

**PROGRAMME: M.Sc., PHYSICS (INTEGRATED)****CURRICULUM**

SEMESTER – 1											
Sl. No.	Course Type	Course Code	Course Title	L	T	P	EL	C	Marks		Page No.
									CAE	ESE	
1	Theory		Language - I	3	0	0	0	3	50	50	
2	Theory	SHSB1102	General English-I	3	0	0	0	3	50	50	
3	Theory	SPHB1102	Properties of Matter	3	0	0	0	3	50	50	
4	Theory	SMTB1110	Ancillary Mathematics-I	3	0	0	0	3	50	50	
5	Theory		Value Added Course-I	3	0	0	0	3	50	50	
6	Practical	SPHB2102	Properties of Matter Lab	0	0	4	0	2	50	50	
7	Practical	SPHB2103	Modern Physics Lab-I	0	0	4	0	2	50	50	
TOTAL CREDITS FOR SEMESTER: 19											
TOTAL MARKS FOR SEMESTER: 700											

SEMESTER-2											
Sl. No.	Course Type	Course Code	Course Title	L	T	P	EL	C	Marks		Page No.
									CAE	ESE	
1	Theory		Language – II	3	0	0	0	3	50	50	
2	Theory	SHSB1201	General English –II	3	0	0	0	3	50	50	
3	Theory	SPHB1201	Mechanics	3	0	0	0	3	50	50	
4	Theory	SMTB1208	Ancillary Mathematics-II	3	0	0	0	3	50	50	
5	Theory		Value Added Course-II	3	0	0	0	3	50	50	
6	Practical	SPHB2201	Mechanics Lab	0	0	4	0	2	50	50	
7	Practical	SPHB2202	Basic computer lab	0	0	4	0	2	50	50	
TOTAL CREDITS FOR SEMESTER: 19											
TOTAL MARKS FOR SEMESTER:700											

SHSB1102	GENERAL ENGLISH - I	L	T	P	EL	Credits	Total Marks
		3	0	0	0	3	100

COURSE OBJECTIVES

- To provide opportunities for students to read and respond to representations of current issues
- To prepare the students to effectively communicate by applying reflective thinking practices
- To provide an opportunity to the students to improve their vocabulary

UNIT 1**9 Hrs.**

Listening to identify vocabularies- Self Introduction - Developing dialogue between characters -Talking about neighbours, family members, likes and dislikes, Reading Comprehension strategies- Parts of Speech- Kinds of Sentences Connectives and Discourse markers - Rearranging the Jumbled sentences, EMail Writing.

UNIT 2**9 Hrs.**

Listening for Inference- Just a Minute speech- Types of words- Compound words, abbreviations and acronyms, Word Association- Tenses and its Types- Voice- Impersonal Passive- Rules of Passive voice formation - Transcoding - Encoding and Decoding- Bar chart, Pie Chart

UNIT 3**9 Hrs.**

Listening to telephonic talk to fill blanks- Giving information- travel, hotel booking, making enquiries about availability of seats for admission, asking about courses - Question Tags – Open ended and Close ended questions, Concord, Single - Line Definition - Note Making - Preparing checklists

UNIT 4**9 Hrs.**

Listening to summarise the information- Reading and identifying the topic sentence, - Editing - PunctuationError Corrections, „If „Conditionals, Idioms & Phrases, Instructions & Recommendations – Drafting a brochure/Advertisement.

UNIT 5**9 Hrs.**

Listening to Movie reviews and book reviews, Listening and summarizing- Giving impromptu talks - Reading and Summarizing -Types of words- Homonyms, Homophones, eponyms, acronyms- Writing a Paragraph, Descriptive Essay, Dialogue Writing.

Max. 45 Hrs.**COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1** - Remember knowledge of linking words related to both spoken and written discourse.
- CO2** - Understand collocations, words to express one's point of view in both writing and speaking.
- CO3** - Apply the rules for writing compare and contrast paragraphs by using cohesive devices based on prompts given,
- CO4** - Analyse critical thinking skills by framing questions related to elements of reasoning.
- CO5** - Evaluate written pieces to self-correct in the topic areas of verbs, reported speech, and punctuation
- CO6** - Equip the students with the required Professional Skills.

