COMPLEMENTARY COURSES

Semester 1 (Mathematics Main)

PY1131.1 – Mechanics and Properties of matter (36 hours)

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	Describe about the dynamics of rigid bodies, various theorems and derivations on moment of inertia of bodies of different shapes	Un, Re
2.	CO2	Study of bending behavior beams and analyze the expression for young's modulus	Un, Re, Ap
3.	CO3	Understand the surface tension and viscosity of fluid	Re, Un, An
4.	CO4	Analyse waves and oscillations	Re, Un, An

Semester 2 (Mathematics Main)

PY1231.1 – Thermal Physics and statistical mechanics

No. of credits: 2 **No. of hours per week: 2**

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	have an idea about various heat transfer phenomena.	Un, Re, Cr
2.	CO2	Use thermodynamic terminology correctly to explain fundamental thermodynamic properties and various laws of thermodynamics	Un, Re, Ap
3.	CO3	develop a skill to solve problems using the properties and relationships of thermodynamic systems and to analyse basic thermodynamic processes.	Re, Un, Ap, Cr
4.	CO4	To gain a knowledge on the basics of statistical physics	Re, Un, Ap, An

Semester 3 (Mathematics Main)

PY1331.1 – Optics, Magnetism and Electricity (54 hours)

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	The course provides an introduction to electricity, magnetism, optics: Electric charge and electric fields, current and resistance, magnetic fields, the properties of light, optical instruments etc.	Un, Re, Ap, An, Ev
2.	CO2	analyze and understand interference between waves	Un, Re, An
3.	CO3	get acquainted with Fresnel's and Fraunhofer's diffraction	Re, Un, Ap
4.	CO4	gain a knowledge in different light sources including lasers	Re, Un, Ap
5.	CO5	Demonstrate an understanding of various magnetic materials and their properties, various circuits including inductor, capacitor, resistor, their combinations etc.	Re, Un, Ev, An

Semester 4 (Mathematics Main)

PY1431.1Modern Physics and Electronics

No. of credits: 3 **No. of hours per week: 3**

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	Obtain a deep understanding in various atom models, properties of atomic nucleus.	Un, Re, Ap
2.	CO2	Describe the need of quantum mechanics, show an understanding of quantization.	Un, Re
3.	CO3	Explain about semiconductor devices like diodes, transistors, their characteristics and types of biasing.	Re, Un, Ap
4.	CO4	Compare various number systems, logic gates and related theorems, basics of Boolean algebra.	Re, Un, An

Semester 1 (Chemistry Main)

PY1131.2 – Rotational dynamics and Properties of matter (36 hours)

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	Describe about the dynamics of rigid bodies, various theorems and derivations on moment of inertia of bodies of different shapes	Un, Re, An
2.	CO2	Study of bending behaviour beams and analyse the expression for young's modulus	Un, Re, An
3.	CO3	Understand the surface tension and viscosity of fluid	Re, Un, Ap
4.	CO4	Analyse waves and oscillations	Re, Un, An

Semester 2 (Chemistry Main)

PY1231.2 – Thermal Physics (36 hours)

No. of credits: 2 **No. of hours per week: 2**

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	have an idea about various diffusion phenomena	Un, Re, Cr
2.	CO2	get an idea about various phenomena of transference of heat	Un, Re, Cr
3.	CO3	To Use thermodynamic terminology correctly and explain fundamental thermodynamic properties and various laws of thermodynamics	Re, Un, Ap
4.	CO4	To Use thermodynamic terminology correctly and explain fundamental thermodynamic properties and various laws of thermodynamics	Re, Un
5.	CO5	To develop a skill to solve problems using the properties and relationships of thermodynamic systems.	Un, Re, Cr

Semester 3 (Chemistry Main)

PY1331.2 – Optics, Magnetism and Electricity (54 hours)

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	The course provides an introduction to electricity, magnetism, optics: Electric charge and electric fields, current and resistance, magnetic fields, the properties of light, optical instruments etc.	Un, Re, Ap
2.	CO2	analyze and understand interference between waves	Un, Re, An
3.	CO3	get acquainted with Fresnel's and Fraunhofer's diffraction	Re, Un, Ap
4.	CO4	gain a knowledge in different light sources including lasers	Re, Un, Ap, Cr
5.	CO5	get a thorough knowledge of the polarization of light and its changes upon reflection and transmission	Re, Un, Ap
6.	CO6	Demonstrate an understanding of various magnetic materials and their properties, various circuits including inductor, capacitor, resistor, their combinations etc.	Re, Un, Ap, Ev

Semester 4 (Chemistry Main)

PY1431.2 – Atomic Physics, Quantum Mechanics and Electronics (54 hours)

No. of credits: 3 **No. of hours per week: 3**

Course Outcome

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
1.	CO1	Get a deep understanding in various atom models, properties of atomic nucleus etc	Un, Re
2.	CO2	Explain about superconductors, their types, properties and applications	Un, Re, An
3.	CO3	Describe the need of quantum mechanics, show an understanding of quantization etc	Re, Un, Ap
4.	CO4	Derive the time dependent and time independent Schrodinger equation	Re, Un, Ap
5.	CO5	Demonstrate an idea about instrumentation behind various spectroscopic techniques	Re, Un, Cr
6.	CO5	Explain about semiconductor devices like diodes, transistors , their characteristics and types of biasing	Re, Un, Ap
7.	CO6	Compare various number systems, logic gates etc.	Re, Un