

 <p>AMRITSAR GROUP OF COLLEGES</p> <p>NAAC Grade "A" 3rd Cycle under Autonomous Category Autonomous College (Since 2014) Conferred by UGC</p>	Study Scheme	Department of Applied Sciences
	B.Tech. 1st Year Batch 2025 onwards	

Physics Group									
B.Tech First Semester								Contact Hours 28	
S.No.	Subject Code	Subject Name	Load Allocation			INT	EXT	Total	Credit
			L	T	P				
1	AGPH-25101	Applied Physics	3	1	0	40	60	100	4
2	AGHU-25101	Professional Communication- I	3	0	0	40	60	100	3
3	AGAM-25101	Applied Mathematics-I	3	1	0	40	60	100	4
4	AGHV-21101	Human Values & Professional Ethics	3	0	0	40	60	100	3
5	AGEE-25101	Fundamentals of Electrical & Electronics Engineering	3	1	0	40	60	100	4
6	AGHU-25102	Professional Communication Lab- I	0	0	2	30	20	50	1
7	AGPH-25102	Applied Physics Lab	0	0	2	30	20	50	1
8	AGEE-25102	Fundamentals of Electrical & Electronics Engineering Lab	0	0	2	30	20	50	1
9	AGMP-21101	Manufacturing Practice	0	0	4	60	40	100	2
Total		5 Theory Classes + 4 Laboratory Classes	15	3	10	350	400	750	23
B.Tech. Second Semester								Contact Hours 32	
S.No.	Subject Code	Subject Name	Load Allocation			INT	EXT	Total	Credit
			L	T	P				
1	AGCH-25101	Applied Chemistry	3	1	0	40	60	100	4
2	AGHU-25201	Professional Communication- II	3	0	0	40	60	100	3
3	AGAM-25201	Applied Mathematics-II	3	1	0	40	60	100	4
4	AGES-25101	Environment Education	2	0	0	40	60	100	2
5	AGCS-25101	Fundamentals of C Programming	3	0	0	40	60	100	3
6	AGHU-25202	Professional Communication Lab-II	0	0	2	30	20	50	1
7	AGCH-25102	Applied Chemistry Lab	0	0	2	30	20	50	1
8	AGCS-25102	Fundamentals of C Programming Lab	0	0	4	30	20	50	2
9	AGME-25101	Engineering Graphics & Design	0	0	4	30	20	50	2
10	EMC - 25101	Entrepreneurship Setup and Launch	0	0	4	60	40	100	2
Total		5 Theory Classes + 5 Laboratory Classes	14	2	16	380	420	800	24

 <p>AMRITSAR GROUP OF COLLEGES</p> <p>NAAC Grade "A" 3rd Cycle under Autonomous Category</p> <p>Autonomous College (Since 2014) Conferred by UGC</p>	Study Scheme	Department of Applied Sciences
	B. Tech. 1st Year Batch 2025 onwards	

Chemistry Group									
B.Tech. First Semester							Contact Hours 32		
S.No.	Subject Code	Subject Name	Load Allocation			INT	EXT	Total	Credit
			L	T	P				
1	AGCH-25101	Applied Chemistry	3	1	0	40	60	100	4
2	AGHU-25101	Professional Communication - I	3	0	0	40	60	100	3
3	AGAM-25101	Applied Mathematics- I	3	1	0	40	60	100	4
4	AGES-25101	Environment Education	2	0	0	40	60	100	2
5	AGCS-25101	Fundamentals of C Programming	3	0	0	40	60	100	3
6	AGHU-25102	Professional Communication Lab-I	0	0	2	30	20	50	1
7	AGCH-25102	Applied Chemistry Lab	0	0	2	30	20	50	1
8	AGCS-25102	Fundamentals of C Programming Lab	0	0	4	30	20	50	2
9	AGME-25101	Engineering Graphics & Design	0	0	4	30	20	50	2
10	EMC - 25101	Entrepreneurship Setup and Launch	0	0	4	60	40	100	2
Total		5 Theory Classes + 5 Laboratory Classes	14	2	16	380	420	800	24
B.Tech. Second Semester							Contact Hours 28		
S.No.	Subject Code	Subject Name	Load Allocation			INT	EXT	Total	Credit
			L	T	P				
1	AGPH-25101	Applied Physics	3	1	0	40	60	100	4
2	AGHU-25201	Professional Communication-II	3	0	0	40	60	100	3
3	AGAM-25201	Applied Mathematics-II	3	1	0	40	60	100	4
4	AGHV-21101	Human Values & Professional Ethics	3	0	0	40	60	100	3
5	AGEE-25101	Fundamentals of Electrical & Electronics Engineering	3	1	0	40	60	100	4
6	AGHU-25202	Professional Communication Lab-II	0	0	2	30	20	50	1
7	AGPH-25102	Applied Physics Lab	0	0	2	30	20	50	1
8	AGEE-25102	Fundamentals of Electrical & Electronics Engineering Lab	0	0	2	30	20	50	1
9	AGMP-21101	Manufacturing Practice	0	0	4	60	40	100	2
Total		5 Theory Classes + 4 Laboratory Classes	15	3	10	350	400	750	23

B. Tech 1 st / 2 nd Semester		AGPH-25101: APPLIED PHYSICS			
Internal Marks:	40		L	T	P
External Marks:	60		3	1	0
Total Marks:	100		Credits		4

Course Outcomes: After studying the course, students will be able to;	
CO1	To explain new physics concepts like laser emission and holography for engineering and technological applications.
CO2	Develop logical thinking to solve numerical problems to improve the problem solving ability in students
CO3	To explain need of quantum mechanics and its applications in every branch of engineering
CO4	To identify and classify different types of materials in physics and concept of superconductivity
CO5	To explain heat, its transfer modes, thermal expansion of materials, foundational for all engineering disciplines
CO6	Classify branches of physics like Electromagnetics, modern physics which will surely help the students in engineering and technology in future.