TEXT / REFERENCE BOOKS

1. Sen S, Mahendra et al. (2015) Communication and Language Skills. Foundation books. Chennai
2. Strunk, William Jr., and E.B. White. The Elements of Style. Allyn and Bacon, 2000.
3. Murphy, Raymond. English Grammar in Use. Cambridge University Press, 2012.
4. Thomson, A.J., and A.V. Martinet. A Practical English Grammar. Oxford University Press, 1986.
5. Straus, Jane. The Blue Book of Grammar and Punctuation. John Wiley & Sons, 2014.
6. O'Conner, Patricia T. Woe is I: The Grammarphobe's Guide to Better English in Plain English. Riverhead Books, 2019.

END SEMESTER EXAM QUESTION PAPER PATTERN**Max. Marks : 100****Exam Duration : 3 Hrs.****PART A : 10 Questions of 2 marks each-No choice****20 Marks****PART B : 2 Questions from each unit with internal choice, each carrying 16 marks****80 Marks**

SPHB1102	PROPERTIES OF MATTER	L	T	P	EL	Credits	Total Marks
		3	0	0	0	3	100

COURSE OBJECTIVES

- It gives a brief idea of the physical parameters and their relevance in our day to day life.
- To impart a thorough knowledge about liquid motion and various relevant theoretical facts. It creates a platform for in depth understanding in low temperature Physics
- It gives a brief idea of the crystalline materials and their structural determination using various methods.

UNIT 1 ELASTICITY**9 Hrs.**

Modulus of elasticity- Poisson's ratio- Relation between elastic constants and Poisson's ratio-Energy stored- Twisting couple on a cylinder- Torsional pendulum (with and without weights)- Bending of beams- Bending moment- Cantilever loading- Transverse vibrations of cantilever-Non- uniform and uniform bending of a beam-Koenig's method – Determination of Y and n for the material of the spring.

UNIT 2 VISCOSITY AND LOW PRESSURE**9 Hrs.**

Newton's law- Poiseuille's flow- Stoke's fall- Rotation viscometer- Ostwald viscometer- Meyer's formula for viscosity of gas-Rankine's method- Effect of temperature and pressure on viscosity- Air pump- Rotary oil pump-Mercury diffusion pump- McLeod gauge-Pirani gauge- Knudsen Gauge.

UNIT 3 SURFACE TENSION**9 Hrs.**

Molecular interpretation- surface energy- Pressure difference across a curved surface- Excess pressure in liquid drops and air bubbles-Molecular forces- Shape of liquid meniscus in capillary tube-Angle of contact- Capillary rise and energy consideration- Jaeger's method- Quincke's drop- Vapour pressure over flat and curved surfaces.

UNIT 4 GRAVITATION**9 Hrs.**

Classical theory of gravitation : Kepler's laws, Newton's law of gravitation – G and measurement – Earth – moon system – weightlessness – earth satellites – parking orbit – earth density – mass of the Sun – gravitational potential – velocity of escape – satellite potential and kinetic energy. Einstein's theory of gravitation : Introduction – the principle of equivalence – experimental tests of general theory of relativity – gravitational red shift – bending of light – perihelion of mercury.

UNIT 5 CRYSTAL PHYSICS**9 Hrs.**

Crystal structures: Introduction – periodic array of atoms – crystal lattice – unit cell – basis – symmetry considerations – classification of crystals – Bravais lattices in three dimensions – crystal planes and Miller indices – simple crystal structures. Crystal diffraction: Bragg's law – experimental X-ray diffraction methods :- Laue method – rotating crystal method – powder method – neutron diffraction.

