

# **Study Scheme & Syllabus of**

## **Bachelor of Technology**

### **(Agricultural Engineering)**

## **Batch 2025 onwards**



By

Department of Academics

**I.K. Gujral Punjab Technical University**

## Study Scheme & Syllabus of B. Tech Agricultural Engg. for batch 2025 onwards

| SEMESTER 1 <sup>st</sup> |                                        | Contact Hrs. |          |           | Marks                          |            |             | Credits    |
|--------------------------|----------------------------------------|--------------|----------|-----------|--------------------------------|------------|-------------|------------|
| Subject Code             | Subject Name                           | L            | T        | P         | Int.                           | Ext.       | Total       |            |
| <b>BTAG101-22</b>        | Engineering Mathematics-I              | 2            | 1        | 0         | 40                             | 60         | 100         | 3          |
| <b>BTAG102-22</b>        | Engineering Physics                    | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| <b>BTAG103-22</b>        | Engineering Chemistry                  | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| <b>BTAG104-22</b>        | Principles of Soil Science             | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| <b>BTAG105-22</b>        | Surveying and Levelling                | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| <b>BTAG106-22</b>        | Engineering Mechanics                  | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| <b>BTAG107-22</b>        | Heat and Mass Transfer                 | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| <b>BTAG109-22</b>        | Engineering Physics Lab                | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| <b>BTAG110-22</b>        | Engineering Chemistry Lab              | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| <b>BTAG111-22</b>        | Principles of Soil Science Lab         | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| <b>BTAG112-22</b>        | Surveying and Levelling Lab            | 0            | 0        | 4         | 30                             | 20         | 50          | 2          |
| <b>BTAG113-22</b>        | Engineering Mechanics Lab              | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| <b>BTAG114-22</b>        | Engineering Drawing                    | 0            | 0        | 4         | 60                             | 40         | 100         | 2          |
| <b>BTAG115-22</b>        | Mentoring and Professional Development | 0            | 0        | 2         | Satisfactory / Un-Satisfactory |            |             | Non-Credit |
| <b>Total</b>             |                                        | <b>13</b>    | <b>1</b> | <b>18</b> | <b>490</b>                     | <b>560</b> | <b>1050</b> | <b>22</b>  |

## Study Scheme & Syllabus of B. Tech Agricultural Engg. for batch 2025 onwards

| SEMESTER 2 <sup>nd</sup> |                                                      | Contact Hrs. |          |           | Marks                          |            |             | Credits    |
|--------------------------|------------------------------------------------------|--------------|----------|-----------|--------------------------------|------------|-------------|------------|
| Subject Code             | Subject Name                                         | L            | T        | P         | Int.                           | Ext.       | Total       |            |
| BTAG201-22               | Engineering Mathematics-II                           | 2            | 1        | 0         | 40                             | 60         | 100         | 3          |
| BTAG202-22               | Environmental Science and Disaster Management        | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG203-22               | Entrepreneurship Development and Business Management | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG204-22               | Fluid Mechanics and Open Channel Hydraulics          | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG205-22               | Strength of Materials                                | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| BTAG206-22               | Theory of Machines                                   | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| BTAG207-22               | Web Designing and Internet Applications              | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG208-22               | Workshop Technology and Practice                     | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| BTAG209-22               | Environmental Science and Disaster Management Lab    | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG211-22               | Fluid Mechanics and Open Channel Hydraulics Lab      | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG212-22               | Strength of Materials Lab                            | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG213-22               | Web Designing and Internet Applications Lab          | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG214-22               | Workshop Technology and Practice                     | 0            | 0        | 4         | 60                             | 40         | 100         | 2          |
| BTAG215-22               | Mentoring and Professional Development               | 0            | 0        | 2         | Satisfactory / Un-Satisfactory |            |             | Non-Credit |
| EMC-101                  | Entrepreneurship Setup and Launch **                 | 0            | 0        | 4         | 60                             | 40         | 100         | 2          |
| <b>Total</b>             |                                                      | <b>13</b>    | <b>1</b> | <b>18</b> | <b>560</b>                     | <b>640</b> | <b>1200</b> | <b>22</b>  |

\*\*The department of Higher Education and Languages, Government of Punjab endeavor to AI-powdered entrepreneurship learning platform on the said course. The Institute /Campus shall appoint an assistant professor as faculty coordinator.

## ENGINEERING MATHEMATICS-I

### Subject Code: BTAG101-22

Matrices: Elementary transformations, rank of a matrix, reduction to normal form, Gauss- Jordan method to find inverse of a matrix, Eigen values and Eigen vectors, Cayley-Hamilton theorem, linear transformation, orthogonal transformations, diagonalisation of matrices, quadratic forms. PAQ form, Echelon form, Solution of linear equations, nature of rank, using Cayley-Hamilton theorem to find inverse of A.

Differential calculus: Taylor's and Maclaurin's expansions; indeterminate form; curvature, function of two or more independent variables, partial differentiation, homogeneous functions and Euler's theorem, composite functions, total derivatives, maxima and minima.

Integral calculus: volumes and surfaces of revolution of curves; double and triple integrals, change of order of integration, application of double and triple integrals to find area and volume.

Vector calculus: Differentiation of vectors, scalar and vector point functions, vector differential operator Del, Gradient of a scalar point function, Divergence and Curl of a vector point function and their physical interpretations, identities involving Del, second order differential operator; line, surface and volume integrals, Stoke's, divergence and Green's theorems (without proofs).

### Recommended Books:

1. Narayan Shanti. 2004. Differential Calculus. S. Chand and Co. Ltd. New Delhi.
2. Narayan Shanti. 2004. Integral Calculus. S. Chand and Co. Ltd. New Delhi.
3. Grewal B S. 2004. Higher Engineering Mathematics. Khanna Publishers Delhi.
4. Narayan Shanti. 2004. A Text Book of Vector. S. Chand and Co. Ltd. New Delhi.

## ENGINEERING PHYSICS

### Subject Code: BTAG102-22

Dia, Para and ferromagnetism-classification. Langevin theory of dia and paramagnetism. Adiabatic demagnetization. Weiss molecular field theory and ferromagnetism. Curie-Weiss law.

Wave particle quality, de-Broglie concept, uncertainty principle. Wave function. Time dependent and time independent Schrodinger wave equation, Qualitative explanation of Zeeman effect, Stark effect and Paschan Back effect, Raman spectroscopy. Statement of Bloch's function. Bands in solids, velocity of Bloch's electron and effective mass.

Distinction between metals. insulators and semiconductors. Intrinsic and extrinsic semiconductors, law of mass action. Determination of energy gap in semiconductors. Donors and acceptor levels. Superconductivity, critical magnetic field. Meissner effect. Isotope effect. Type-I and II superconductors, Josephson's effect DC and AC, Squids. Introduction to high  $T_c$  superconductors. Spontaneous and stimulated emission,

Einstein A and B coefficients. Population inversion, He-Ne and Ruby lasers. Ammonia and Ruby masers, Holography-Note. Optical fiber. Physical structure. basic theory. Mode type, input output characteristics of optical fiber and applications. Illumination: laws of illumination, luminous flux, luminous intensity, candle power, brightness.

### Recommended Books:

1. Brijlal and Subrahmanyam. Text Book of optics. S. Chand and Co., New Delhi.
2. Sarkar Subir Kumar. Optical State Physics and Fiber Optics. S. Chand and Co., New Delhi.
3. Gupta S L, Kumar V Sharma R C. Elements of Spectroscopy. Pragati Prakasam, Meeruth.

## ENGINEERING CHEMISTRY

### Subject Code: BTAG103-22

Phase rule and its application to one and two component systems.

Fuels: classification. calorific value. Colloids: classification. properties.

Corrosion: causes. types and method of prevention.

Water: temporary and permanent hardness. disadvantages of hard water, scale and sludge formation in boilers, boiler corrosion.

Analytical methods like thermo-gravimetric, polarographic analysis, nuclear radiation detectors and analytical applications of radioactive materials.

Enzymes and their use in the manufacturing of ethanol and acetic acid by fermentation methods. Principles of food chemistry. Introduction to lipids, proteins, carbohydrates, vitamins, food preservatives, colouring and flavouring reagents of food.

Lubricants: properties. mechanism. classification and tests. Polymers. types of polymerization. properties. uses and methods for the determination of molecular weight of polymers. Introduction to IR spectroscopy.

#### Recommended Books:

1. Jain P L and Jain M. 1994. Engineering Chemistry. Danpat Rai publishing company Pvt. Ltd., Delhi.
2. Bahl B S, Arun Bahl and Tuli B D. 2007. Essentials of Physical Chemistry. S. Chand and Co. Ltd., Delhi.

## PRINCIPLES OF SOIL SCIENCE

### Subject Code: BTAG104-22

Nature and origin of soil; soil forming rocks and minerals, their classification and composition, soil forming processes.

Classification of soils – soil taxonomy orders; important soil physical properties; and their importance; soil particle distribution; soil inorganic colloids – their composition, properties and origin of charge; ion exchange in soil and nutrient availability.

Soil organic matter – its composition and decomposition, effect on soil fertility; soil reaction – acidic, saline and sodic soils; quality of irrigation water; essential plant nutrients – their functions and deficiency symptoms in plants.

Important inorganic fertilizers and their reactions in soils. Use of saline and sodic water for crop production, Gypsum requirement for reclamation of sodic soils and neutralising RSC; Liquid fertilisers and their solubility and compatibility.

#### Recommended Books:

1. Brady Nyle C and Ray R Well. 2002. Nature and properties of soils. Pearson Education Inc., New Delhi.
2. Indian Society of Soil Science. 1998. Fundamentals of Soil Science. IARI, New Delhi.
3. Sehgal J.. A. Textbook of Pedology Concepts and Applications. Kalyani Publishers, New Delhi.
4. Hillel D. 1982. Introduction to Soil Physics. Academic Press, London.

## SURVEYING AND LEVELLING

### Subject Code: BTAG105-22

Surveying: Introduction, classification and basic principles, Linear measurements. Chain surveying. Cross staff survey, Compass survey.

Planimeter, Errors in measurements, their elimination and correction. Plane table surveying.

Levelling, Leveling difficulties and error in leveling, Contouring, Computation of area and volume. Theodolite traversing.

Introduction to setting of curves. Total station, Electronic Theodolite. Introduction to GPS survey.