Part	Content	CO
I	Lasers: Lasers, Population Inversion, Properties of Laser Light, Stimulated and Spontaneous Emission, Einstein A and B Coefficients, Pumping, Types and Applications of LASER-Ruby Laser, He-Ne Laser, Difference between Holography and Photography	CO-1
	Engineering Optics: Laws of Reflection and Refraction, Acceptance Angle, Numerical Aperture, TIR- Conditions and Applications, Optical Fibre, Attenuation of Optical fibre Signals, Propagation of waves, Applications of Optical Fibres, Numericals related to heat and temperature	CO-2
II	Quantum Mechanics: Introduction to Classical Mechanics and Quantum Mechanics, Need of Quantum Mechanics, Uncertainty Principle, Wave-particle duality, Matter Waves, Group and Phase Velocities, Black Body Radiation, Concept of Wave function, Born's Interpretation, Time Independent and Time Dependent Schrodinger Wave Equation, Normalization of Wave Function and Orthogonal wave functions, Schrodinger wave equation for particle in one dimensional infinite potential well, Application of Quantum Mechanics.	CO-3
III	Material Science: Basic Idea of Dia, Para and Ferromagnetic material, Soft and Hard Magnetic Materials, Magnetostriction, Magnetic Anisotropy, Hysteresis curve. Introduction to Semiconductors, Dielectrics, Metamaterials, Superconductors and Nanomaterials; types and their Applications, Superconductivity, Meissner Effect, Type I and Type II superconductors, Properties of superconductors, Isotope Effect, Cooper Pair, BCS Theory(Qualitative Idea), London Equations (No derivations).	CO-4
IV	Thermal Physics: Concept of Heat and Temperature, Units and differences. Different scales of temperature and their conversions, Expansion of Solids, Linear Expansion, Superficial Expansion and Volume Expansion, Relation between α , β and γ , Coefficient of Thermal Conductivity, Transfer of Heat, Modes of Transfer of Heat (Conduction, Convection and Radiation), Phonons: Lattice Vibration Heat Transfer, Seebeck Effect, Peltier Effect, Thomson Effect, Wiedemann-Franz Law, Thermal Equilibrium, Entropy.	CO-5
	Electromagnetism: Introduction and properties of EM Waves, EM Waves in Free Space, Divergence, Gradient and Curl, Applications of EM Waves, Displacement Current, Continuity Equation, Maxwell's Equations in Differential form, Maxwell Equations in Free Space, Susceptibility & Permittivity, Skin Depth.	CO-6

Suggested Reading/Books:

- Physics for Scientists & Engineers (Vol. I & II), Serway & Jewett, 9th Edition. Cengage Learning.
- Engineering Physics, Malik; HK, Singh; AK, Tata McGraw Hill,
- Concepts of Modern Physics, Beiser; A., Mahajan; S., Choudhary; SR, Tata McGraw Hill.
- Physics; A calculus based approach (Vol. I & II) Serway; RA & Jewett; JW, Cengage Learning.
- Materials Science & Engineering, Callister; WD, John Wiley & Sons.
- Introduction to Electrodynamics, Griffiths; DJ, Prentice Hall.
- D.A Neaman, "Semiconductor Physics and devices", Times Mirror High Education Group, Chicago. 1997
- Laser Theory & Applications, Thygrajan; K, Ghatak; AK, Mc Millan India Ltd.
- Engineering Mechanics, 2nd ed. — MK Harbola
- Principles of Mechanics — JL Synge & BA Griffith.
- Mechanics by D S Mathur, S Chand Publishing, 1981
- Halliday and Resnick, Physics
- W. Saslow, Electricity, magnetism and light

1 st Semester		AGHU-25101: PROFESSIONAL COMMUNICATION-I			
Internal Marks:	40		L	T	P
External Marks:	60		3	0	0
Total Marks:	100		Credits		3

Course Outcomes: After studying the course, students will be able to:	
CO1	Define different aspects of Communication Process.
CO2	Reproduce a broad range of general and technical vocabulary relevant to professional contexts.
CO3	Restate accurately, clearly and deeply the matter in a concrete and interesting manner.
CO4	Understand the language through Grammatical Components of English.
CO5	Develop writing skills in formulating Business Communication.
CO6	Identify the relation between Language and Literature through textual Reading

Part	Content	CO
I	Communication: Meaning, Significance, Process, Types, Channels, Functions, Barriers to Communication, Role of Communication in society; Technology-enabled Communication.	CO-1
II	Vocabulary Building: The concept of word formation and their use in English, Prefix, Suffix, Collocation, Homonyms, Homographs and Homophones	CO-2
	Composition: Comprehension Reading, Cloze Reading	CO-3
III	Grammar: Subject Verb Agreement, Active and Passive Voice, Reported Speech, If clause	CO 4
IV	Business Letters: Structure, Kinds of Application and Formal Letters	CO-5
	Know the Literature: A Piece of Prose and Poems by renowned authors; <ul style="list-style-type: none"> • The Road not Taken by Robert Frost (Poem) • Where the Mind is Without Fear by Rabindranath Tagore (Poem) • The School for Sympathy by EV Lucas (Prose) 	CO-6

Suggested Readings/Books:

- Rodriques. M. V., "Effective Business Communication", Concept Publishing Company New Delhi, 1992 reprint (2000)
- Bhattacharya. Indrajit., "An Approach to Communication Skills", Dhanpat Rai & Co., (Pvt.) Ltd. New Delhi.
- Practical English Usage. Michael Swan. OUP. 1995.
- Remedial English Grammar. F.T. Wood. Macmillan.2007
- Eckersley. C. E., "A Comprehensive English Grammar" Orient Longman, Hyderabad.
- Carter. Ronald and McCarthy. Michael., "Cambridge Grammar of English", Cambridge University Press, Cambridge.
- Chaturvedi. P. D. & Chaturvedi. Mukesh., "Business Communication – Concepts, Cases & applications, Pearson Publications.
- Swan. Michael, Practical English Usage. Oxford University Press.

1 ST SEMESTER		AGAM-25101: APPLIED MATHEMATICS-I			
Internal Marks:	40		L	T	P
External Marks:	60		3	1	0
Total Marks:	100		Credits		4

Course Outcomes: After studying the course, students will be able to;

CO-1	Solve Partial Differential Equations and Evaluate Maxima / Minima of functions.
CO-2	Identify and apply methods for solving Partial Differential Equations.
CO-3	Predict Convergence/Divergence of Infinite series using Standard tests.
CO-4	Explain Matrix theory to Model and Solve Engineering Problems.
CO-5	Describe Vector Functions and develop models for Physical Systems.
CO-6	Recognize Vector operators and construct Potential functions.