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Acquire in depth knowledge about our modulus of elasticity.
- CO2** - Apply the Concepts to several relevant fields like Material Science, Civil and Mechanical streams.
- CO3** - Develop the theoretical and practical skills towards industrial applications,
- CO4** - Choose the optional subjects of interest for further study and research.
- CO5** - Relate the advanced topics easily later for higher studies.
- CO6** - Correlate with growth of single crystals

TEXT / REFERENCE BOOKS

1. Properties of matter – Brijlal and Subramanian, S.Chand Co., Ltd (2001).
2. Properties of matter and acoustics –R.Murugesan, KiruthigaSivaprasad, S.Chand Co., Ltd (2013).
3. Elements of Properties of matter – D.S. Mathur.S.Chand, Ltd (1968).
4. Properties of matter – Subramanian Iyer and Jeyaraman.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

PART A : 10 Questions of 2 marks each-No choice

20 Marks

PART B : 2 Questions from each unit with internal choice, each carrying 16 marks

80 Marks

SMTB1110	ANCILLARY MATHEMATICS-I	L	T	P	EL	Credits	Total Marks
		3	1	0	0	3	100

COURSE OBJECTIVES

- The ability to identify, reflect upon, evaluate and apply different types of information
- To enhance the knowledge to form independent judgments. Analytical, logical thinking
- To educate the conclusions based on quantitative information will be the main objective of learning this subject.

UNIT 1**9 Hrs.**

Polynomial equations – Imaginary and Irrational roots – relation between roots and coefficients of equations Symmetric functions of roots in terms of coefficients of third degree equation -problems.

UNIT 2**9 Hrs.**

Characteristic Equation of a square matrix - Eigen values, Eigen vectors of a real matrix, Properties of Eigen values and Eigen vectors. Cayley Hamilton Theorem (without proof) Verification - Finding inverse and power of a matrix.

UNIT 3**9 Hrs.**

Differentiation of all standard functions (without proof): Product rule, quotient rule, functions of a function rule, logarithmic differentiation, differentiation of implicit function. Applications of differentiation: maxima, minima of a curve.

UNIT 4**9 Hrs.**

Methods of Integration - Integration by parts-Bernoulli's formula- Definite Integrals - Properties of Definite Integrals-Simple problems..

UNIT 5**9 Hrs.**

Formation of ODE - Solving higher order linear differential equations with constant coefficients: Particular integral for.

Max. 45 Hrs.**COURSE OUTCOMES**

On completion of the course, student will be able to

CO1 - Identify using Cayley Hamilton theorem, the power and the inverse of the matrix..

CO2 - Understand the concept of derivatives to find maxima and minima of a curve..

CO3 - Solve problems involving the various methods of integration

CO4 - Point out the complementary function and particular integral of ODE..

CO5 - Apply the concept of probability to solve the problems.

CO6 - Produce the conditional probability problems using Baye's theorem.

TEXT / REFERENCE BOOKS

1. T.K.Manickavachagam Pillai, Matrices, S.Viswanathan Printers & Publishers, 2012.
2. Dipak Chatterjee, Integral Calculus and differential equations, TATA McGraw S Hill Publishing Company Ltd.,2000.
3. Narayanan, T.K. Manichavasagam Pillai, Calculus, Vol. I, S. Viswanathan Printers Pvt. Limited, 2007.
4. P. R. Vittal, Mathematical Statistics, Margham Publications, Chennai, 2002..

END SEMESTER EXAM QUESTION PAPER PATTERN**Max. Marks : 100****Exam Duration : 3 Hrs.****PART A :** 10 Questions of 2 marks each-No choice**20 Marks****PART B :** 2 Questions from each unit with internal choice, each carrying 16 marks**80 Marks**

SPHB2102	PROPERTIES OF MATTER LAB	L	T	P	EL	Credits	Total Marks
		0	0	4	0	2	100

COURSE OBJECTIVES

- To explain the laws of orbit and the gravitational phenomenon surrounding us.
- To impart basic understanding of the various physical techniques practically. It caters the needs for engineering applications.
- To give details about physical properties of materials and inculcates interest to observe facts Experimentally

LIST OF EXPERIMENTS

1. Rigidity modulus of a wire using Torsional Pendulum
2. Wavelength of Laser source using Diffraction grating
3. Young's modulus of a bar - non uniform bending - Pin and Microscope
4. Refractive index of the given liquid- Spectrometer - Hollow Prism
5. Surface tension of a liquid by Capillary rise method
6. Viscosity of highly viscous liquid using Stokes method
7. Young's modulus of a bar - uniform bending - Pin and Microscope
8. Coefficient of viscosity – Burette method.
9. Coefficient of thermal conductivity of a bad conductor – Lee disc method
10. Magnetic susceptibility of Liquid – Quinke's method

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Acquire in depth knowledge about our modulus of elasticit

CO2 - Apply the Concepts to several relevant fields like Material Science, Civil and Mechanical streams.