#### Recommended Books:

1. B.C. Punamia, 'Surveying and Levelling', Vol-I & Vol-II, Laxmi Publications, **2005**.
2. Kanetkar & Kulkarni, 'Surveying and Levelling Part-1', Vidyarthi Griha Prakashan, Pune.
3. S.K. Duggal, 'Surveying', Vol I & II, Tata McGraw Hill, **2006**.
4. R. Agor, 'Surveying', Khanna Publishers.
5. S.S. Bhavikatti, 'Surveying & Levelling', Vol. I & II, **2009**.

## ENGINEERING MECHANICS

### Subject Code: BTAG106-22

Basic concepts of Engineering Mechanics. Force systems, Centroid, Moment of inertia, Free body diagram and equilibrium of forces.

Frictional forces Analysis of simple framed structures using methods of joints, methods of sections and graphical method.

Simple stresses. Shear force and bending moment diagrams. Stresses in beams. Torsion. Analysis of plane and complex stresses.

#### Recommended Books:

1. Sundarajan V 2002. Engineering Mechanics and Dynamics. Tata McGraw Hill Publishing Co. Ltd., New Delhi.
2. Timoshenko S and Young D H 2003. Engineering Mechanics. McGraw Hill Book Co., New Delhi.
3. Prasad I B 2004. Applied Mechanics. Khanna Publishers, New Delhi.
4. Prasad I B 2004. Applied Mechanics and Strength of Materials. Khanna Publishers, New Delhi.
5. Bansal R K 2005. A Text Book of Engineering Mechanics. Laxmi Publishers, New Delhi.

## HEAT AND MASS TRANSFER

### Subject Code: BTAG107-22

Concept, modes of heat transfer, thermal conductivity of materials, measurement. General differential equation of conduction.

One dimensional steady state conduction through plane and composite walls, tubes and spheres with and without heat generation. Electrical analogy. Insulation materials.

Fins, Free and forced convection. Newton's law of cooling, heat transfer coefficient in convection. Dimensional analysis of free and forced convection. Useful non dimensional numbers. Equation of laminar boundary layer on flat plate and in a tube. Laminar forced convection on a flat plate and in a tube. Combined free and forced convection.

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Introduction. Absorptivity, reflectivity and transmissivity of radiation. Black body and monochromatic radiation, Planck's law, Stefan- Boltzman law, Kirchoff's law, grey bodies and emissive power, solid angle, intensity of radiation. Radiation exchange between black surfaces, geometric configuration factor.

Heat transfer analysis involving conduction, convection and radiation by networks. Types of heat exchangers, fouling factor, log mean temperature difference, heat exchanger performance, transfer units. Heat exchanger analysis restricted to parallel and counter flow heat exchangers.

Steady state molecular diffusion in fluids at rest and in laminar flow, Fick's law, mass transfer coefficients. Reynold's analogy.

### Recommended Books:

1. Geankoplis C.J. 1978. Transport Processes and Unit Operations. Allyn and Bacon Inc., Newton, Massachusetts.
2. Holman J P. 1989. Heat Transfer. McGraw Hill Book Co., New Delhi.
3. Incropera F P and De Witt D P. 1980. Fundamentals of Heat and Mass Transfer. John Wiley and Sons, New York.
4. Gupta C P and Prakash R. 1994. Engineering Heat Transfer. Nem Chand and Bros., Roorkee.

## ENGINEERING PHYSICS LAB

**Subject Code: BTAG108-22**

To find the frequency of A.C. supply using an electrical vibrator; To find the low resistance using Carey Foster bridge without calibrating the bridge wire; To determine dielectric constant of material using De Sauty's bridge; To determine the value of specific charge ( $e/m$ ) for electrons by helical method; To study the induced e.m.f. as a function of velocity of the magnet; To obtain hysteresis curve (B-H curve) on a C.R.O. and to determine related magnetic quantities; To study the variation of magnetic field with distance along the axis of a current carrying circular coil and to detuning the radius of the coil; To determine the energy band gap in a semiconductor using a p-n Junction diode; To determine the slit width from Fraunhofer diffraction pattern using laser beam; To find the numerical aperture of optical fiber: To set up the fiber optic analog and digital link; To study the phase relationships in L.R. circuit; To study LCR circuit; To study the variations of thermo emf of a copper-constantan thermo-couple with temperature; To find the wave length of light by prism.

## ENGINEERING CHEMISTRY LAB

**Subject Code: BTAG109-22**

Determination of temporary and permanent hardness of water by EDTA method: Estimation of chloride in water: Estimation of dissolved oxygen in water: Determination of BOD in water sample: Determination of COD in water sample: Estimation of available chlorine in bleaching powder: Determination of viscosity of oil: Estimation of activity of water sample: Estimation of alkalinity of water sample: Determination of carbonate and non- carbonate hardness by soda reagent: Determination of coagulation of water and chloride ion content: Determination of specific rotation of an optically active compound: Determination of  $X_{\text{max}}$  and verification of Beer Lambert Law: Determination of calorific value of fuel: Identification of functional groups (alcohol, aldehyde, ketones, carboxylic acid and amide) by IR: Chromatographic analysis: Determination of molar refraction of organic compounds.

### PRINCIPLES OF SOIL SCIENCE LAB

**Subject Code: BTAG110-22**

Identification of rocks and minerals; Examination of soil profile in the field; Collection of Soil Sample; Determination of bulk density; particle density and porosity of soil; Determination of organic carbon of soil; Determination of Nitrogen, Determination of Phosphorus and Determination of Potassium; Identification of nutrient deficiency symptoms of crops in the field; Determination of gypsum requirement of sodic soils; Determination of water quality parameters.

### SURVEYING AND LEVELLING LAB

**Subject Code: BTAG111-22**

Chain survey of an area and preparation of map; Compass survey of an area and plotting of compass survey; Plane table surveying; Levelling. L section and X sections and its plotting; Contour survey of an area and preparation of contour map; Introduction of software in drawing contour; Theodolite surveying; Ranging by Theodolite, Height of object by using Theodolite; Setting out curves by Theodolite; Minor instruments. Use of total station.

### ENGINEERING MECHANICS LAB

**Subject Code: BTAG112-22**

Problems on composition and resolution of forces, moments of a force, couples, transmission of a couple, resolution of a force into a force & a couple; Problems relating to resultant of; Coplaner force system, collinear force system, concurrent force system, co-planer concurrent force system, co-planer non-concurrent force system, Non-coplaner concurrent force system, Non-coplaner non-concurrent force system, system of couples in space; Problems relating to centroids of composite areas; Problems on moment of inertia, polar moment of inertia, radius of gyration, polar radius of gyration of composite areas; Equilibrium of concurrent – co-planer and non concurrent – co-planer force systems; Problems involving frictional forces; Analysis of simple trusses by method of joints and method of sections; Analysis of simple trusses by graphical method; Problems relating to simple stresses and strains; Problems on shear force and bending moment diagrams; Problems relating to stresses in beams; Problems on torsion of shafts; Analysis of plane and complex stresses.

### ENGINEERING DRAWING

**Subject Code: BTAG113-22**

Introduction of drawing scales; First and third angle methods of projection. Principles of orthographic projections; Reference planes; Points and lines in space and traces of lines and planes; Auxiliary planes and true shapes of oblique plain surface; True length and inclination of lines; Projections of solids (Change of position method, alteration of ground lines); Section of solids and Interpenetration of solid surfaces; Development of surfaces of geometrical solids; Isometric projection of geometrical solids. Preparation of working drawing from models and isometric views. Drawing of missing views. Different methods of dimensioning. Concept of sectioning. Revolved and oblique sections. Sectional drawing of simple machine parts. Types of rivet heads and riveted joints. Processes for producing leak proof joints. Symbols for different types of welded joints. Nomenclature, thread profiles, multi start threads, left and right hand threads. Square headed and hexagonal nuts and bolts. Conventional representation of threads. Different types of lock nuts, studs, machine screws, cap screws and wood screws. Foundation bolts. Forms of screw threads, representation of threads, Bolts- headed centre, stud screws, set screws, butt, hexagonal and square; keys-types, taper, rank taper, hollow saddle etc.

**MENTORING AND PROFESSIONAL DEVELOPMENT**

**Subject Code:** BTAG114-22

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

**Part – A (Class Activities)**

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

**Part – B (Outdoor Activities)**

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

## ENGINEERING MATHEMATICS-II

**Subject Code: BTAG201-22**

Ordinary differential equations: Exact and Bernoulli's differential equations, equations reducible to exact form by integrating factors, equations of first order and higher degree, Clairaut's equation, Differential equations of higher orders, methods of finding complementary functions and particular integrals, method of variation of parameters, Cauchy's and Legendre's linear equations, simultaneous linear differential equations with constant coefficients, series solution techniques, Bessel's and Legendre's differential equations.

Functions of a Complex variable: Limit, continuity and analytic function, Cauchy-Riemann equations, Harmonic functions. Infinite series and its convergence, periodic functions, Fourier series, Euler's formulae, Dirichlet's conditions, functions having arbitrary period, even and odd functions, half range series, Harmonic analysis. Fourier Sine and Cosine Series, Fourier series for function having period  $2L$ , Elimination of one and two arbitrary function.

Partial differential equations: Formation of partial differential equations Higher order linear partial differential equations with constant coefficients, solution of non-linear partial differential equations, Charpit's method, application of partial differential equations (one dimensional wave and heat flow equations, Laplace Equation.

### Recommended Books:

1. Narayan Shanti. 2004. A Text Book of Matrices. S. Chand and Co. Ltd. New Delhi.
2. Grewal B S. 2004. Higher Engineering Mathematics. Khanna Publishers Delhi.
3. Ramana B V. 2008. Engineering Mathematics. Tata McGraw-Hill. New Delhi.

## ENVIRONMENTAL SCIENCE AND DISASTER MANAGEMENT

**Subject Code: BTAG202-22**

### *Environmental Studies:*

Scope and importance. Natural Resources: Renewable and non-renewable resources Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Ecosystems: Concept, Structure, function, Producers, consumers, decomposers, Energy flow, ecological succession, food chains, food webs, ecological pyramids. Introduction, types, characteristic features, structure and function of the forest, grassland, desert and aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Biodiversity and its conservation: Introduction, definition, genetic, species & ecosystem diversity and biogeographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels, India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Environmental Pollution: definition, cause, effects and control measures of a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards. Solid Waste Management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies.