Part	Content	CO
I	Partial Differentiation: Introduction, Homogeneous functions and Euler's theorem, Composite functions, Total derivative, Derivative of an implicit function, Change of variable, Jacobians Applications of Partial Differentiation: Maxima and Minima of function of two variables	CO-1
II	Partial Differential Equations: Formation of Partial Differential Equations, Solution of homogeneous Partial Differential Equations with constant coefficients.	CO-2
	Sequence and Series: Convergence and divergence of series, Tests of convergence, Comparison test, Ratio test, Raabe's test, Logarithmic test, Cauchy's root test and Gauss test. Convergence and absolute convergence of alternating series.	CO-3
III	Matrices: Inverse and rank of a matrix, System of linear equations, Symmetric, Skew-symmetric and orthogonal matrices, Determinants, Eigenvalues and eigenvectors, Cayley-Hamilton Theorem.	CO 4
IV	Vector Calculus: Scalar and Vector fields, differentiation of vectors, velocity and acceleration, Vector differential operators, Del, Gradient, Divergence and Curl and their physical interpretations. Formulae involving Del applied to point functions and their products.	CO-5
	Applications of Vector Calculus: Line integral, Solenoidal Vector point function, irrotational vector, Conservative field (Irrotational field).	CO-6

Suggested Readings/Books:

<ul style="list-style-type: none"> ➤ Thomes, G.B, Finney, R.L. Calculus and Analytic Geometry, Ninth Edition, Pearson Education Mathematical Statistics: S.C.Gupta ➤ Kreyszig, E., Advanced Engineering Mathematics, Eighth edition, John Wiley. ➤ Peter. V. O' Nil, Advanced Engineering Mathematics, Wordsworth Publishing Company ➤ Jain, R.K and Lyengar, S.R.K., Advanced Engineering Mathematics, Narosa Publishing Company ➤ Grewal, B.S., Higher Engineering Mathematics, Khanna Publishers, New Delhi ➤ Taneja, H.C., Engineering Mathematics, Volume-I & Volume-II, I.K. Publisher ➤ Babu Ram, Advance engineering Mathematics, Pearson Education. ➤ Bindra, J.S., Applied Mathematics, Volume-I, Kataria Publications
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1 st /2 nd Semester		AGHV-21101: HUMAN VALUES AND PROFESSIONAL ETHICS			
Internal Marks:	40		L	T	P
External Marks:	60		3	0	0
Total Marks:	100		Credits		3

Course Outcomes: After studying the course, students will be able to;	
CO-1	Explain need and process of value education.
CO-2	Explain and Analyze Basic human Aspiration.
CO-3	Describe the needs and Activities of Self (I) and Body.
CO-4	Explain and understand comprehensive human goal.
CO-5	Illustrate existence as co-existence at all level of living.
CO-6	Visualize futuristic goals for Holistic Development.

Part	Content	CO
I	Introduction to Value Education, Self-Exploration as the Process of Value Education	CO-1
	Basic Human Aspirations and the Program to fulfil Basic Human Aspirations	CO-2
II	Understanding the Human Being as Co-existence of Self (I') and Body	CO-3
III	Harmony in the Family, Extending relationship from Family to society.	CO-4
	Harmony in Nature and the Holistic perception of Harmony in Existence	CO-5
IV	Implications of Holistic Understanding for mutually enriching and sustainable systems	CO-6

Suggested Readings/Books:

- A Foundation Course in Human Values and Professional Ethics by R R Gaur, R Sangal & G P Bagaria
- Ethics and Human Values by S. Abdul Sattar.
- Human Values by Dr. Kshitiz Jain.

1 st / 2 nd Semester		AGEE-25101: FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING			
Internal Marks:	40		L	T	P
External Marks:	60		3	1	0
Total Marks:	100		Credits		4

Course Outcomes: After studying the course, students will be able to;	
CO1	Examine DC circuits using network laws and theorems.
CO2	Construct and solve single-phase AC circuits using waveform parameters
CO3	Illustrate understanding of three-phase systems and magnetic circuits.
CO4	Describe the operation, construction, and applications of single-phase transformers and autotransformers.
CO5	Explain the concepts of DC and three-phase induction machines in industrial applications.
CO6	Describe the applications of microelectronics through the use of diodes, transistors, and logic gates.

Part	Content	CO
I	Direct Current (DC) Circuits: Difference Between AC & DC Quantities, Circuit elements (R, L & C), Analysis of DC circuit by Nodal Analysis, Mesh Analysis, Superposition & Thevenin Theorem, Delta-Star & Star- Delta Conversions.	CO-1
II	Alternating Current (AC) Circuits: Single Phase EMF generation, Instantaneous Value, RMS values, Average value, Form factor & peak factor of sinusoidal AC Quantities, Analysis of AC circuits: series RL, RC and RLC circuits with sinusoidal input.	CO-2
	Introduction to 3-Phase AC systems: Types of 3-Phase Connection, Voltage & current relations in star & delta connections under balanced conditions. Magnetic Circuits Analogy between electric & magnetic circuits, concept of self-induced & mutually induced EMFs.	CO-3
III	Static and Rotating Electrical Machines Single phase transformer: Working Principle, construction (core & shell type), EMF equation, Losses, Efficiency and Voltage Regulation. Autotransformer: Construction, Comparison with single phase transformer and industrial applications.	CO 4
	DC Machines: Construction, working principle of DC motor & generator, introduction to types of DC Motor & their industrial applications. 3-Phase Induction Motor: Construction, working principle, classification & industrial applications.	CO-5
IV	Microelectronics: Application of diodes as rectifiers, operation of Bipolar Junction Transistor (BJT), Characteristics & applications of BJT under CB & CE configuration. Introduction to binary, octal, decimal & hexadecimal number system & their conversions. Logic gates & its truth tables. Derivation of basic gates from Universal gates.	CO-6

Suggested Readings/Books:
<ul style="list-style-type: none"> • Basic Electrical and Electronics and Computer Engineering by R Muthusubramanian, S Salivahanan, K A Muraleedharan, Tata McGraw Hill • A Textbook of Electrical Techology by B.L Theraja & A.K Theraja, S Chand publishers. • Electrical Technology, Edward Hughes, Addisin Wesley Longman Limited. • Digital Electronics by R P Jain, Tata McGraw Hill • Electrical Machines by J. B. Gupta, S.K. Kataria & Sons

1 st /2 nd SEMESTER		AGPH-25102: APPLIED PHYSICS LABORATORY			
Internal Marks:	30		L	T	P
External Marks:	20		0	0	2
Total Marks:	50		Credits		1

Course Outcomes: After studying the course, students will be able to:	
CO-1	To calculate, measure and interpret key behaviours of electro-optic systems.
CO-2	Summarize and apply new technology while validating results against theoretical calculations.
CO-3	Examine modern measurement technologies, instrument usage, and their real-time engineering applications.
CO-4	To learn new techniques of experimental work through simulation (virtual lab)
CO-5	Apply experimental skills and grasp the significance of measurement in Science and Technology.
CO-6	To construct a mini project that demonstrate a concept , based on the content of AGPH-25101 (Applied Physics)