CO3 - CO3 - Develop the theoretical and practical skills towards industrial applications,

CO4 - Choose the optional subjects of interest for further study and research.

CO5 - Relate the advanced topics easily later for higher studies.

CO6 - Produce the conditional probability problems using Thermal methods.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

CAE Model Practical Exam

50 Marks

ESE University Practical Exam

50 Marks

SPHB2103	MODERN PHYSICS LAB-I	L	T	P	EL	C	Total Marks
		0	0	4	0	2	100

COURSE OBJECTIVES

- To understand about the paramagnetic solution and find the susceptibility of a materials.
- To study about the energy loss of material by hysteresis loop.
- To measure the young's modulus of a material

LIST OF EXPERIMENTS

1. Measurement of susceptibility of paramagnetic solution (Quinck's Tube Method)
2. To draw the BH curve of iron using a Solenoid and determine the energy loss from Hysteresis.
3. To measure (a) Voltage, and (b) Frequency of a periodic waveform using a CRO
4. To study IV characteristics of PN diode, Zener and Light emitting diode.
5. To determine the Refractive Index of the Material of a given Prism using Sodium Light.
6. To study Lissajous Figures
7. To study the variation of thermo emf across two junctions of a thermocouple with temperature.
8. To determine the modulus of a material by sear's method.
9. Determine the resistance of a wire by potentio meter
10. To use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current, and (d) checking electrical fuses

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Acquire in depth knowledge about our ferromagnetism

CO2 - Apply the Concepts to several relevant fields like Material Science,

CO3 - Develop the theoretical and practical skills towards industrial applications,

CO4 - Choose the optional subjects of interest for further study and research.

CO5 - Relate the Zener diode and PN junction diode.

CO6 - Acquire knowledge of Lissajous figure

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

CAE Model Practical Exam

50 Marks

ESE University Practical Exam

50 Marks

SHSB1201	GENERAL ENGLISH- II	L	T	P	EL	Credits	Total Marks
		3	0	0	0	3	100

COURSE OBJECTIVES

- To provide opportunities for students to read and respond to representations of current issues through texts that present themes and topics that are familiar, insightful and informative.
- To provide an opportunity to the students to improve their vocabulary
- To develop skills relating to creative writing

UNIT 1**9 Hrs.**

Listening for details, Speaking - making a presentation, reading for details and Global Comprehension Vocabulary Binomials, Types of Words- Synonyms, Antonyms that describe people, things and their actions - Paired Expressions -Letter Writing - Informal Letters- Letter to a Friend / Family Members - Creating blogs to post written materials

UNIT 2**9 Hrs.**

Listening for details - Speaking: Giving Interview, Public Speech based on specific topics given. Reading for Comprehension and for overall idea - Vocabulary: phrases - Sentence Pattern – Contextual guessing of words– Singular, Plural– Letter writing- Formal letters- Inviting dignitary for a function, Application for job with resume.

UNIT 3**9 Hrs.**

Listening for details - Telephonic conversation – Speaking: Narrating a Story - Vocabulary: positive and negative connotations - Language Focus: Adjective- Degrees of Comparison, Direct and Indirect Speech -Types of Sentences (simple, compound, complex) - Collocations -Letter to the Editor (Social Issues) –Hints Development.

UNIT 4**9 Hrs.**

Listening for Overall information - Making requests and suggestions - Speaking: Group Discussion - Vocabulary: Homonyms and Homophones - Language Focus: Transitive and Intransitive verbs - Writing: Precise writing, Story Writing - Process description (Flow chart)

UNIT 5**9 Hrs.**

Listening for specific details - Speaking using imagination. Reading to identify facts – Language Focus : Modal Auxiliary Verbs Writing: Imaginative writing by predicting, Argumentative Essay, Writing a Book or Film review. Vocabulary: Countable and Uncountable Nouns, foreign nouns and framing of plurals.