Social Issues and the Environment from Unsustainable to Sustainable development, Urban problems related to energy. Water conservation, rain water harvesting, watershed management.

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Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation.

Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme.

Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

### *Disaster Management:*

Natural Disasters and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves. Climatic change: global warming, Sea level rise, ozone depletion.

Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents.

Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community-based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

### **Recommended Books:**

1. Bharucha Erach. 2005. Text Book of Environmental Studies for Undergraduate Courses. University Grants Commission, University Press, Hyderabad.
2. Sharma J P. 2003. Introduction to Environment Science. Lakshmi Publications.
3. Chary Manohar and Jaya Ram Reddy. 2004. Principles of Environmental Studies. BS Publishers, Hyderabad.
4. Kaul S N, Ashuthosh Gautam. 2002. Water and Waste Water Analysis. Days Publishing House, Delhi.

## **ENTREPRENEURSHIP DEVELOPMENT AND BUSINESS MANAGEMENT**

### **Subject Code: BTAG203-22**

Entrepreneurship, management – Management functions – planning- Organizing -Directing –motivation – ordering – leading – supervision-Communication and control – Capital – Financial management – importance of financial statements – balance sheet – profit and loss statement, Analysis of financial statements – liquidity ratios – leverage ratios, Coverage ratios – turnover ratios – profitability ratios.

Agro-based industries – Project – project cycle – Project appraisal and evaluation techniques – undiscounted measures – payback period – proceeds per rupee of outlay, Discounted measures – Net Present Value (NPV) – Benefit-Cost Ratio (BCR) – Internal Rate of Return (IRR) – Net benefit investment ratio (N / K ratio) – sensitivity analysis-Importance of agribusiness in Indian economy.

International trade-WTO agreements – Provisions related to agreements in agricultural and food commodities. Agreements on agriculture (AOA) – Domestic supply, market access, export subsidies agreements on sanitary and phyto-sanitary (SPS) measures, Trade related intellectual property rights (TRIPS). Development (ED): Concept of entrepreneur and entrepreneurship.

Assessing overall business environment in Indian economy– Entrepreneurial and managerial characteristics- Entrepreneurship development Programmes (EDP)- Generation incubation and commercialization of ideas and innovations- Motivation and entrepreneurship development- Globalization and the emerging business entrepreneurial environment. Managing an enterprise: Importance of planning, budgeting, monitoring evaluation and follow-up managing competition.

Role of ED in economic development of a country- Overview of Indian social, political systems and their implications for decision making by individual entrepreneurs- Economic system and its implications for decision making by individual entrepreneurs- Social responsibility of business. Morals and ethics in enterprise management- SWOT analysis- Government schemes and incentives for promotion of entrepreneurship. Government policy on small and medium enterprises (SMEs)/SSIs/MSME sectors- Venture capital (VC), contract farming (CF) and joint ventures (JV), public-private partnerships (PPP)- Overview of agricultural engineering industry, characteristics of Indian farm machinery industry.

**Recommended Books:**

1. Joginder Singh, Lekhi R.K. 2018. Agricultural Marketing Trade & Prices an Indian Perspective, Kalyani Publisher, India.
2. Harsh, S.B., Conner, U.J. and Schwab, G.D. 1981. Management of the Farm Business. Prentice Hall Inc., New Jersey.
3. Joseph, L. Massie. 1995. Essentials of Management. Prentice Hall of India Pvt. Ltd., New Delhi.
4. Omri Rawlins, N. 1980. Introduction to Agribusiness. Prentice Hall Inc., New Jersey
5. Gittenger Price, J. 1989. Economic Analysis of Agricultural Projects. John Hopkins University, Press, London.

**FLUID MECHANICS AND OPEN CHANNEL HYDRAULICS**

**Subject Code: BTAG204-22**

Properties of fluids: Ideal and real fluid. Pressure and its measurement, Pascal's law, pressure forces on plane and curved surfaces, centre of pressure, buoyancy, meta centre and meta centric height, condition of floatation and stability of submerged and floating bodies.

Kinematics of fluid flow: Lagrangian and Eulerian description of fluid motion, continuity equation, path lines, streak lines and stream lines, stream function, velocity potential and flow net. Types of fluid flow, translation, rotation, circulation and vorticity, Vortex motion; Dynamics of fluid flow, Bernoulli's theorem, venturimeter, orifice meter and nozzle, siphon; Laminar flow: Stress strain relationships, flow between infinite parallel plates both plates fixed, one plate moving, discharge, average velocity; Laminar and turbulent flow in pipes, general equation for head loss Darcy, Equation, Moody's diagram,

Minor and major hydraulic losses through pipes and fittings, flow through network of pipes, hydraulic gradient and energy gradient; Flow through orifices (Measurement of Discharge, Measurement of Time), Flow through Mouthpieces, Flow over Notches, Flow over weirs, Chezy's formula for loss of head in pipes, Flow through simple and compound pipes.

Open channel design and hydraulics: Chezy's formula, Bazin's formula, Kutter's Manning's formula, Velocity and Pressure profiles in open channels, Hydraulic jump; Dimensional analysis and similitude: Rayleigh's method and Buckingham's 'Pi' theorem, types of similarities, dimensional analysis, dimensionless numbers. Introduction to fluid machinery.

**Recommended Books:**

1. Khurmi, R .S. 1970. A Text Book of Hydraulics, Fluid Mechanics and Hydraulic Machines S. Chand & Company Limited, New Delhi.
2. Modi P M and Seth S.M.1973. Hydraulics and Fluid Mechanics. Standard Book House, Delhi.
3. Chow V T 1983. Open Channel Hydraulics. McGraw Hill Book Co., New Delhi.
4. Lal Jagadish 1985. Fluid Mechanics and Hydraulics. Metropolitan Book Co.Pvt. Ltd., New Delhi.

## STRENGTH OF MATERIALS

### Subject Code: BTAG205-22

Slope and deflection of beams using integration techniques, moment area theorems and conjugate beam method.

Columns and Struts.

Riveted and welded connections. Stability of masonry dams.

Analysis of statically intermediate beams. Propped beams. Fixed and continuous beam analysis using superposition, three moment equation and moment distribution methods.

#### Recommended Books:

1. Khurmi R.S. 2001. Strength of Materials S. Chand & Co., Ltd., New Delhi.
2. Junarkar S.B. 2001. Mechanics of Structures (Vo-I). Choratar Publishing House, Anand.
3. Ramamrutham S. 2003. Strengths of Materials. Dhanpat Rai and Sons, Nai Sarak, New Delhi.

## THEORY OF MACHINES

### Subject Code: BTAG206-22

Elements, links, pairs, kinematics chain, and mechanisms. Classification of pairs and mechanisms. Lower and higher pairs. Four bar chain, slider crank chain and their inversions. Determination of velocity and acceleration using graphical (relative velocity and acceleration) method. Instantaneous centers.

Types of gears. Law of gearing, velocity of sliding between two teeth in mesh. Involute and cycloidal profile for gear teeth. Spur gear, nomenclature, interference and undercutting. Introduction to helical, spiral, bevel and worm gear. Simple, compound, reverted, and epicyclic trains. Determining velocity ratio by tabular method. Turning moment diagrams, coefficient of fluctuation of speed and energy, weight of flywheel, flywheel applications.

Belt drives, types of drives, belt materials. Length of belt, power transmitted, velocity ratio, belt size for flat and V belts. Effect of centrifugal tension, creep and slip on power transmission, Chain drives.

Types of friction, laws of dry friction. Friction of pivots and collars. Single disc, multiple disc, and cone clutches. Rolling friction, anti-friction bearings.

Types of governors. Constructional details and analysis of Watt, Porter, Proell governors. Effect of friction, controlling force curves. Sensitiveness, stability, hunting, iso-chronism, power and effort of a governor.

Static and dynamic balancing. Balancing of rotating masses in one and different planes.

#### Recommended Books:

1. Bevan Thomas. 1984. Theory of Machines. CBS Publishers and Distributors, Delhi.
2. Ballaney P L. 1985. Theory of Machines. Khanna Publishers, 2-B Nath Market, Nai Sarak, New Delhi.
3. Rao J S and Dukkippatti R V. 1990. Mechanisms and Machine Theory. Wiley astern Ltd., New Delhi.
4. Lal Jagdish. 1991. Theory of Mechanisms and Machines. Metropolitan Book Co. Pvt. Ltd., Netaji Subash Marg, New Delhi.

## WEB DESIGNING AND INTERNET APPLICATIONS

### Subject Code: BTAG207-22

Basic principles in developing a web designing, Planning process, Five Golden rules of web designing, Designing navigation bar, Page design, Home Page Layout, Design Concept.

Basics in Web Design, Brief History of Internet, World Wide Web, creation of a web site, Web Standards, Audience requirement.

Introduction to Java Script, variables & functions, Working with alert, confirm and prompt, Connectivity of Web pages with databases; Project.

#### Recommended Books:

1. Jennifer Niederst Robbins. Developing web design latest edition.
2. Frain and Ben. Responsive Web Design with HTML5..
3. Nicholas c.Zakas. Java Script for Web Developers.

## WORKSHOP TECHNOLOGY AND PRACTICE

### Subject Code: BTAG208-22

Introduction to various carpentry tools, materials, types of wood and their characteristics and Processes or operations in wood working.

Introduction to Smithy tools and operations.

Introduction to welding, types of welding, Oxyacetylene gas welding, types of flames, welding techniques and equipment. Principle of arc welding, equipment and tools. Casting processes.

Classification, constructional details of center lathe, Main accessories and attachments. Main operations and tools used on center lathes. Types of shapers, Constructional details of standard shaper. Work holding devices, shaper tools and main operations.

Types of drilling machines. Constructional details of pillar types and radial drilling machines. Work holding and tool holding devices. Main operations. Twist drills, drill angles and sizes.

Types and classification. Constructional details and principles of operation of column and knee type universal milling machines. Plain milling cutter. Main operations on milling machine.

#### Recommended Books:

1. Hazra, Choudari S K and Bose S K. 1982. Elements of Workshop technology (Vol. I and II). Media Promoters and Publishers Pvt. Ltd., Mumbai.
2. Chapman W A J. 1989. Workshop Technology ( Part I and II). Arnold Publishers (India) Pvt. Ltd., AB/9 Safdarjung Enclave, New Delhi.
3. Raghuwamsi B S. 1996. A Course in Workshop Technology (Vol. I and II). Dhanpat Rai and Sons, 1682 Nai Darak, New Delhi.

