALG-4-MM-22P	DSC 1DP	Mathematics-IV Algebra (Practical)	--	3	1	20	30	50	3
WOP-4-PH-22T	DSC 2D	**Waves & Optics** (Theory)	4	--	4	40	60	100	3
JV-4-CS-22T	DSC 3D	Computer Science (Theory) Java Programming	4	--	4	40	60	100	3
WOP-4-PH-22P	DSC 2DP	**Waves & Optics** (Practical)	--	3	1	20	30	50	3
JV-4-CS-22P	DSC 3DP	Computer Science-IV (Practical) **Java Programming Lab**	--	3	1	20	30	50	3
		Total	24	9	27	280	420	700	

Total No of Credits by the end of Second Year 108

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FIFTH SEMESTER

Subject Code	Course Type	Course Title	Hours/ Week		Credits	Max Marks		Total Marks	Duration of Exam
			L	P/T		Int	Ext		
		Mathematics: Theory of Equations (OR) Logic & Sets							
TOE-5-MM-22T LS-5-MM-22T APO-5-PH-22T EMEA-5-PH-22T HP-5-CS-22T	SEC 3	**Physics :** Applied Optics /Experimental methods and Error Analysis	2	--	2	20	30	50	2
		Computer Science: HTML Programming							
LA-5-MM-22T	DSC 1E	Mathematics-V Linear Algebra (Theory)	4	-	4	40	60	100	3
LA-5-MM-22P	DSC 1EP	Mathematics-V Linear Algebra (Practical)	--	3	1	20	30	50	3
MP-5-PH-22T NPP-5-PH-22T CP-5-PH-22T	DSE 2E	1.Modern Physics 2.Nuclear&Particle Physics 3.Computational Physics	4	--	4	40	60	100	3
WT-5-CS-22T SE-5-CS-22T PY-5-CS-22T	DSE 3E	Computer Science (Theory) Web Technologies Software Engineering Programming in Python	4	--	4	40	60	100	3
MP-5-PH-22P NPP-5-PH-22P CP-5-PH-22P	DSE1EP	1.Modern Physics (Practical) 2.Nuclear&Particle Physics (Practical) 3.Computational Physics (Practical)	--	3	1	20	30	50	3
WT-5-CS-22P SE-5-CS-22P PY-5-CS-22P	DSE 3EP	Computer Science (Practical) Web Technologies Lab Software Engineering Lab Programming in Python Lab	--	3	1	20	30	50	3
BM-5-MM-22T MEF-5-MM-22T	GECs	Mathematics- Basic Mathematics /Mathematics for Economics & Finance (Theory)	4	--	4	40	60	100	3

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PDL-5-PH-22T **OU-5-PH-22T** **RES-5-PH-22T**	**GE-Generic**	**1. Physics in daily life** **2. Our Universe** **3. Renewable energy Sources** (Theory)							
DM-5-CS-22T **WD-5-CS-22T**	**GE-Generic**	**Computer Science :** (Theory) Basics of Digital Marketing Web development using Word Press							
	Total		19	8	21	240	360	600	

SIXTH SEMESTER

Subject Code	Course Type	Course Title	Hours/ Week		Credits	Max Marks		Total Marks	Duration of Exam
			L	P/T		Int	Ext		
NT-6-MM-22T **VC-6-MM-22T** **MS-6-PH-22T** **AP-6-PH-22T** **CNC-6-CS-22T** **ST-6-CS-22T** **OS-6-CS-22T** **GDS-6-CS-22T**	**SEC 4**	**Mathematics:** Number Theory / Vector Calculus **Physics:** Material Science /Astrophysics **Computer Science**: Google Data Studio	2	--	2	20	30	50	2
NA-6-MM-22T **IT-6-MM-22T** **ASG-6-MM-22T**	**DSE 1F**	**Mathematics:** 1. Numerical Analysis (Theory) 2. Integral Transforms (Theory) 3. Analytical Solid Geometry (Theory)	4	--	4	40	60	100	3
NA-6-MM-22P **IT-6-MM-22P** **ASG-6-MM-22P**	**DSE 1FP**	Mathematics: 1. Numerical Analysis (Practical) 2. Integral Transforms ((Practical) 3. Analytical Solid Geometry (Practical)	--	3	1	20	30	50	3
SSP-6-PH-22T **SCP-6-PH-22T** **NS-6-PH-22T**	**DSE 2F**	**Physics:** 1.Solid State Physics (Theory) 2.Semi Conductor Physics (Theory) 3. Nano Science (Theory)	4	--	4	40	60	100	3
CNC-6-CS-22T **ST-6-CS-22T** **OS-6-CS-22T**	**DSE 3F**	Computer Science: Computer Networks & Cloud Computing Software Testing Operating Systems	4	--	4	40	60	100	3