Max. 45 Hrs

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Remember knowledge of linking words related to both spoken and written discourse
- CO2** - Understand collocations, words to express one's point of view in both writing and speaking
- CO3** - Apply the rules for writing compare and contrast paragraphs by using cohesive devices based on prompts given
- CO4** - Analyse critical thinking skills by framing questions related to elements of reasoning
- CO5** - Evaluate written pieces to self-correct in the topic areas of verbs, reported speech, and punctuation
- CO6** - Equip the students with the required Professional Skills

TEXT / REFERENCE BOOKS

1. Strunk Jr., William, and E.B. White. The Elements of Style. Allyn and Bacon, 2000.
2. Murphy, Raymond. English Grammar in Use. Cambridge University Press, 2019.
3. Thomson, A.J., and A.V. Martinet. A Practical English Grammar. Oxford University Press, 2013.
4. Straus, Jane. The Blue Book of Grammar and Punctuation. John Wiley & Sons, 2014.
5. Swan, Michael. Practical English Usage. Oxford University Press, 2016.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

- | | |
|---|-----------------|
| PART A : 10 Questions of 2 marks each-No choice | 20 Marks |
| PART B : 2 Questions from each unit with internal choice, each carrying 16 marks | 80 Marks |

SPHB2101	MECHANICS	L	T	P	EL	Credits	Total Marks
		3	0	0	0	3	100

COURSE OBJECTIVES

- To study the rotational and vibrational motion of rigid body.
- To determine the Centre of gravity, Centre of pressure, Centre of mass.
- To acquire the details of the Relative motion.

UNIT 1 DYNAMICS**9 Hrs.**

Rigid body - moment of inertia - radius of gyration - moment of inertia of a solid cylinder, hollow sphere with external and internal radii. Compound pendulum - theory - equivalent simple pendulum - reversibility of centers of suspension and oscillation - determination of g and k - Kater's pendulum.

UNIT 2 STATICS AND HYDROSTATICS**9 Hrs.**

Centre of gravity - Centre of gravity of a solid and hollow tetrahedron, solid and hollow hemisphere, solid cone. Centre of pressure - Centre of pressure of a vertical rectangular lamina. Laws of floatation - meta centre - meta centric height of a ship.

UNIT 3 FRAME OF REFERENCE**9 Hrs.**

Laws of Mechanics, Inertial frames of reference and three type of co-ordinate system (qualitative), Galilean transformations, conservation of momentum. Non-Inertial Systems: Non-inertial frames and fictitious forces - Rotating frames of reference Centrifugal force - Coriolis force and its applications.

UNIT 4 SPECIAL THEORY OF RELATIVITY**9 Hrs.**

Michelson-Morley Experiment and its outcome. Postulates of Special Theory of Relativity – Consequences of special relativity- Time Dilation – Length Contraction - Relativistic Doppler effect – Lorentz Transformation - Lorentz Velocity Transformation - Relativistic Kinematics - Transformation of Energy and Momentum.

UNIT 5 OSCILLATIONS**9 Hrs.**

SHM: Simple Harmonic Oscillations. Differential equation of SHM and its solution. Kinetic energy, potential energy, total energy and their time-average values. Damped oscillation. Forced oscillations: Resonance, sharpness of resonance; power dissipation and Quality Factor.