## ENVIRONMENTAL SCIENCE AND DISASTER MANAGEMENT LAB

### Subject Code: BTAG209-22

Case Studies and Field work. Visit to a local area to document environmental assets river/forest/grassland/hill/mountain, Visit to a local polluted site-Urban/ Rural/ Industrial/ Agricultural, study of common plants, insects, birds and study of simple ecosystems-pond, river, hill slopes, etc. Expected impact of climate change on agricultural production and water resources, Mitigation Strategies, Economics of climate change. Disaster Management introduction, Natural and Manmade Disaster Studies, Informatics for Disaster Management, Quantitative Techniques for Disaster Management Environmental Impact Assessment (EIA) and Disaster Management Disaster Management Policy Environmental Modelling.

### **FLUID MECHANICS AND OPEN CHANNEL HYDRAULICS LAB.**

#### **Subject Code: BTAG211-22**

Study of manometers and pressure gauges; Verification of Bernoulli's theorem; Determination of coefficient of discharge of venturi-meter and orifice meter; Determination of coefficient of friction in pipeline; Determination of coefficient of discharge for rectangular and triangular notch; Determination of coefficient of discharge, coefficient of velocity and coefficient of contraction for flow through orifice; Determination of coefficient of discharge for mouth piece; Measurement of force exerted by water jets on flat and hemispherical vanes; Determination of meta-centric height; Determination of efficiency of hydraulic ram; Performance evaluation of Pelton and Francis turbine; Study of current meter; Velocity distribution in open channels and determination of Manning's coefficient of rugosity.

### **STRENGTH OF MATERIALS LAB.**

#### **Subject Code: BTAG212-22**

To perform the tension test on metal specimen (M.S., C.I.), to observe the behaviour of materials under load, to calculate the value of E, ultimate stress, permissible stress, percentage elongation etc. and to study its fracture; To perform the compression test on; Concrete cylinders & cubes, C.I., M.S. & Wood specimens and to determine various physical and mechanical properties; To perform the bending test on the specimens; M.S. Girder, Wooden beam, Plain concrete beams & R.C.C. beam, and to determine the various physical and mechanical properties; To determine Young's modulus of elasticity of beam with the help of deflection produced at centre due to loads placed at centre & quarter points; To study the behaviour of materials (G.I. pipes, M.S., C.I.) under torsion and to evaluate various elastic constants; To study load deflection and other physical properties of closely coiled helical spring in tension and compression; To perform the Rockwell, Vicker's and Brinell's Hardness tests on the given specimens; To perform the Drop Hammer Test, Izod Test and Charpy's impact tests on the given specimens; To determine compressive & tensile strength of cement after making cubes and briquettes; To measure workability of concrete (slump test, compaction factor test); To determine voids ratio & bulk density of cement, fine aggregates and coarse aggregates; To determine fatigue strength of a given specimen; To write detail report emphasizing engineering importance of performing tension, compression, bending, torsion, impact and hardness tests on the materials.

### **WEB DESIGNING AND INTERNET APPLICATIONS LAB.**

#### **Subject Code: BTAG213-22**

FLASH: Animation concept FPS, Understanding animation for web, Flash interface, Working with tools, DREAM WEAVER :Exploring Dreamweaver Interface, Planning & Setting Web Site Structure, Working with panels, Understanding and switching views, Using property inspector, Formatting text, JAVA SCRIPT: Working with alert, confirm and prompt, Understanding loop, arrays, Creating rollover image, Working with operator, GIF ANIMATION: Learning to use FTP, Setting FTP, Uploading of site, Using Control panel, FTP UPLOADING SITE: Understanding gif animation interface, Knowing Gif file format, Creating basic web banners, Creating web banners with effects, Creating animated web buttons.

### **WORKSHOP TECHNOLOGY AND PRACTICE LAB**

#### **Subject Code: BTAG214-22**

Preparation of simple joints: Cross half Lap joint and T-Halving joint; Preparation of Dovetail joint, Mortise and tenon joint;

Jobs on Bending, shaping etc.;

Jobs on Drawing, Punching, Rivetting. Introduction to tools and measuring instruments for fitting;

Jobs on sawing, filing and right angle fitting of MS Flat; Practical in more complex fitting job;

Operations of drilling, reaming, and threading with tap and dies;

Introduction to tools and operations in sheet metal work; Making different types of sheet metal joints using G.I. sheets.

Introduction to welding equipment, processes tools, their use and precautions; Jobs on ARC welding – Lap joint, butt joint; T-Joint and corner joint in Arc welding; Gas welding Practice – Lab, butt and T-Joints;

## Study Scheme & Syllabus of B. Tech Agricultural Engg. for batch 2025 onwards

Introduction to metal casting equipment, tools and their use; Mould making using one-piece pattern and two pieces pattern; Demonstration of mould making using sweep pattern, and match plate patterns; Introduction to machine shop machines and tools; Demonstration on Processes in machining and use of measuring instruments; Practical jobs on simple turning, step turning; Practical job on taper turning, drilling and threading; Operations on shaper and planer, changing a round MS rod into square section on a shaper; Demonstration of important operations on a milling machine, making a plot, gear tooth forming and indexing; Any additional job.

### MENTORING AND PROFESSIONAL DEVELOPMENT

**Subject Code:** BTAG215-22

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

#### Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

#### Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

|                                          |          |          |          |
|------------------------------------------|----------|----------|----------|
| <b>EMC-101</b>                           | <b>L</b> | <b>T</b> | <b>P</b> |
| <b>Entrepreneurship Setup and Launch</b> | <b>0</b> | <b>0</b> | <b>4</b> |

### 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 behavior 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               |

### Weekly Component:

| Component       | Duration   | Description                                                                                                                                                                                                                                  |
|-----------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Module | ~1.5 hrs   | <ul style="list-style-type: none"> <li>- Introduces key concepts in a simple and engaging way</li> <li>- Includes, examples, and 1–2 interactive discussions or quizzes</li> </ul>                                                           |
| Action Lab      | ~2 hrs     | <ul style="list-style-type: none"> <li>- Hands-on task on the weekly concept</li> <li>- Includes step-by-step guidance, templates, and worksheets</li> <li>- Ends with a submission (e.g., video, reflection, or proof of action)</li> </ul> |
| Resources       | Self-paced | <ul style="list-style-type: none"> <li>- Supplementary videos, short readings, real- life stories, and tools to deepen understanding at their own pace</li> </ul>                                                                            |

## Evaluation Criteria

| Evaluation Component   | Description                                                                                                 | Weightage |
|------------------------|-------------------------------------------------------------------------------------------------------------|-----------|
| Weekly Task Completion | Timely submission of weekly tasks including reflections, activities, quizzes etc.                           | 40%       |
| Target Completion      | Performance-based evaluation on hitting <b>revenue or profit targets</b> (e.g., generating ₹10,000 revenue) | 30%       |
| Final Project          | A comprehensive project based on the semester's theme                                                       | 30%       |

## Week 1: What is Entrepreneurship? Who Can Be an entrepreneur?

### INTRODUCTION: Could *You* Be an entrepreneur?

When people hear “entrepreneur,” they often think it means having a company, investors, or an MBA. Some even believe it's only for toppers or those with high grades. But entrepreneurship is more about mindset than qualifications: it's about seeing a problem and doing something about it. Like someone who starts selling snacks because their school canteen is always shut, or a friend who fixes broken chargers for others. If you've ever spotted a need and thought, “I can solve this,” - you’ve already taken your first step.

### Component 1: Learning Module (~1.5 hours) Unit 1:

#### What is Entrepreneurship?

1. *Solving problems or creating value in exchange for money.*
2. Entrepreneurship is not just about starting a company: it's about initiative, resourcefulness, and value creation.
3. Different types of entrepreneurs: small shop owners, street vendors, YouTubers, local tailors, mechanics, and more.
4. Entrepreneurs build opportunities instead of waiting for them.

#### Simple Slide/Visual Aid Tip:

A circle that says "Problem", an arrow pointing to "Solution", then an arrow to "Earn". That's entrepreneurship.

<A video that visually shows how entrepreneurship starts with spotting a problem (e.g., long food lines), creating a solution (e.g., pre-order lunch service), and earning from it: illustrating the simple flow: Problem → Solution → Earn>

### MCQ 1

**Q:** What best describes entrepreneurship?

- A. Getting a job in a company
- B. Solving problems for others and earning from it ☒
- C. Studying business in college
- D. Buying expensive things

#### Feedback:

1. *Correct! Entrepreneurs solve problems or offer value and get paid for it.*
2. *Not quite! Entrepreneurship is about creating something useful, not just getting a job or studying.*

## Unit 2: Who Can Be an entrepreneur?

Entrepreneurship starts with spotting a problem, finding a solution, and creating value. Today, anyone with a phone and an internet connection can start a business: money helps, but mindset and initiative matter more at the start.

You just need:

1. A problem to solve
2. A simple skill or product
3. The courage to start small

### Examples Carousel (Swipeable cards)

1. **Pooja (India)** – Sells handmade rakhis on Instagram, learned designing on YouTube.  
*Problem she saw: Expensive or generic rakhis in the market; no personal touch.*
2. **Luis (Mexico)** – Repairs used phones in his garage, now has loyal customers.  
*Problem he saw: Many people couldn't afford new phones or didn't trust local repair shops.*
3. **Sana (Kolkata)** – Started tiffin delivery from her home kitchen, now earns ₹500/day.  
*Problem she saw: Office workers struggled to find affordable, homemade meals.*
4. **Sal Khan (USA)** – Started Khan Academy with YouTube lessons to help his cousin.  
*Problem he saw: His cousin needed help with math, but good learning resources were hard to access.*

### MCQ

**Q:** Which of these can be a form of entrepreneurship?

- A. Making reels on skincare tips and selling homemade face packs 
- B. Buying new clothes from malls
- C. Studying engineering
- D. Playing games without sharing or streaming

**Feedback:**

1. *Correct! Sharing useful tips + selling a product = solving a need!*
2. *Try again! Entrepreneurship is about creating value and helping others.*

### Reflection Prompt

1. If you had to earn ₹100 this week, what would you do?

### Component 2: Action Lab (~2 hours) Task

#### Find & Learn from 2 Entrepreneurs Near You

##### Steps (Checklist):

1. Look around your neighborhood or online: find 2 people who earn through their own work
2. Ask or observe:
  - a) What do they do?
  - b) How do they earn?