PART	CONTENT	CO
I	To study the laser beam characteristics like wave length using diffraction grating aperture and measurement of divergence of given laser beam.	CO-1
	To find out the frequency of AC mains using electric-vibrator.	CO-2
II	To determine the band gap of a semiconductor material.	
	To determine the grain size of a material using optical microscope	CO-3
	To determine the time period of simple pendulum for different length and acceleration due to gravity using virtual lab. (https://bop2-iitk.vlabs.ac.in/exp/compound-pendulum/index.html)	CO-4
	To find numerical aperture of an Optical Fibre using Simulator. (https://vlab.amrita.edu/?sub=1&brch=189&sim=343&cnt=1)	
	To study VI characteristics of solar cell. (https://ep-iitb.vlabs.ac.in/exp/characteristics-solar-cell/)	
III	To familiarize students with Vernier calliper, screw gauge and travelling Microscope, use of plumb line and spirit level. (https://amrita.olabs.edu.in/?sub=1&brch=5&sim=16&cnt=1 and https://amrita.olabs.edu.in/?sub=1&brch=5&sim=156&cnt=1)	
	Use of multimeter for measuring (a) resistance (b) ac and dc voltages (c) dc current (d) capacitance (e) checking electrical fuses.	CO-5
	To make a mini project that demonstrate a concept based on the content of AGPH-25101 (Applied Physics)	CO-6

Suggested Readings/Books:

- Practical Physics, C.L. Arora, S. Chand & Company Ltd.
- Practical Physics, R.S. Sirohi, Wiley Eastern.
- Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
- Practical Physics, G.L.Squires, Cambridge University Press, Cambridge, 1985
- <https://vlab.amrita.edu/index.php?sub=1>
- <http://www.vlab.co.in>
- physicsandbox.com/projects/double_pendulum.com
- 1000sciencefairprojects.com
- Seminaronly.com/engineering-projects/physics
- <https://learning-center.homesciencetools.com/article/electromagnetism-science-project/>

1 st Semester		AGHU-25102: PROFESSIONAL COMMUNICATION-I Lab			
Internal Marks:	30		L	T	P
External Marks:	20		0	0	2
Total Marks:	50		Credits		1

Course Outcomes: After studying the course, students will be able to:	
CO-1	Articulate effectively about their academic background, skills in a professional manner.
CO-2	Modify their listening skills and improve their pronunciation.
CO-3	Apply skills to think cognitively about a situation and put the ideas on paper in writing.
CO-4	Produce pronunciation skills; expand vocabulary, stronger grammar and fluency
CO-5	Develop public speaking skills and development of critical thinking
CO-6	Examine the all-round development of students by focusing on soft skills.

Part	Content	CO
I	Introduction to components of Self Introduction, performance and written document	CO-1
II	Software-based Learning: Utilizing computer-assisted language learning software (EWL) for self-paced learning and practice. (Module: Communication Skills)	CO-2
	Introduction to Elocution, performance and written document	CO-3
III	Software-based Learning: Utilizing computer-assisted language learning software (EWL) for self-paced learning and practice. (Module: English Concepts)	CO-4
	Introduction to Poem recitation, performance and written document	CO-5
IV	Fundamental aspects of Personality Development	CO-6

Suggested Readings/Books:

- The Audio CD accompanying S.P. Dhanavel's Book (Part 1 & 2)
- English Lab Software by **Bureau for Health and Education Status Upliftment**
- Various Video lectures on Power Point Presentation and Group Discussion
- Soft Skills for Everyone, Butterfield Jeff, Cengage Publications, 2011.
- Technical Communication, Meenakshi Raman & Sangeeta Sharma, O U Press 2009.

1 st / 2 nd Semester		AGEE – 25102: FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB.			
Internal Marks:	30		L	T	P
External Marks:	20		0	0	2
Total Marks:	50		Credits		1

Course Outcomes: After studying the course, students will be able to;	
CO1	Demonstrate the use of electrical and electronic measuring instruments.
CO2	Verify basic electrical laws and theorems through experiments.
CO3	Analyse single-phase and three-phase AC circuit parameters.
CO4	Perform practical operations on transformers and electrical machines.
CO5	Evaluate characteristics of semiconductor devices, rectifiers, and logic gates.
CO6	Design and execute a project integrating knowledge and skills from CO1 to CO5.

Part	Content	CO
I	To get familiar with the working of following instruments: (a) Multimeter (Analog and Digital), (b) Cathode Ray Oscilloscope, (c) Function Generator, (d) Power Supply	CO-1
	<ul style="list-style-type: none"> To verify Ohm's law and its limitations. To verify Kirchhoff's laws. To prove Superposition and Thevenin's theorem. 	CO-2
II	<ul style="list-style-type: none"> To find voltage-current relationship in R-L series circuit and to determine the power factor of the circuit. To verify line and phase voltage & current relations in balanced three-phase Star & Delta connected system. 	CO-3
	<ul style="list-style-type: none"> To perform the Star & Delta connections on three-phase transformer. To study cut-out section of DC machine. To start and reverse the direction of rotation of 3-phase induction motor. 	CO 4
III	<ul style="list-style-type: none"> To plot the forward & reverse V-I characteristics of PN junction diode. To plot and study the characteristics of Zener diode. To verify the various waveforms for rectifier circuits. To obtain the characteristics of transistor under common emitter (CE) configuration. To verify truth tables of logic gates – OR, AND, NOT, NAND, NOR, EX-OR, EX-NOR. 	CO-5
IV	<ul style="list-style-type: none"> Undertake and present a mini-project applying concepts from CO1 to CO5. 	CO-6

Suggested Readings/Books:
<ul style="list-style-type: none"> ➤ K. Bhattacharya and R.K. Rastogi, Experiments in Electrical Engineering, New Age International Publishers Ltd., New Delhi. ➤ D.R. Kohli and S.K. Jain, A Laboratory Course in Electrical Machines. VISIONIAS Publishers

1 st /2 nd Semester		AGMP 21101: MANUFACTURING PRACTICE			
Internal Marks:	60		L	T	P
External Marks:	40		0	0	4
Total Marks:	100		Credits		2

Course Outcomes: After studying the course, students will be able to:	
CO 1	Recognize equipment's ,tools and processes used in Foundry shop and welding shop..
CO 2	Explain the basic tools, equipment, and processes used in Smithy and Fitting shops.
CO 3	Apply knowledge of machine shop tools and operations to perform basic machining tasks.
CO 4	Identify electrical and electronic shop tools and recall the steps involved in PCB preparation.
CO 5	Describe sheet metal tools and operations and understand the production of sheet metal models
CO 6	Illustrate the use of carpentry tools and operations in constructing simple wooden models.