Max. 45 Hrs**COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1** - Study about the Relative motion, Inertial and non- inertial reference frames.
- CO2** - Calculate Centre of mass and inertia tensor of mechanical systems.
- CO3** - Students can learn about the Newton's laws of motion and conservation principles.
- CO4**- Establish the knowledge about Michelson-Morley experiments with interferometer, Lorentz Transformation
- CO5** - Learn Constant relative motion of different bodies.
- CO6** - Understand the concept of oscillations and its solutions

TEXT / REFERENCE BOOKS

1. An introduction to Mechanics, Daniel Kleppner and Robert Kolenkow, Cambridge, Second Edition, March 2021
2. Mechanics by J.C. Upadhyaya, Ram Prakash Publications, January 2017.
3. Fundamentals Of Mechanics by Mohit Kumar Sharma|Suresh Chandra, Wiley India, January 2021.
4. Introduction To Mechanics, Chittaranjan Ghosh, TECHNO WORLD PUBLICATION, March 2021
5. Mechanics, D.S. Mathur, S. Chand and Company Limited, 2016
6. Mechanics -J.C. Slater and N. H. Frank (McGraw-Hill)
7. Physics for scientists and Engineers with Modern Phys., J.W. Jewett, R.A.Serway, 2010
8. Mechanics, Berkeley Physics, vol.1, C.Kittel, W.Knight, et.al. 2017, Tata McGraw-Hill.

END SEMESTER EXAM QUESTION PAPER PATTERN**Max. Marks : 100****Exam Duration : 3 Hrs.****PART A : 10 Questions of 2 marks each-No choice****20 Marks****PART B : 2 Questions from each unit with internal choice, each carrying 16 marks****80 Marks**

SMTB1208	ANCILLARY MATHEMATICS-II	L	T	P	EL	Credits	Total Marks
		3	1	0	0	3	100

COURSE OBJECTIVES

- To study the rotational and vibrational motion of rigid body.
- To determine the Centre of gravity, Centre of pressure, Centre of mass.
- To acquire the details of the Relative motion.

UNIT 1 TRIGONOMETRY**9 Hrs.**

DeMoivre's Theorem-Expansion of $\sin^n x$, $\cos^n x$, $\sin^n x$, $\cos^n x$, $\sin x$, $\cos x$ - Hyperbolic functions, Inverse Hyperbolic functions, Relation between Circular and Hyperbolic Functions - Separating into Real and Imaginary parts.

UNIT 2 PARTIAL DIFFERENTIAL EQUATIONS**9 Hrs.**

Formation of PDE by eliminating constants and functions - Solution of linear homogeneous PDE of higher order with constant coefficients.

UNIT 3 NUMERICAL METHODS FOR SOLVING EQUATIONS**9 Hrs.**

Solution of algebraic equation and transcendental equation: Regula Falsi Method, Newton Raphson Method- Solution of simultaneous linear algebraic equations: Gauss Elimination Method, Gauss Jacobi and Gauss Seidel Method

UNIT 4 NUMERICAL INTERPOLATION**9 Hrs.**

Difference operators-Relation between the operators-Interpolation: Newton's forward and backward difference interpolation formula (equal interval) - Lagrange's interpolation formula (unequal interval).

UNIT 5 INTRODUCTION TO PROBABILITY**9 Hrs.**

Definitions: Sample Space, Events – Addition Law of probability – Multiplication law of probability Conditional probability – Baye's theorem (without proof) – problems on Baye's theorem.

Max. 45 Hrs**COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1** - Identify the trigonometric functions and the relation between circular and hyperbolic functions
- CO2** - Understand the concept of formation of PDE and solving them.
- CO3** - Use Gauss method to solve system of linear equations.
- CO4** - Discuss the problems on the numerical interpolation methods.
- CO5** - Apply the concept of probability to solve the problems.
- CO6** - Produce the conditional probability problems using Baye's theorem.

TEXT / REFERENCE BOOKS

1. 1. Narayanan. S, Manicavachagom Pillay. T.K, Trigonometry, S.Viswanathan Printers & Publishers 1980.
2. S. Arumugam& Others, Trigonometry, New Gamma Publications, Revised Edition, 1985.
3. Kandasamy P, Thilagavathy. K and G. Gunawathy, Numerical Methods, S.Chand & Sons,3rd Revised Edition, 2013.30
4. Balagurusamy. E, Numerical Methods, Tata Mcgraw Hill Publishing Company, 3rd Edition, 2000.
5. Narayanan, T.K. Manichavasagam Pillai, Calculus, Vol. I, S. Viswanathan Printers Pvt. Limited, 2007.