- c) What makes them entrepreneurial?
3. Use the **Entrepreneur Tracker Template** (available in the resources tab)

### **Final Deliverable**

Learner submits:

1. A short definition of entrepreneurship (in their words)
2. 2 entries from the Entrepreneur Tracker (name, what they do, what learner learned)

→ Submitted in the submissions tab.

### **Supplementary Resources (Optional)**

1. [Danny O'Neill - Getting started | Entrepreneurship | Khan Academy](#)
2. [The Better India – Stories of local entrepreneurs](#)

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## Week 2: Can I Be an entrepreneur?

### INTRO – What Makes an entrepreneur?

You don't need a suit, a degree, or a lot of money to be an entrepreneur.

You need one thing: a mindset. Entrepreneurs notice problems around them: and do something about it. From the boy fixing bikes outside his house to the girl teaching dance on Instagram, they all started small. What matters most is not what you have: it's how you think and act.

### Component 1: Learning Module (~1.5 hours)

#### Unit 1: What Makes an entrepreneur?

##### Key Concepts:

1. **Entrepreneurs are driven by curiosity:** they ask questions, explore possibilities, and seek better ways to do things.
2. **They take initiative:** they act, experiment, and create using limited resources with creativity and courage
3. **They learn by doing:** embracing mistakes as stepping stones to progress.
4. **They take full ownership:** one day they're the marketer, the delivery person, and the customer support, all in one.
5. **They are resilient:** they persist through challenges, adapt to change, and keep moving forward with purpose.

##### Real-Life Examples:

1. Nithin & Nikhil Kamath (Zerodha) – Started India's largest stock brokerage without formal degrees or external funding, just deep curiosity about stock markets and a desire to simplify investing.
2. *Qualities: Took initiative early and stayed persistent through challenges.*
3. Prajakta Koli (MostlySane) – Started by making comedy sketches about everyday Indian life: family, school, relationships: and became one of India's top digital creators.
4. *Qualities: Stayed consistent, adapted over time, and built strong audience trust.*
5. Tilak Mehta (Paper n Parcels) – As a teenager, launched a courier startup using Mumbai's dabbawala network for delivery.
6. *Qualities: Thought creatively and acted with confidence at a young age.*

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## Unit 2: Start Small: Build Ideas from What You Know

In the last unit, you learned that entrepreneurs don't just have ideas: they act, solve problems, and use what they have.

But the big question now is:

“What can I offer?”

That's where the Value Map comes in. It helps you take your first step toward thinking and acting like an entrepreneur: in your own way.

### What is a Value Map?

**A Value Map connects three simple things:**

**A. What people around you need**

→ *Look around: is there something people often struggle with or something that could be better?*

**B. What you *enjoy* or are *willing to try***

→ *You don't need to be an expert. Start with small things you like doing: talking to people, fixing, organizing, helping, designing, or learning something new.*

→ *Even if you're just curious about something: that's enough to begin.*

**C. What solution you can create**

→ *Use what you enjoy or are learning to try solving a real need around you: even in a small way*

### Visuals:

3 overlapping circles:

1. “People Need”
2. “I Can”
3. “My Offer”

### Examples:

**1. People Need → Affordable meals**

I Can → Cook + have access to home kitchen My Offer → ₹40 tiffin service

**2. People Need → Study tips in Punjabi I Can → Speak clearly + love teaching**

My Offer → 3-minute video tips on Instagram

### MCQ

**Q: What's the first step to being an entrepreneur?**

- A. Waiting for the perfect idea
- B. Solving a problem with your skills 
- C. Buying a shop
- D. Studying for years

**Feedback:**

1. *Correct! Entrepreneurs start by solving small problems using what they already have.*
2. *Try again! It's not about waiting: it's about starting.*

**Reflection Prompt**

1. If someone gave you ₹500 and asked you to earn from it, what would you do?

**Component 2: Action Lab (~2 hours)****Task: Create Your Personal Value Map Steps (checklist in app):**

1. Think of 2–3 problems people face around you (hunger, phone repair, boredom, etc.)
2. List your own skills, interests, or resources.
3. Match each problem with something you could offer.
4. Use the **Value Map Template in the resources** to organize your ideas.

**Final Deliverable (Submitted in App):**

1. Your completed **Value Map** (in 3 columns: Need, Skill, Offer)
2. Highlight **1 idea** you'd like to explore for your future hustle

**Supplementary Resources (Optional)**

1. "Start with Why" by Simon Sinek
2. [10 Characteristics of Successful Entrepreneurs | Business: Explained](#)

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### Study Scheme of B. Tech Agricultural Engg. for batch 2025 onwards

| SEMESTER 3 <sup>rd</sup> |                                                        | Contact Hrs. |          |           | Marks                          |            |             | Credits    |
|--------------------------|--------------------------------------------------------|--------------|----------|-----------|--------------------------------|------------|-------------|------------|
| Subject Code             | Subject Name                                           | L            | T        | P         | Int.                           | Ext.       | Total       |            |
| BTAG301-22               | Principles of Horticultural Crops                      | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| BTAG302-22               | Principles of Agronomy                                 | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG303-22               | Communication Skills and Personality Development       | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| BTAG304-22               | Engineering Mathematics-III                            | 2            | 1        | 0         | 40                             | 60         | 100         | 3          |
| BTAG305-22               | Soil Mechanics                                         | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| BTAG306-22               | Design of Structures                                   | 1            | 0        | 0         | 40                             | 60         | 100         | 1          |
| BTAG307-22               | Machine Design                                         | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG308-22               | Thermodynamics, Refrigeration and Air Conditioning     | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG309-22               | Electrical Machines and Power Utilization              | 2            | 0        | 0         | 40                             | 60         | 100         | 2          |
| BTAG310-22               | Principles of Horticultural Crops Lab                  | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG311-22               | Principles of Agronomy Lab                             | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG312-22               | Communication Skills and Personality Development Lab   | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG313-22               | Soil Mechanics Lab                                     | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG314-22               | Design of Structures Lab                               | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG315-22               | Thermodynamics, Refrigeration and Air Conditioning Lab | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG316-22               | Electrical Machines and Power Utilization Lab          | 0            | 0        | 2         | 30                             | 20         | 50          | 1          |
| BTAG308-19               | Institutional Training*                                | 0            | 0        | 4         | 60                             | 40         | 100         | 2          |
| BMPD301-19               | Mentoring and Professional Development                 | 0            | 0        | 2         | Satisfactory / Un-Satisfactory |            |             | Non-Credit |
| EMC-102-25               | Entrepreneurship Marketing Basics                      | 0            | 0        | 4         | 60                             | 40         | 100         | 2          |
| <b>Total</b>             |                                                        | <b>14</b>    | <b>1</b> | <b>24</b> | <b>690</b>                     | <b>760</b> | <b>1450</b> | <b>26</b>  |

\* 4 Week Institutional Training after 2<sup>nd</sup> semester during summer vacations

## PRINCIPLES OF HORTICULTURAL CROPS

**Subject Code: BTAG301-22**

Scope of horticulture. Soil and climatic requirements for fruits, vegetables and flower crops, improved varieties, Criteria for site selection, layout and planting methods, nursery raising, commercial varieties/hybrids, sowing and planting times and methods, seed rate and seed treatment for vegetable crops; macro and micro propagation methods, plant growing structures, pruning and training, crop coefficients, water requirements and critical stages, fertilizer application, fertigation, irrigation methods, harvesting, grading and packaging, post harvest practices, Garden tools, management of orchard, Extraction and storage of vegetables seeds. Major pests and diseases and their management in horticulture crops.

### Recommended Books:

- Bansal. P.C. 2008. Horticulture in India. CBS Publishers and Distributors, New Delhi
- Saraswathy, S., T.L. Preethi, S. Balasubramanyan, J. Suresh, N. Revathy and S. Natarajan. 2007. Postharvest management of Horticultural Crops. Agrobios Publishers, Jodhpur.
- Arjunan, G., Karthikeyan, G, Dinakaran, D. and Raguchander, T. 1999. Diseases of Horticultural Crops. AE Publications, Coimbatore.
- Sharma Neeta and Mashkoo Alam. 1997. Postharvest diseases of Horticultural crops. International Book publishing Co. UP

## PRINCIPLES OF AGRONOMY

**Subject Code: BTAG302-22**

Introduction and scope of agronomy. Classification of crops, Effect of different weather parameters on crop growth and development. Principles of tillage, tilth and its characteristics. Crop seasons. Methods, time and depth of sowing of major field crops. Methods and time of application of manures and fertilizers. Organic farming-Sustainable agriculture. Soil water plant relationship, crop coefficients, water requirement of crops and critical stages for irrigation, weeds and their control, crop rotation, cropping systems, Relay cropping and mixed cropping. Major pests and diseases and their management in agronomic crops.

### Recommended Books:

- William L Donn. 1965. Meteorology. McGraw-Hill Book Co. New York.
- Arnon L. 1972. Crop Production in Dry Regions. Leonard Hill Publishing Co. London.
- Yawalkar K S and Agarwal J P. 1977. Manures and Fertilizers. Agricultural Horticultural Publishing House, Nagpur.
- Gupta O P. 1984. Scientific Weed Management in the Tropics and Sub- Tropics. Today and Tomorrow's Printers and Publishers. New Delhi

## COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT

**Subject Code: BTAG303-22**

Communication Skills: Structural and functional grammar; meaning and process of communication, verbal and non-verbal communication; listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precis writing, summarizing, abstracting; individual and group presentations, impromptu presentation, public speaking; Group discussion. Organizing seminars and conferences.

### Recommended Books:

- Balasubramanian T. 1989. A Text book of Phonetics for Indian Students. Orient Longman, New Delhi.
- Balasubramanyam M. 1985. Business Communication. Vani Educational Books, New Delhi.
- Naterop, Jean, B. and Rod Revell. 1997. Telephoning in English. Cambridge University Press, Cambridge.
- Mohan Krishna and Meera Banerjee. 1990. Developing Communication Skills. Macmillan India Ltd. New Delhi.