Part	Content	CO
I	Foundry Shop: Introduction to molding materials; moulds; use of cores; melting furnaces; tools and equipment used in foundry shops; firing of a cupola furnace; exercises involving preparation of small sand moulds and castings.	CO-1
	Welding Shop: Introduction to different welding methods; welding equipment; electrodes; welding joints; welding defects; exercises involving use of gas/electric arc welding.	
II	Forging Practice: Introduction to forging tools; equipments and operations; forgeability of metals; exercises on simple smithy; forging exercises.	CO-2
	Fitting Shop: Introduction of fitting practice and tools used in fitting shop; exercise involving marking, cutting, fitting practice (Right Angles), male- Female mating parts practice, trapping practice.	
	Machine Shop: Machines, Grinders etc; cutting tools and operations; exercises involving awareness.	CO-3
III	Electrical and Electronics Shop: Introduction to electrical wiring; preparation of PCBs involving soldering applied to electrical and electronic applications; exercises preparation of PCBs involving soldering applied to electrical and electronic applications.	CO-4
IV	Sheet Metal: Shop development of surfaces of various objects; sheet metal forming and joining operations, joints, soldering and brazing; exercises involving use of sheet metal forming operations for small joints.	CO-5
	Carpentry and Pattern Making: Various types of timber and practice boards, defects in timber, seasoning of wood; tools, wood operation and various joints; exercises involving use of important carpentry tools to practice various operations and making joints.	CO-6

1 st /2 nd Semester	AGCH-25101: APPLIED CHEMISTRY				
Internal Marks:	40		L	T	P
External Marks:	60		3	1	0
Total Marks:	100		Credits		4

Course Outcomes: After studying the course, students will be able to:
Classify various types of polymers and explain ideas on various manufacturing techniques.
Interpret the preparation and applications of energy storage and sensing devices.
Predict the hardness present in water and to solve the problems related to municipal water.
Identify Basic concepts of spectroscopic methods and their applicability.
Recall basic facts about engineering materials and applying various physical separation techniques of petrochemicals.
Develop new ideas on nanotechnology and their industrial applications.

Part	Content	CO
I	Polymers: Introduction, Classification, Degree of Polymerization, Functionality, Addition and Condensation Polymerization and its mechanism, Number Average and Weight Average Molecular Weight, Polarizability.	CO-1
	Energy Storage and Sensing Devices: Fundamentals of Electrochemistry, types of electrodes, Primary and Secondary Cells, Fuel cells, Batteries (Lithium-ion and Sodium-ion), Solar Cells, Sensors for IoT.	CO-2
II	Water and its treatment: Types of hardness, Heavy water, Degree of hardness, Boiler Feed Water and its internal and external treatment methods, Lime Soda Process and its numerical problems.	CO-3
	Spectroscopy & its Applications: Introduction, Electromagnetic spectrum, Absorption & Emission spectrum, Atomic & Molecular spectroscopy and its types, UV & Visible spectroscopy, Auxochromes, Chromophores, Franck- Condon Principle.	CO 4
III	Engineering materials: Properties and Application of Gypsum, Lime, Cement its types and its composition, Adhesives, Ceramics etc.	CO-5
	Petrochemicals& Organic Fuels: Introduction, First, Second & Third generation petrochemicals, Crude Oil: It's Physical Separation and its composition, Sweet and Sour Natural Gas, Production of Ethylene and Propylene and their industrial applications.	
IV	Nano-technology: Introduction, material self-assembly, molecular vs. material self-assembly, nano crystals, supramolecular structures, nanoscale materials, future perspective.	CO-6

Suggested Readings/Books:
<ul style="list-style-type: none"> ➤ Engineering Chemistry by Jain & Jain, Dhanpat Rai Pub. ➤ Engineering Chemistry by RPS Grewal, Kalyani Pub. ➤ Engineering Chemistry by B. Sivasankar, McGraw Hill. ➤ Introduction to nanotechnology by C.P. Poole, Jr, F.J Owens, Wiley Interscience, 2003.

2 nd Semester		AGHU-25201: PROFESSIONAL COMMUNICATION-II			
Internal Marks:	40		L	T	P
External Marks:	60		3	0	0
Total Marks:	100		Credits		3

Course Outcomes: After studying the course, students will be able to;	
CO-1	Understand and interpret listening strategies effectively in personal and professional contexts.
CO-2	Demonstrate effective communication and teamwork in academic and workplace settings.
CO-3	Create documentation using research and critical thinking to solve problems.
CO-4	Evaluate and reflect on textual content to gain deeper insight and informed opinions.
CO-5	Analyse verbal expressions to enhance critical thinking and reasoning.
CO-6	Justify personal viewpoints and present them confidently in interview situations

Part	Content	CO
I	Listening Skills: Purpose of Listening, Listening v/s Hearing, Active Listening- an Effective Listening Skill, Benefits of Effective Listening, Barriers to Listening, Overcoming Barriers	CO-1
II	Meeting Skills: Circulars, Notices, Agenda, Minutes of Meetings	CO-2
	Report and Proposal Writing: Introduction to Report Writing, Types of Reports, Guidelines for Writing an Effective Report, Definition, Types and Structure of Proposal Writing	CO-3
III	Text Reading: Essay: Of Studies by Francis Bacon Poem: "If" by Rudyard Kipling	CO 4
IV	Verbal Reasoning: Jumbled Sentences, Gap Filling, Verbal Analogy, Spotting Errors, Sentence Correction, Correct Spellings	CO-5
	Interview Skills: Resume Writing, How to write a resume, Importance of resume, Introduction to interview, Purpose, Guidelines and Dress Code for an effective interview, Do's and Don'ts, Commonly asked Questions in Interview	CO-6

Suggested Readings/Books:
<ul style="list-style-type: none"> ➤ Practical English Usage. Michael Swan. OUP. 1995. ➤ Remedial English Grammar. F.T. Wood. Macmillan.2007 ➤ On Writing Well. William Zinsser. Harper Resource Book. 2001 ➤ Communication Skills. Sanjay Kumar and Pushp Lata. Oxford University Press. 2011. ➤ Sharma, Arun, and Meenakshi Udhyay. Verbal Ability and Reading Comprehension. Latest ed., McGraw Hill Education

2 nd Semester		AGAM-25201: APPLIED MATHEMATICS-II			
Internal Marks:	40		L	T	P
External Marks:	60		3	1	0
Total Marks:	100		Credits		4

Course Outcomes: After studying the course, students will be able to;	
CO-1	Apply concepts of Multiple Integrals to solve Engineering and Science problems
CO-2	Classify and solve Linear Programming Problems using Graphical and Simplex methods
CO-3	Identify Differential Equations and solve them with appropriate Analytical techniques.
CO-4	Explain Modelling assumptions and derive Partial Differential Equations from physical situations
CO-5	Represent the extension from real to Complex numbers and demonstrate key applications.
CO-6	Examine the differentiability of Complex functions and interpret its implications