END SEMESTER EXAM QUESTION PAPER PATTERN**Max. Marks : 100****Exam Duration : 3 Hrs.****PART A : 10 Questions of 2 marks each-No choice****20 Marks****PART B : 2 Questions from each unit with internal choice, each carrying 16 marks****80 Marks**

SPHB2201	MECHANICS LAB	L	T	P	EL	Credits	Total Marks
		0	0	4	0	2	100

COURSE OBJECTIVES

- To understand about the paramagnetic solution and find the susceptibility of a materials
- To study about the energy loss of material by hysteresis loop
- To measure voltage and frequency by CRO

LIST OF EXPERIMENTS

1. To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c) Modulus of rigidity
2. To investigate SHM using an oscillating spring
3. To determine the Moment of Inertia of a Flywheel
4. To determine the elastic Constants of a wire by Searle's method
5. To determine the Modulus of Rigidity of a Wire by Maxwell's needle
6. To determine the meta centric height of ship model
7. To determine the value of g using Kater's Pendulum
8. To determine the value of g and K using Compound Bar Pendulum
9. To determine of g using simple pendulum
10. Verification of Law of floatation

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - To determine the simple harmonic oscillation for spring.

CO2 - To determine the moment of Inertia of a flywheel

CO3 - To determine the elastic constants of a wire

CO4 - To determine of g using simple pendulum

CO5 - To determine g using Kater's pendulum

CO6 - To determine SHG of a oscillating spring

TEXT/REFERENCE BOOKS

1. An introduction to Mechanics, Daniel Kleppner and Robert Kolenkow, Cambridge, Second Edition, March 2021
2. Mechanics by J.C. Upadhyaya, Ram Prakash Publications, January 2017.
3. Fundamentals Of Mechanics by Mohit Kumar Sharma|Suresh Chandra, Wiley India, January 2021.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

CAE Model Practical Exam

50 Marks

ESE University Practical Exam

50 Marks

SPHB2202	BASIC COMPUTER LAB	L	T	P	EL	Credits	Total Marks
		0	0	4	0	2	100

COURSE OBJECTIVES

- Develop programs using C Programming Language
- Understand problem statements and identify appropriate solutions
- To understand the usage of pointers

LIST OF EXPERIMENTS

1. Write a Program to calculate and display the volume of a CUBE having its height (h=10cm), width (w=12cm) and depth (8cm).
2. Write a program to take input of name, roll no. and marks obtained by a student in 4 subjects of 100 marks each and display the name, roll no. with percentage score secured.
3. Write a program to print whether a given number is even or odd.
4. Write a program to print positive integers from 1 to 10.
5. Write a program to insert 5 elements into an array and print the elements of the array.
6. Write a program to calculate factorial of a number using recursion.
7. Write a program to find biggest among three numbers using pointer.
8. Write a program to find smallest among three numbers using pointer.
9. Write a C program to create, declare and initialize structure.
10. Write a program to create a file called emp. rec and store information about a person, in terms of his name, age and salary

COURSE OUTCOMES

On completion of the course, student will be able to

- CO1** - Explore the basic knowledge of C programs.
CO1 - Apply the concept of control structures to solve any given problem.
CO3 - Apply concept of structures to write programs.
CO4 - Apply the knowledge in solving problems
CO5 - Apply the usage of pointers for programs
CO6 - Apply the knowledge in solving numerical problems using C

TEXT / REFERENCE BOOKS

1. Dr. Guruprasad Nagraj, "C Programming for Problem Solving", Himalaya Publishing House. ISBN-978-93-5299-361
2. 1. Pradip Dey, Manas Ghosh, "Programming in C", 2nd Edition, 2018, Oxford University Press, ISBN: 978-01-9949-147-6. 3.
3. Kernighan B.W and Dennis M. Ritchie, "The C Programming Language", 2nd Edition, 2015, Pearson Education India, ISBN: 978-93-3254-944-9.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks : 100

Exam Duration : 3 Hrs.

CAE Model Practical Exam
ESE University Practical Exam

50 Marks
50 Marks