## ENGINEERING MATHEMATICS-III

**Subject Code: BTAG304-22**

Numerical analysis and Laplace transformation: finite difference, various difference operators and their relationships. factorial notation, interpolation with equal intervals. Newton's forward and backward interpolation formula. Bessel's and Stirling's difference interpolation formulae. Interpolation with unequal intervals. Newton's divided difference formula. Lagrange's interpolation formula. numerical differentiations, numerical integrations, difference equations and their solutions, numerical solutions of ordinary differential equations by Picard's Taylor's series. Fuller's and modified Fuller's methods. Runge-Kutta method; Laplace transformation and its applications to the solutions of ordinary and simultaneous differential equations. Testing of Hypothesis-Level of Significance-Degrees of freedom-Statistical errors, Large sample test (Z-test), Small sample test t-test (One tailed, two tailed and Paired tests), Testing of Significance through variance (F-test), Chi -Square test, contingency table, Correlation, Regression.

### Recommended Books:

- Chandel SRS. A Hand book of Agricultural Statistics. Achal Prakasham Masndir, Kanpur.
- Agrawal B L. Basic Statistics. Wiley Eastern Ltd. New Age International Ltd.
- Nageswara Rao G. Statistics for Agricultural Sciences. BS Publications.

## SOIL MECHANICS

### Subject Code: BTAG305-22

Introduction of soil mechanics, field of soil mechanics, phase diagram, physical and index properties of soil, classification of soils, effective and neutral stress, elementary concept of Boussinesq and Westergaard analysis, new mark influence chart. Seepage Analysis; Quick condition-two dimensional flow-Laplace equation, Velocity potential and stream function, Flow net construction. Shear strength, Mohr stress circle, theoretical relationship between principle stress circle, theoretical relationship between principal stress, Mohr coulomb failure theory, effective stress principle. Determination of shear parameters by direct shear test, triangle test & vane shear test. Numerical exercise based on various types of tests. Compaction, composition of soils standard and modified protector test, abbot compaction and Jodhpur mini compaction test field compaction method and control. Consolidation of soil: Consolidation of soils, one dimensional consolidation spring analogy, Terzaghi's theory, Laboratory consolidation test, calculation of void ratio and coefficient of volume change, Taylor's and Casagrande's method, determination of coefficient of consolidation. Earth pressure: plastic equilibrium in soils, active and passive states, Rankine's theory of earth pressure, active and passive earth pressure for cohesive soils, simple numerical exercises. Stability of slopes: introduction to stability analysis of infinite and finite slopes friction circle method, Taylor's stability number.

#### Recommended Books:

- Punmia B C, Jain A K and Jain A K. 2005. Soil Mechanics and Foundations. Laxmi Publications (P) Ltd. New Delhi.
- Ranjan Gopal and Rao A S R. 1993. Basic and Applied Soil Mechanics. Welley Easters Ltd., New Delhi.
- Singh Alam. 1994. Soil Engineering Vol. I. CBS Publishers and Distributions, Delhi

## DESIGN OF STRUCTURES

### Subject Code: BTAG306-22

Loads and use of BIS Codes. Design of connections. Design of structural steel members in tension, compression and bending. Design of steel roof truss. Analysis and design of singly and doubly reinforced sections, Shear, Bond and Torsion. Design of Flanged Beams, Slabs, Columns, Foundations, Retaining walls and Silos.

#### Recommended Books:

- Junarkar, S.B. 2001. Mechanics of Structures Vol. I Charotar Publishing Home, Anand.
- Khurmi R. S. 2001. Strength of materials. S. Chand & Company Ltd., 7361, Ram Nagar, New Delhi – 110055.
- Kumar Sushil 2003. Treasure of R.C.C. Design. R.K. Jain. 1705-A, Nai Sarak , Delhi-110006, P.B.1074

## MACHINE DESIGN

**Subject Code: BTAG307-22**

Meaning of design, Phases of design, design considerations. Common engineering materials and their mechanical properties. Types of loads and stresses, theories of failure, factor of safety, selection of allowable stress. Stress concentration. Elementary fatigue and creep aspects. Cotter joints, knuckle joint and pinned joints, turnbuckle. Design of welded subjected to static loads. Design of threaded fasteners subjected to direct static loads, bolted joints loaded in shear and bolted joints subjected to eccentric loading. Design of shafts under torsion and combined bending and torsion. Design of keys. Design of muff, sleeve, and rigid flange couplings. Design of helical and leaf springs. Design of flat belt and V-belt drives and pulleys. Design of gears. Design of screw motion mechanisms like screw jack, lead screw, etc. Selection of anti-friction bearings.

### Recommended Books:

- Jain R K. 2013. Machine Design. Khanna Publishers, 2-B Nath Market, Nai Sarak, New Delhi.
- Khurmi R S and Gupta J K. 2014. A Text Book of Machine Design. S. Chand & Company Ltd., New Delhi

## THERMODYNAMICS, REFRIGERATION AND AIR CONDITIONING

**Subject Code: BTAG308-22**

Thermodynamics properties, closed and open system, flow and non-flow processes, gas laws, laws of thermodynamics, internal energy. Application of first law in heating and expansion of gases in non-flow processes. First law applied to steady flow processes. Carnot cycle, Carnot theorem. Entropy, physical concept of entropy, change of entropy of gases in thermodynamics process. Otto, diesel and dual cycles. Principles of refrigeration, - units, terminology, production of low temperatures, air refrigerators working on reverse Carnot cycle and Bell Coleman cycle. Vapour refrigeration-mechanism, P-V, P-S, P-H diagrams, vapor compression cycles, dry and wet compression, super cooling and sub cooling. Vapour absorption refrigeration system. Common refrigerants and their properties. Design calculations for refrigeration system. Cold storage plants. Thermodynamic properties of moist air, perfect gas relationship for approximate calculation, adiabatic saturation process, wet bulb temperature and its measurement, psychometric chart and its use, elementary psychometric process. Air conditioning – principles –Type and functions of air conditioning, physiological principles in air conditioning, air distribution and duct design methods, fundamentals of design of complete air conditioning systems – humidifiers and dehumidifiers – cooling load calculations, types of air conditioners – applications.

### Recommended Books:

- Kothandaraman C P Khajuria P R and Arora S C. 1992. A Course in Thermodynamics and Heat Engines. Dhanpat Rai and Sons, 1682 Nai Sarak, New Delhi.
- Khurmi R S. 1992. Engineering Thermodynamics. S Chand and Co. Ltd., Ram Nagar, New Delhi.
- Mathur M L and Mehta F S. 1992. Thermodynamics and Heat Power Engineering. Dhanpat Rai and Sons 1682 Nai Sarak, New Delhi

### **ELECTRICAL MACHINES AND POWER UTILIZATION**

**Subject Code: BTAG309-22**

Electro motive force, reluctance, laws of magnetic circuits, determination of ampere-turns for series and parallel magnetic circuits, hysteresis and eddy current losses, Transformer: principle of working, construction of single phase transformer, EMF equation, phasor diagram on load, leakage reactance, voltage regulation, power and energy efficiency, open circuit and short circuit tests, principles, operation and performance of DC machine (generator and motor), EMF and torque equations, armature reaction, commutation, excitation of DC generator and their characteristics, DC motor characteristics, starting of shunt and series motor, starters, speed control methods-field and armature control, polyphase induction motor: construction, operation, phasor diagram, effect of rotor resistance, torque equation, starting and speed control methods, single phase induction motor: double field revolving theory, equivalent circuit, characteristics, phase split, shaded pole motors, various methods of three phase power measurement; power factor, reactive and apparent power, Concept and analysis of balanced poly-phase circuits; Series and parallel resonance.

#### **Recommended Books:**

- Thareja B L & Theraja AK. 2005. A text book of Electrical Technology. Vol. I S. Chand & Company LTD., New Delhi.
- Theraja B L & Theraja AK 2005. A text book of Electrical Technology. Vol. II S.Chand & Company LTD., New Delhi.
- Vincent Del Toro. 2000. Electrical Engineering Fundamentals. Prentice-Hall of India Private LTD., New Delhi.
- Anwani M L. 1997. Basic Electrical Engineering. Dhanpat Rai & Co.(P) LTD. New Delhi.

### **PRINCIPLES OF HORTICULTURAL CROPS LAB**

**Subject Code: BTAG310-22**

Practical Judging maturity time for harvesting of crop; Study of seed viability and germination test; Identification and description of important fruits, flowers and vegetable crops; Study of different garden tools; Preparation of nursery bed; Practices of pruning and training in some important fruit crops, visit to commercial greenhouse/ polyhouse; cultural operations for vegetable crops (sowing, fertilizer application, mulching, irrigation and weed control); seed extraction techniques; identification of important pests and diseases and their control.

### **PRINCIPLES OF AGRONOMY LAB**

**Subject Code: BTAG311-22**

Identification of crops and their varieties, seeds, manures, fertilizers and weeds; Fertilizer application methods; Different weed control methods; Practice of ploughing, Practice of Puddling, Practice of sowing; identification of important pests and diseases and their control.

**COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT LAB**

**Subject Code: BTAG312-22**

Listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures. Reading and comprehension of general and technical articles, precis writing, summarizing, abstracting; individual and group presentations.

**SOIL MECHANICS LAB**

**Subject Code: BTAG313-22**

Practical Determination of water content of soil; Determination of specific gravity of soil; Determination of field density of soil by core cutter method; Determination of field density by sand replacement method; Grain size analysis by sieving (Dry sieve analysis); Grain size analysis by hydrometer method; Determination of liquid limit by Casagrande's method; Determination of liquid limit by cone penetrometer and plastic limit; Determination of shrinkage limit; Determination of permeability by constant head method; Determination of permeability by variable head method; Determination of compaction properties by standard proctor test; Determination of shear parameters by Direct shear test; Determination of unconfined compressive strength of soil; Determination of shear parameters by Tri-axial test; Determination of consolidation properties of soils.

**DESIGN OF STRUCTURES LAB**

**Subject Code: BTAG314-22**

Design and drawing of single reinforced beam, double reinforced beam, Design and drawing of steel roof truss; Design and drawing of one way, two way slabs, Design and drawing of RCC building; Design and drawing of Retaining wall. To measure workability of cement by slump test.