Part	Content	CO
I	Multiple Integration: Multiple Integration, Double integrals (Cartesian and polar), Triple integrals (Cartesian and polar) Applications of Multiple Integration: Area and Volume; Theorems of Green, Gauss and Stokes.	CO-1
	Introduction to Linear Programming: Linear programming – formulation, solution by graphical and simplex methods (Primal- Penalty, Two Phase), Special cases Dual Simplex method- Principles of Duality.	CO-2
II	Ordinary Differential Equations: Exact differential equation, reducible to exact form by integrating factors, Equations of the first order and higher degree, Clairaut's equation, Leibniz's linear and Bernoulli's equation.	CO-3
III	Linear Ordinary Differential Equations: Solution of linear Ordinary Differential Equations of second and higher order, methods of finding complementary functions and particular integrals, Special methods for finding particular integrals, Method of variation of parameters, Operator method, Cauchy's homogeneous and Legendre's linear equation.	CO 4
IV	Complex Numbers and elementary functions of complex variable: De-Moivre's theorem and its applications, Real and Imaginary parts of exponential, logarithmic functions of complex variables, Summation of trigonometric series. (C+ iS method).	CO-5
	Complex Variable: Differentiation, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate, elementary analytic functions.	CO-6

Suggested Readings/Books:
<ul style="list-style-type: none"> ➤ Thomes, G.B, Finney, R.L. Calculus and Analytic Gemetry, Ninth Edition, Peason Education ➤ Mathematical Statistics: S.C.Gupta ➤ Kreyszig, E., Advanced Engineering Mathematics, Eighth edition, John wiley. ➤ Peter. V. O' Nil, Advanced Engineering Mathematics, Wordsworth Publishing Company ➤ Jain, R.K and Lyengar, S.R.K., Advanced Engineering Mathematics, Narosa Publishing Company ➤ Grewal, B.S., Higher Engineering Mathematics, Khanna Publishers, New Delhi ➤ Taneja, H.C., Engineering Mathematics, Volume-I & Volume-II, I.K. Publisher ➤ Babu Ram, Advance engineering Mathematics, Pearson Education. ➤ Bindra,. J.S., Applied Mathematics, Volume-I, Kataria Publications

1st/2nd Semester	AGES-25101: ENVIRONMENT EDUCATION				
Internal Marks:	40		L	T	P
External Marks:	60		2	0	0
Total Marks:	100		Credits		2

Course Outcomes: After studying the course, students will be able to;	
CO1	To examine the knowledge of multidisciplinary nature of environment education.
CO2	Predict the challenges in resource management and evaluate sustainability strategies with SDG targets for balanced development
CO3	To differentiate the terms of biodiversity by citing the case studies and to study environment laws
CO4	Examine the interlink between biotic and abiotic components of ecosystem
CO5	Apply the knowledge to understand the problems of pollution and practical control measures by citing the case studies
CO6	Explain causes, impacts and mitigation strategies of climate change and evaluate human rights, gender equality, stereotypes, biases and poverty related social issues.

Part	Content	CO
I	Introduction to Environmental Sciences: Multidisciplinary nature of Environmental Sciences, Scope and Importance, Role of an individual and IT in protection, Need for public awareness.	CO-1
	Natural Resources and Sustainable Development: Definition of resources; Classification of natural resources-biotic and abiotic, renewable and non-renewable. Types of resources (Biotic resources, water resources, soil and mineral resource, energy resources). Introduction to sustainable development: Sustainable Development Goals-targets and indicators, challenges and Strategies for SDGs.	CO-2
II	Biodiversity: Levels of biodiversity, India as a mega-biodiversity nation, Hotspots, Threats to biodiversity, Conservation and Values of biodiversity, Laws of Environment, Case studies on protection of tigers and other endangered species. Wildlife Protection Act, Forest Conservation Act Field Work: To visit some sites rich in biodiversity and to prepare a report on the species available on those sites.	CO-3
III	Ecosystem: Structure and function of Ecosystem, Energy flow, food chain and food web, Ecological Pyramids.	CO 4
	Environmental Pollution: Types, Causes, effects and controls (Air, Water, Soil, Noise and Nuclear Hazards) Solid Waste Management, Pollution Case studies (Taj Mahal), Study of various types of wastes produced and their dumping spots and their consequences. Field Work: To visit various polluted sites and industries generating waste and pollution.	CO-5
IV	Climate Change and Social issues: Climate change and its impacts, adaptation and mitigation techniques for climate change, IPCC and it's laws, Economic conditions of the world related to climate change. Human rights, Women and Child Welfare Program, Understanding Gender Equality, Gender stereotypes, Gender Sensitization and biases	CO-6

Field Work

- Visit to a local polluted site- Urban/ Rural/ Industrial/ Agricultural.
- Study of various species of Plants /Animals/Birds/Insects in local and nearby regions.

- Study of simple pond ecosystem.

Suggested Readings/Books:

- Environmental Studies by Anindita Basak
- Introductory Environmental Studies by Dr. S. K. Bhasin and Dr. Varinder Kaur
- Elements of Environmental Pollution Control by O.P Gupta
- Climate Change: The Human aspects by Krishan Sehgal
- Ministry of Environment, Forest and Climate Change (2019) A Handbook on International Environment Conventions & Programmes.<https://moef.gov.in/wp-content/uploads/2020/02/convention-v-16-CURVE-web.pdf>
- Kanchi Kohli and Manju Menon (2021) Development of Environment Laws in India, Cambridge University Press.

1 st /2 nd Semester		AGCS-25101: FUNDAMENTALS OF C PROGRAMMING			
Internal Marks:	40		L	T	P
External Marks:	60		3	0	0
Total Marks:	100		Credits		3

Course Outcomes: After studying the course, students will be able to;	
CO-1	Elucidate basic structure and functionality of C programming.
CO-2	Illustrate the use of appropriate datatypes, operators and console I/O functions in program segments.
CO-3	Apply programming constructs of C language to solve variety of problems.
CO-4	Design reusable modules and analyse memory management efficiently.
CO-5	Evaluate and choose appropriate user-defined data types for optimized data handling.
CO-6	Develop modular and efficient C programs for real-life applications.