SSP-6-PH-22P **SCP-6-PH-22P** **NS-6-PH-22P**	**DSE 2FP**	**Physics:** 1.Solid State Physics (Practical) 2.Semi Conductor Physics (Practical) 3. Nano Science (Practical)	--	3	1	20	30	50	3
CNC-6-CS-22P **ST-6-CS-22P** **OS-6-CS-22P**	**DSE 3FP**	Computer Science:(Practical) Computer Networks & Cloud Computing Lab Software Testing Lab Operating Systems Lab	--	3	1	20	30	50	3
PPR-6-PH-22T **RM-6-PH-22T** **BE-6-PH-22T** **ES-6-PH-22T** **PR-6-CS-22P**	**Project/DSE**	Mathematics Project/ Mathematical Modeling. 4.PhysicsProject 5.Research Methodology 6.Basic Electronics 7.Earth Science Computer Science Project	4	--	4	40	60	100	3
		Total	19	8	21	240	360	600	

Total No of Credits by the End of Third Year: 150

Mathematics Tutorials: Problems solving session for each 20 students' one batch.

Mathematics: The students are required to Opt either the optional paper Mathematical Modeling or Project.

***Practical's:** lab sessions for each 20 student's one batch.

The students are required to choose either the optional paper **Research Methodology/Basic Electronics/Earth Science or Project

Note:

ELS: English Language Skill; **SLS:** Second Language Skill; **AECC:** Ability Enhancement Compulsory Course; **SEC:** Skill Enhancement Course; **DSC:** Discipline Specific Course; **DSE:** Discipline Specific Elective; **GE:** Generic Elective; **T**: Theory; **P:** Practical; **I:** Internal Exam **E**: End Semester Exam: **PR**: Project Report; **VV:** Viva-Voce Examination.

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SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits per Course	Total Credits
1	English Language	4	5	20
2	Second Language	4	5	20
3	DSC	13	5	65
4	DSE	5	5	25
5	GE	1	4	4
6	AECC	2	2	4
7	SEC	4	2	8
8	Project / DSE	1	4	4
	TOTAL	34		150
Credits Under Non-CGPA	NSS / Sports / Extra-Curricular / YRC / JGG / WEC / JSR / ED			

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FACULTY OF SCIENCE
SEMESTER- I
PROGRAMME DESCRIPTION (SYLLABI IN DETAIL)
DSC: PHYSICS PAPER-I (Mechanics & Oscillations (Theory)

Scheme of Instruction	Scheme of Examination
Course Code: **MEO-1-PH-22T**	Course Title : **Mechanics & Oscillations**
Credits : 4	Max. Marks : 100 Marks
Category : DSC	Internal Examination : 30 Marks
Hours/Week : 4	SBT :10 Marks
Total durations Hrs : 60 Hrs	External Examination : 60 Marks
Instruction Mode: Lecture + Practical	Exam Duration : 3 Hrs

Course Objectives:

1. The course aims to teach the concepts of mechanics like vector analysis, mechanics of particles and rigid bodies, central forces, gravitation and special theory of relativity.
2. The course aims to teach the nature, causes and principles of oscillations and solve differential equations of vibrations.

Course Outcomes:

CO1: Understand and apply principles and applications of Divergence, gradient, curl and theorems of Stokes, Gauss and Green in vector and scalar fields.

CO 2: Understand the mechanics of particles and rigid body dynamics with relevant theories and derivations

CO 3: Gain knowledge on Central forces and gravitational fields, conservative nature, inverse square law. Kepler's laws, and Understand and also solve problems using Lorentz & Galilean transformations, Einstein's postulates of special theory of relativity, length contraction, time dilation and velocity addition &mass-energy relations and Michelson Morley experiment.

CO 4: Understand Fundamentals of vibrations and apply on Torsional pendulum, Compound pendulum, superposition of two or more vibrations with Lissajous figures.

CO 5: Solve differential equations of Damped harmonic oscillator with special cases and Forced Harmonic Oscillator with logarithmic decrement, relaxation time, quality factor and resonance.

SYLLABUS

Unit	Content	Hrs	COs	Cognitive Level
I	**Vector Analysis:** Scalar and vector fields, gradient of a scalar field and its physical significance. Divergence and curl of a vector field and related problems. Vector integration, line, surface and volume integrals. Stokes, Gauss, & Greens theorems- simple applications with problems.	**15 Hrs**	CO1	Understanding Analyzing Applying Problem solving
II	**Mechanics of Particles:** Laws of motion, motion of variable mass system, motion of a rocket, multi-stage rocket, conservation of energy and momentum. Collisions in two and three dimensions, Concept	**15 Hrs**	CO2	Understanding Analyzing Applying Problem solving