**THERMODYNAMICS, REFRIGERATION AND AIR CONDITIONING LAB**

**Subject Code: BTAG315-22**

Tutorials on thermodynamic air cycles, Study and application of P V and T S chart in refrigeration, P H chart (or) Mollier diagram in refrigeration, Numerical on air refrigeration cycle systems, Numerical on vapour compression cycle refrigeration system, Study of domestic water cooler, Study of domestic household refrigerator, Study of absorption type solar refrigeration system, Study cold storage for fruit and vegetables, Freezing load and time calculations for food materials, Determination of refrigeration parameters using refrigeration tutor – II, Numerical on design of air conditioning systems, Study of window air conditioner, Study on repair and maintenance of refrigeration and air-conditioning systems. Visit to chilling or ice making and cold storage plants.

**ELECTRICAL MACHINES AND POWER UTILIZATION LAB**

**Subject Code: BTAG316-22**

To obtain load characteristics of d.c. shunt/series /compound generator; To study characteristics of DC shunt/series motors; To study d.c. motor starters; To Perform load-test on 3 ph. induction motor & to plot torque V/S speed characteristics; To perform no-load & blocked –rotor tests on 3 ph. Induction motor to obtain equivalent ckt. parameters & to draw circle diagram; To study the speed control of 3 ph. induction motor by cascading of two induction motors, i.e. by feeding the slip power of one motor into the other motor; To study star- delta starters physically and (a) to draw electrical connection diagram (b) to start the 3 ph. induction motor using it. (c) to reverse the direction of 3 ph. I.M.; To start a 3-phase slip –ring induction motor by inserting different levels of resistance in the rotor ckt. and to plot torque –speed characteristics; To perform no load & blocked –rotor test on 1 ph. induction motor & to determine the parameters of equivalent ckt. drawn on the basis of double revolving field theory; To perform load –test on 1 ph. induction motor & plot torque –speed characteristics; To study power consumed in a three-phase circuit; Two lights in series controlled by one switch; Two lights in parallel controlled by one switch.

**MENTORING AND PROFESSIONAL DEVELOPMENT**

**Subject Code: BMPD301-19**

Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities. For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.

## Semester Snapshot - Semester 2

### Entrepreneurship 102/201 (Marketing Basics)

6702-102-25

#### Introduction

This semester helps learners understand marketing as a practical life skill - not just "advertising." It teaches them how to communicate value, attract the right customers, and grow something small into something sustainable. Learners explore the basics of customer psychology, messaging, content creation, and simple sales strategies. Through hands-on activities, they will practice real marketing techniques for their micro-hustle or a simulated business idea, learning how to get attention, build trust, and generate sales.

#### Learners Objective

- Understand the core concepts of marketing using simple, relatable real-world examples.
- Learn how customers think, choose, and buy—and how businesses influence decisions ethically.
- Identify and define a target customer clearly instead of "selling to everyone."
- Create clear messaging: what they sell, who it helps, and why it matters.
- Use basic marketing channels (offline + online) to attract customers.
- Run a simple marketing campaign and measure what worked.
- Build confidence in selling, promoting, and talking about their product/service.

#### Outcome

By the end of this semester, learners will be able to market a product/service using basic strategies, attract real customers, and improve their results through feedback and experimentation.

#### Guiding Principles/Approach

This syllabus is built on action-based learning, clarity-first communication, and customer-first thinking. Learners don't just *study* marketing - they *practice* it in real situations through small experiments and repeated improvement. The course is designed to feel approachable and practical: learners create simple content, test messaging, talk to real people, and observe what influences decisions.

Instead of heavy theory, students build marketing skills through doing: customer discovery, storytelling, channel experiments, and reflection. The curriculum emphasizes confidence-building, ethical marketing, and communication as a leadership skill. By helping learners see results quickly (even small wins like one customer or one inquiry), the program builds motivation, creativity, and real-world business readiness.

## Semester 2 Curriculum

### Recap Milestone

The recap milestone focuses on revising all the 12 milestones of semester 1 and also helps students understand the upcoming 12 milestones journey of semester 2.

| Milestone # | Milestone Name         | Milestone Description                                                         | Task # | Task Title                               | Activity title                                              |
|-------------|------------------------|-------------------------------------------------------------------------------|--------|------------------------------------------|-------------------------------------------------------------|
| Recap       | Recap and Introduction | Revise what you learned in Semester 1 and plan what you will do in Semester 2 | 1      | Revise first 12 milestones of Semester 1 | Watch a video on "Semester 1 summary"                       |
|             |                        |                                                                               |        |                                          | Download 12 summary cards of Semester 1 milestones          |
|             |                        |                                                                               |        |                                          | Write 3 key learnings of Semester 1                         |
|             |                        |                                                                               |        |                                          | Write 3 things you will improve in semester 2               |
|             |                        |                                                                               |        |                                          | Attempt Semester 1 Recap Quiz                               |
|             |                        |                                                                               | 2      | Set your goals for Semester 2            | Learn how to 4X your revenue in Semester 02 using Marketing |
|             |                        |                                                                               |        |                                          | Read how famous brands use marketing to increase revenue    |
|             |                        |                                                                               |        |                                          | Set your marketing goals                                    |
|             |                        |                                                                               |        |                                          | Attempt Semester 2 Readiness Quiz                           |

## Milestone 13: Marketing Fundamentals

Marketing Fundamentals milestone focuses on helping students understand the basics of marketing and how they can use marketing to scale their businesses and generate revenue.

| Milestone # | Milestone Name                                      | Milestone Description                                                                          | Task # | Task Title                                 | Activity title                                                                       |
|-------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------|--------|--------------------------------------------|--------------------------------------------------------------------------------------|
| 13          | Learn marketing fundamentals to scale your business | Learn how you can use multiple types of marketing to scale your business and grow your revenue | 1      | Understand what is marketing               | Watch a video on marketing fundamentals                                              |
|             |                                                     |                                                                                                |        |                                            | Read examples of famous marketing campaigns in India                                 |
|             |                                                     |                                                                                                |        |                                            | Explain what you learned about marketing                                             |
|             |                                                     |                                                                                                |        |                                            | Attempt task 01 quiz                                                                 |
|             |                                                     |                                                                                                | 2      | Learn different types of digital marketing | Watch a video on what is digital marketing                                           |
|             |                                                     |                                                                                                |        |                                            | Read a document on types of digital marketing                                        |
|             |                                                     |                                                                                                |        |                                            | Write what what kind of digital marketing works best for your business and why       |
|             |                                                     |                                                                                                |        |                                            | Attempt task 02 quiz                                                                 |
|             |                                                     |                                                                                                | 3      | Write 3 marketing ideas for your business  | Read a document on how businesses like yours are using marketing to generate revenue |
|             |                                                     |                                                                                                |        |                                            | Write 3 marketing ideas to scale your business                                       |
|             |                                                     |                                                                                                |        |                                            | Validate your ideas with 3-5 people                                                  |
|             |                                                     |                                                                                                |        |                                            | Shortlist the best idea and explain how it will generate revenue                     |
|             |                                                     |                                                                                                |        |                                            | Share your experience of doing this milestone                                        |
|             |                                                     | Attempt task 03 quiz                                                                           |        |                                            |                                                                                      |

WhatsApp Community Marketing milestone focuses on helping students learn how to build a WhatsApp community for their users and use it to generate trust, engagement, and sales.

| Year | Percentage of Respondents (%) |
|------|-------------------------------|
| 1990 | 65                            |
| 1991 | 66                            |
| 1992 | 67                            |
| 1993 | 68                            |
| 1994 | 69                            |
| 1995 | 70                            |
| 1996 | 71                            |
| 1997 | 72                            |
| 1998 | 73                            |
| 1999 | 74                            |
| 2000 | 75                            |
| 2001 | 76                            |
| 2002 | 77                            |
| 2003 | 78                            |
| 2004 | 85                            |

| Milest one #         | Milestone Name                             | Milestone Description                                                                         | Task # | Task Title                                           | Activity title                                                       |
|----------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------|--------|------------------------------------------------------|----------------------------------------------------------------------|
| 14                   | Build and activate your WhatsApp community | Build a WhatsApp community for your users and use it to generate trust, engagement, and sales | 1      | Create your WhatsApp community                       | Watch a video on why you should build a WhatsApp Community           |
|                      |                                            |                                                                                               |        |                                                      | Read a document on how to create a WhatsApp community                |
|                      |                                            |                                                                                               |        |                                                      | Enter the name of your community                                     |
|                      |                                            |                                                                                               |        |                                                      | Upload your WhatsApp community link                                  |
|                      |                                            |                                                                                               |        |                                                      | Attempt task 01 quiz                                                 |
|                      |                                            |                                                                                               | 2      | Invite people to join your WhatsApp community        | Read a few sample invite and welcome messages                        |
|                      |                                            |                                                                                               |        |                                                      | Draft an invite message to invite 50 people to join your community   |
|                      |                                            |                                                                                               |        |                                                      | Draft a welcome message for your community members                   |
|                      |                                            |                                                                                               |        |                                                      | Upload a screenshot of your welcome message                          |
|                      |                                            |                                                                                               |        |                                                      | Attempt task 02 quiz                                                 |
|                      |                                            |                                                                                               | 3      | Engage your community users and start building trust | Learn 'how to engage people in your community'                       |
|                      |                                            |                                                                                               |        |                                                      | Read top 10 community engagement ideas for your business             |
|                      |                                            |                                                                                               |        |                                                      | Write 5 types of content to post weekly in your community            |
|                      |                                            |                                                                                               |        |                                                      | Create and upload your weekly calendar                               |
|                      |                                            |                                                                                               |        |                                                      | Attempt task 03 quiz                                                 |
|                      |                                            |                                                                                               | 4      | Get 3 sales from your WhatsApp Community             | Learn how to do soft-selling on community                            |
|                      |                                            |                                                                                               |        |                                                      | Create a community-only offer                                        |
|                      |                                            |                                                                                               |        |                                                      | Learn how to convert interested people into paid customers           |
|                      |                                            |                                                                                               |        |                                                      | Write a simple plan to generate 3 sales per month from the community |
|                      |                                            |                                                                                               |        |                                                      | Share your experience of doing this milestone                        |
| Attempt task 04 quiz |                                            |                                                                                               |        |                                                      |                                                                      |

### Milestone 15: Generating Content for Marketing using AI

AI-led Content creation and marketing milestone focuses on helping students learn how to use AI tools to generate creative ideas and create professional videos, posters, and blogs.