Part	Content	CO
I	Introduction to C Programming: Need of C, Features of C and Advantages & disadvantages of C Language, Converting Algorithms and Flowcharts to a C Program. Different compilers used for C Language. Source code, object code and executable code. Compiling a program, syntax errors, logical errors and runtime errors.	CO-1
	Tokens: Keywords, identifiers, constants, operators, special characters and strings, Categories of operators: unary and binary, arithmetic, relational, logical, conditional, increment/decrement, arithmetic expressions. Precedence and hierarchy of operators, Data types in C along with their size and range. Typecasting, Storage Classes: auto, static, extern and register. Data input/output using scanf() and printf() functions along with their different formats, Single character input and output functions: getchar(), getch(), putchar() variations.	CO-2
II	Control Statements: if, if else, else if ladder, nested if statements, switch case statement. Iteration and loops using while, do-while and for loops, nested loops, continue statement, break statement and go to statement. Arrays: Arrays (1-D arrays) declaration, initialization, accessing elements, Searching and sorting algorithms: Linear search and Bubble sort. Arrays (2-D arrays): Matrices and programs based on it, matrix addition, matrix multiplication, transpose of a matrix. Strings: Need for Strings, inputting and printing strings: gets() and puts(). String handling functions-strupr(), strlwr(), strcat(), strrev(), strlen(), strcpy(), strcmp(), strcmpi().	CO-3
III	Functions and Pointers: Need for functions, overhead in a function call, advantages of using functions. Function prototyping, function definition, formal and actual arguments in functions, return statement in functions, call by value and call by reference, passing arrays to functions, passing strings to functions, concept of recursion, concept of pointers, Three Basic Operations associated with pointers. Pointer arithmetic, dangling pointer. Pointer and arrays, pointer and strings, pointer and structures, malloc(), calloc(), realloc() and free().	CO 4
	Structures: Defining structures, initializing a structure, structure assignment, array of structures, nesting of structures. Unions: Defining a union, Structures Vs Unions.	CO-5
IV	File handling: Need of file handling, Text file Vs Binary file, various file opening modes, reading and writing from/to a file, putc(), getc(), putw(), getw(), fscanf(), fprintf(), fgets(), fputs(), fseek, ftell searching from a file, updating contents of a file, deleting contents of a file, copying contents of a file to another file, errors handling functions in files.	CO-6

Suggested Readings/Books:	
➤	Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language, 2nd Edition, Prentice Hall / Pearson Education, 1988.
➤	E. Balagurusamy, Programming in ANSI C, 8th Edition, McGraw Hill Education, 2019.
➤	Yashavant Kanetkar, Let Us C, 17th Edition, BPB Publications, 2023.
➤	K. N. King, C Programming: A Modern Approach, 2nd Edition, W. W. Norton & Company, 2008.

2 nd Semester		AGHU-25202: PROFESSIONAL COMMUNICATION Lab-II			
Internal Marks:	30		L	T	P
External Marks:	20		0	0	2
Total Marks:	50		Credits		1

Course Outcomes: After studying the course, students will be able to;	
CO 1	Interpret and articulate ideas effectively in presentation.
CO 2	Recall essential phonetic principles to enhance pronunciation accuracy.
CO 3	Design and deliver compelling narratives
CO 4	Apply effective soft skills in communication to build and maintain positive relationships.
CO 5	Evaluate arguments and enhance effective verbal and non-verbal communication.
CO 6	Analyse information by listening carefully and accurately interpreting its meaning.

Part	Content	CO
I	<ul style="list-style-type: none"> Power Point Presentation Practice on current and general topics (e.g., environment, technology, social issues) Building skills in expressing opinions clearly and respectfully 	CO-1
II	<ul style="list-style-type: none"> Software- Based Learning Utilizing computer assisted language learning software (EWL) for self-paced learning and practice. (Module: Phonetics) 	CO-2
	<ul style="list-style-type: none"> Activity: Storytelling and Narrative Skills Crafting and telling short stories Using descriptive language and expression 	CO-3
III	<ul style="list-style-type: none"> Software- Based Learning Utilizing computer assisted language learning software (EWL) for self-paced learning and practice. (Module: Advanced Learning & Soft Skills) 	CO-4
IV	<ul style="list-style-type: none"> Debate Debate on current topics and social issues Critical thinking and argumentation 	CO-5
	<ul style="list-style-type: none"> Listening Tasks Listening different audio clips to solve worksheets 	CO-6

Suggested Readings/Books:

- The Audio CD accompanying S.P. Dhanavel' s Book (Part 1 & 2)
- English Lab Software by Bureau for Health and Education Status Upliftment
- Various Video lectures on Power Point Presentation and Group Discussion (iv) Soft Skills for Everyone, Butterfield Jeff, Cengage Publications, 2011.
- Technical Communication, Meenakshi Raman & Sangeeta Sharma, OU Press 2009

1 st /2 nd Semester		AGCH-25102: APPLIED CHEMISTRY LAB			
Internal Marks:	30		L	T	P
External Marks:	20		0	0	2
Total Marks:	50		Credits		1

Course Outcomes: After studying the course, students will be able to;	
CO1	Synthesize thermosetting polymer and a drug molecule and to analyse the properties.
CO2	Evaluate the hardness of water using complexometric titration.
CO3	Explain ideas on various separation methods like paper chromatography.
CO4	Examine surface tension, viscosity and amount of chlorine present in water sample.
CO5	Apply the concept of conductivity.
CO6	Create a mini project related to the course AGCH-25101(Fundamentals of Applied chemistry)

Part	Content	CO
A	To Synthesize polymer Phenol Formaldehyde Resin (Bakelite) To Synthesize a Drug molecule Aspirin	CO-1
	Determination of hardness of water using EDTA by conductometric titration	CO-2
	Separation of components using chromatographic technique (Paper Chromatography)	CO-3
	Measurement of Surface Tension and Viscosity of fluid. Determination of residual chlorine in a water sample.	CO 4
	Determination of strength of an acid using Conductivity meter.	CO-5
B	Mini Project related to topics: <ul style="list-style-type: none"> To measure and compare the p-H of cleaners, sodas etc using cabbage juice indicators and to explore acids, bases and p-H scales To vary baking ingredients like sugar powder, eggs, baking powder and baking soda in recipes and to study the chemical effects on taste, texture and rise. To generate electricity in lemon and potato batteries 	CO-6

Suggested Readings/Books:

- Engineering Chemistry Practical by Nagendar Mani Khadka .
- Laboratory Manual Engg. Chemistry , Anupama Rajput

1 st /2 nd Semester		AGCS-25102: FUNDAMENTALS OF C PROGRAMMING LAB			
Internal Marks:	30		L	T	P
External Marks:	20		0	0	4
Total Marks:			Credits		2

Course Outcomes: After studying the course, students will be able to;	
CO-1	Recall and explain the basic foundational elements of C programming.
CO-2	Illustrate the use of conditional statements and looping constructs to control program flow.
CO-3	Apply user defined datatypes like array to solve computational problems.
CO-4	Demonstrate reusability by implementing functions and adopting strategies for efficient memory management.
CO-5	Evaluate and choose appropriate user-defined data types for optimized data handling.
CO-6	Implement an integrated mini project using file handling with CRUD modules.

Part	Content	CO
A	Basics of C program: Tokens, categories of operators with precedence, data types with size and range, type casting, and storage classes. Formatted input/output using scanf() and printf() along with single-character I/O functions like getchar(), getche(), getch(), putchar() variations.	CO-1
	Implementation of conditional statements (if, if-else, switch) and looping constructs (for, while, do-while) to control program flow for various problem-solving scenarios.	CO-2
	Programs on 1D and 2D arrays for searching, sorting, and matrix operations; string operations using standard library functions.	CO-3
	Modular programming- writing user-defined functions, parameter passing, recursion, passing arrays/strings to functions. Dynamic memory allocation (malloc, calloc, realloc, free) and pointer arithmetic applications.	CO 4
	Structures, arrays of structures, nested structures, unions, and pointer-based programs (arrays, strings, and structures).	CO-5
B	To make a mini project through file handling by implementing various file operations: Insert, Delete, Update, Display and Search modules should be covered by each project File handling with CRUD modules.	CO-6

1 st /2 nd Semester	AGME-25101: Engineering Drawing & Graphics				
Internal Marks:	30		L	T	P
External Marks:	20		0	0	4
Total Marks:	50		Credits		2

Course Outcomes: After studying the course, students will be able to;	
CO1	Recognize the BIS standards and state the importance of engineering drawing
CO2	Explain the fundamentals of the 2D CAD interface, various settings, and the functions of basic drawing tools.
CO3	Apply the principles of first and third angle projections, projection of points, lines, and planes, principal views, and the quadrant system in engineering drawing.
CO4	Identify the essential steps and conventions used to create orthographic views from objects or isometric drawings using manual and AutoCAD techniques.
CO5	Describe how internal features of solids are represented through sectional projections using both manual and AutoCAD methods.
CO6	Construct precise isometric views from given orthographic drawings by applying manual and AutoCAD methods.

I	Introduction: Manual Drawing: Importance of engineering drawing, BIS standards, drawing instruments. CAD Practice: Introduction to AutoCAD interface, coordinate systems, units & limits	CO-1
	Dimensioning conventions of drawings using editing tools & layers: Manual Drawing: Sectional views, dimensioning methods & conventions. CAD Practice: Text, dimensions, leaders, tolerance, dimension styles	CO-2
II	Projection Basics: Manual Drawing: Lines, lettering, scales, geometrical constructions. CAD Practice: Basic drawing commands (line, circle, polygon, ellipse, arc, rectangle)	CO-3
	Orthographic Projection (Manual & CAD): Manual Drawing: Principles of Orthographic Projections; converting isometric views to orthographic; conventions and dimensioning standards. CAD Practice: Drawing orthographic views in CAD using AutoCAD tools.	CO 4
III	Solid Section (Sectional Projections in Manual & CAD): Manual Drawing: Introduction, Sectioning solids; full and half sections; hatching; floor plans that include windows, doors, and machine parts. CAD Practice: Creating sectional views of solids using hatching tools.	CO-5
IV	Isometric Projection (Manual & CAD): Manual Drawing: Introduction, Principles of Isometric Projection; isometric scale; isometric views and conventions; converting orthographic views to isometric projection. CAD Practice: Creating isometric views using AutoCAD.	CO-6

Suggested Readings/Books:

- Engineering Drawing- Basant Agarwal, TMH
- D. M. Kulkarni, A. P. Rastogi, and A. K. Sarkar (2009), Engineering Graphicswith AutoCAD, PHI Learning Private Limited, New Delhi.
- P.S Gill, "Engineering Drawing", S K Kataria and sons, 18th edition, 2017 reprint
- Jolhe, Dhananjay (2006), Engineering Drawing: With an Introduction toCAD, Tata Mc Graw Hill, India.
- N. D. Bhat (2006), Engineering Drawing, Charotar Publications, New Delhi.

1 st /2 nd Semester		EMC-25101: Entrepreneurship Setup and Launch			
Internal Marks:	60		L	T	P
External Marks:	40		0	0	4
Total Marks:	100		Credits		2

Introduction:

This semester lays the foundation for the learner to understand what entrepreneurship is, beyond just starting a business. It introduces key ideas like problem-solving, value creation, and self-awareness. The learner will begin exploring basic business concepts while discovering their own interests and strengths.

Learners Objective:

1. Understand the core concepts of entrepreneurship through relatable, real-life examples.
2. Begin to see themselves as problem-solvers and creators.
3. Learn about business paths and choose one to try based on interest or local fit.
4. Launch a micro-hustle (online or offline) to earn their first income.
5. Build confidence and self-belief by doing.

Outcome:

By the end of this semester, learners will start a simple business activity, earn their first income, and build belief in their ability to do business.

Guiding Principles/Approach:

This syllabus is built on principles of **experiential learning, growth mindset development, and identity-first learning**. Drawing from learning science and behaviour design, the course shifts students from passive learning to *active doing*, where they try out small business activities in real contexts. The design helps students not just learn entrepreneurship but begin to see themselves as entrepreneurs. Emphasis is placed on *small wins, peer collaboration, and locally relevant opportunities* to ensure learning feels achievable and connected to their realities. The curriculum focuses on conceptual understanding without heavy theory, combining *practical action, reflection, and collaboration*. *By making progress visible and success feel possible, it plants the seeds of self-reliance, initiative, and long-term motivation.*

Semester Syllabus:

Format: 12 weeks, 4 hours/week | 2 credits

Revenue Target: ₹10,000

Week	Learning Goal	Measurable Outcome
1	Understand what entrepreneurship is and who can be an entrepreneur	Students define entrepreneurship in their own words and list 2 entrepreneurs from their local area or community
2	Connect personal identity to entrepreneurship (strengths, interests, struggles)	Students create a “value map” showing how a skill/interest/problem from their life could become a business opportunity
3	Learn about 5 business paths: content creation, drop-shipping, cloud kitchen/food business, gig economy and local services	Students explore 1–2 examples from each domain and share one they’re most curious to try and why

4	Choose a path and generate a basic business idea	Students write down a clear offer (what, for whom, why) and one way to reach their customer
5	Take first real action: message, post, pitch, or sell	Students reach out to or serve 1 real potential customer and record what happened
6	Reflect on first attempt and share with peers	Students share their result, a challenge faced, and one idea to improve next time
7	Improve and try again: aim for first ₹100	Students apply a change, try again, and aim to make their first ₹100 or get meaningful response
8	Learn how to identify and understand your target customer	Students talk to 2 potential customers or observe them and list 3 insights about their needs
9	Learn how to serve your target audience better	Students improve one part of their offer (product, delivery, messaging, or interaction) based on customer feedback or need
10	Explore core entrepreneurial values (resilience, honesty, effort)	Students reflect on 1 value they're building and show it in a business task or peer story
11	Focus on earning and staying consistent	Students complete a second earning task and track their consistency (e.g., same product or message for 3 days)
12	Reflect on earnings, grit, and how to keep going	Students record total earnings, one resilience moment, and one support system or habit they'll continue with