| Milestone # | Milestone Name                           | Milestone Description                                                                                   | Task # | Task Title                                  | Activity title                                                            |
|-------------|------------------------------------------|---------------------------------------------------------------------------------------------------------|--------|---------------------------------------------|---------------------------------------------------------------------------|
| 15          | Use AI to generate content for marketing | Learn how to use AI tools to generate creative ideas and create professional videos, posters, and blogs | 1      | Learn what is content marketing             | Watch a video on 'what is content marketing'                              |
|             |                                          |                                                                                                         |        |                                             | Learn which content works for brand awareness or revenue generation       |
|             |                                          |                                                                                                         |        |                                             | Write 3 types of content you believe your customers like                  |
|             |                                          |                                                                                                         |        |                                             | Attempt task 01 quiz                                                      |
|             |                                          |                                                                                                         | 2      | Generate content ideas to attract customers | Learn how to use AI to generate content marketing ideas for your business |
|             |                                          |                                                                                                         |        |                                             | Generate 10 small content ideas to attract your customers                 |
|             |                                          |                                                                                                         |        |                                             | Discuss the ideas with your users and take feedback                       |
|             |                                          |                                                                                                         |        |                                             | Shortlist top 3 content ideas to attract customers                        |
|             |                                          |                                                                                                         |        |                                             | Attempt task 02 quiz                                                      |
|             |                                          |                                                                                                         | 3      | Create your first brand video using AI      | Watch a video on "How to use AI tools to create simple short videos"      |
|             |                                          |                                                                                                         |        |                                             | Read this guide on how to ask AI to write a video script                  |
|             |                                          |                                                                                                         |        |                                             | Generate 5 ideas for your AI videos and write them here                   |
|             |                                          |                                                                                                         |        |                                             | Upload your AI generated video link                                       |
|             |                                          |                                                                                                         | 4      | Create a brand poster using AI              | Attempt task 03 quiz                                                      |
|             |                                          |                                                                                                         |        |                                             | Learn how to create a poster using AI                                     |
|             |                                          |                                                                                                         |        |                                             | Write a prompt for the poster will you create using AI                    |
|             |                                          |                                                                                                         |        |                                             | Upload the AI poster you have                                             |

|  |  |  |   |                       |                                                                        |
|--|--|--|---|-----------------------|------------------------------------------------------------------------|
|  |  |  |   |                       | created                                                                |
|  |  |  |   |                       | Post this poster in your WhatsApp community                            |
|  |  |  |   |                       | Attempt task 04 quiz                                                   |
|  |  |  | 5 | Write a blog using AI | Learn how to use prompt engineering to write content for your business |
|  |  |  |   |                       | Read list of topics on which you can write a blog                      |
|  |  |  |   |                       | Write the topic on which you will write a short blog                   |
|  |  |  |   |                       | Write the first version of your blog                                   |
|  |  |  |   |                       | Share your blog with your friends and faculty                          |
|  |  |  |   |                       | Share your experience of doing this milestone                          |
|  |  |  |   |                       | Attempt task 05 quiz                                                   |

## Milestone 16: Social Media Marketing

Social Media Marketing milestone focuses on helping students learn what social media marketing is and how to create a social media weekly plan that engages users and improves brand visibility.

| Milestone #          | Milestone Name                            | Milestone Description                                                                  | Task # | Task Title                           | Activity title                                                           |
|----------------------|-------------------------------------------|----------------------------------------------------------------------------------------|--------|--------------------------------------|--------------------------------------------------------------------------|
| 16                   | Plan your social media marketing strategy | Learn what is social media marketing and how can you execute it to scale your business | 1      | Learn what is social media marketing | Watch a video on "Introduction to Social media marketing"                |
|                      |                                           |                                                                                        |        |                                      | Learn different types of social media marketing                          |
|                      |                                           |                                                                                        |        |                                      | Read a document on how to use social media marketing to generate revenue |
|                      |                                           |                                                                                        |        |                                      | Write your understanding of social media marketing                       |
|                      |                                           |                                                                                        |        |                                      | Write one social media marketing idea for your business                  |
|                      |                                           |                                                                                        |        |                                      | Attempt Task 01 Quiz                                                     |
|                      |                                           |                                                                                        | 2      | Research your competitors            | Learn how to research your competitors                                   |
|                      |                                           |                                                                                        |        |                                      | Find your competitors                                                    |
|                      |                                           |                                                                                        |        |                                      | Write top 3 things your competitors are posting                          |
|                      |                                           |                                                                                        |        |                                      | Find one unique gap that you can capture                                 |
|                      |                                           |                                                                                        |        |                                      | Attempt task 02 quiz                                                     |
|                      |                                           |                                                                                        | 3      | Finalize your content pillars        | Watch a video on 'what are content pillars'                              |
|                      |                                           |                                                                                        |        |                                      | Read examples of 'content pillars'                                       |
|                      |                                           |                                                                                        |        |                                      | Write 5 content pillars for your social media strategy                   |
|                      |                                           |                                                                                        |        |                                      | Attempt task 03 quiz                                                     |
|                      |                                           |                                                                                        | 4      | Create your weekly social media plan | Watch a video on 'how to create a weekly social media plan'              |
|                      |                                           |                                                                                        |        |                                      | Look at examples of 'social media calendar'                              |
|                      |                                           |                                                                                        |        |                                      | Create and upload your weekly calendar                                   |
|                      |                                           |                                                                                        |        |                                      | Upload the link of your Instagram Channel                                |
|                      |                                           |                                                                                        |        |                                      | Share your experience of doing this milestone                            |
| Attempt task 04 quiz |                                           |                                                                                        |        |                                      |                                                                          |

## Milestone 17: Trust-led Marketing

Trust-led Marketing milestone focuses on helping students build trust through social media proofs, testimonials, or basic engagement and later converting them into leads and sales.

| Milestone #                                           | Milestone Name                          | Milestone Description                                                               | Task # | Task Title                                                      | Activity title                                                      |
|-------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------|---------------------------------------------------------------------|
| 17                                                    | Generate leads and turn them into sales | Use testimonials, conversations, and daily posts to generate leads and close sales. | 1      | Use social proof to build trust                                 | Identify 2 happy customers                                          |
|                                                       |                                         |                                                                                     |        |                                                                 | Create a testimonial post with CTA                                  |
|                                                       |                                         |                                                                                     |        |                                                                 | Post testimonial on social media                                    |
|                                                       |                                         |                                                                                     |        |                                                                 | Post testimonial on the community                                   |
|                                                       |                                         |                                                                                     |        |                                                                 | Attempt task 01 quiz                                                |
|                                                       |                                         |                                                                                     | 2      | Make people share their problems                                | Learn how to ask open-ended questions                               |
|                                                       |                                         |                                                                                     |        |                                                                 | List 5 customer problems                                            |
|                                                       |                                         |                                                                                     |        |                                                                 | Post these problems in community and social media                   |
|                                                       |                                         |                                                                                     |        |                                                                 | Evaluate top 2 problems customers face                              |
|                                                       |                                         |                                                                                     |        |                                                                 | Encourage people to share their problems                            |
|                                                       |                                         |                                                                                     | 3      | Help your users with 3-5 days content sprint and generate leads | Attempt task 02 quiz                                                |
|                                                       |                                         |                                                                                     |        |                                                                 | Brainstorm or use AI to create a solution document for each problem |
|                                                       |                                         |                                                                                     |        |                                                                 | Post solution to 1 problem on a daily basis                         |
|                                                       |                                         |                                                                                     |        |                                                                 | DM people to check if your solution is helping them                 |
|                                                       |                                         |                                                                                     |        |                                                                 | Write how many leads did you generate                               |
|                                                       |                                         |                                                                                     | 4      | Convert leads into sales                                        | Attempt task 03 quiz                                                |
|                                                       |                                         |                                                                                     |        |                                                                 | Learn how to convert leads into sales                               |
| Soft sell your offering in community and social media |                                         |                                                                                     |        |                                                                 |                                                                     |
| DM people how can your product help them better       |                                         |                                                                                     |        |                                                                 |                                                                     |
| Follow up after 24 to 48 hours                        |                                         |                                                                                     |        |                                                                 |                                                                     |
| Write how many leads you converted into sales         |                                         |                                                                                     |        |                                                                 |                                                                     |
| Share your experience of doing this milestone         |                                         |                                                                                     |        |                                                                 |                                                                     |
| Attempt task 04 quiz                                  |                                         |                                                                                     |        |                                                                 |                                                                     |

### Milestone 18: Viral/Trend Marketing

Viral Marketing milestone focuses on helping students learn how to launch viral campaigns for their businesses using the latest trends and make their brand go viral without spending any money.

| Milest<br>one #                               | Milestone<br>Name                 | Milestone<br>Description                                                                        | Task<br># | Task Title                                                          | Activity title                                          |
|-----------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------|---------------------------------------------------------|
| 18                                            | Make<br>your<br>brand go<br>viral | Design viral<br>marketing<br>campaigns to<br>reach 5X users<br>without<br>spending any<br>money | 1         | Learn viral<br>marketing                                            | Understand what is virality and how it works            |
|                                               |                                   |                                                                                                 |           |                                                                     | Read about top 10 viral marketing campaigns<br>in India |
|                                               |                                   |                                                                                                 |           |                                                                     | Write 3 reasons why people share content                |
|                                               |                                   |                                                                                                 |           |                                                                     | Attempt task 01 quiz                                    |
|                                               |                                   |                                                                                                 | 2         | Design 2<br>viral<br>campaigns<br>for your<br>business              | Learn 5 types of common viral marketing<br>strategies   |
|                                               |                                   |                                                                                                 |           |                                                                     | Read 10 viral marketing ideas for your<br>business      |
|                                               |                                   |                                                                                                 |           |                                                                     | Design 2 viral campaigns for your business              |
|                                               |                                   |                                                                                                 |           |                                                                     | Take feedback from people and finalize one<br>campaign  |
|                                               |                                   |                                                                                                 |           |                                                                     | Set your campaign targets                               |
|                                               |                                   |                                                                                                 |           |                                                                     | Attempt task 02 quiz                                    |
|                                               |                                   |                                                                                                 | 3         | Launch one<br>viral<br>campaign to<br>increase<br>customer<br>reach | Create your campaign launch video or poster             |
|                                               |                                   |                                                                                                 |           |                                                                     | Create your campaign launch message                     |
|                                               |                                   |                                                                                                 |           |                                                                     | Launch your campaign on your social media<br>platform   |
|                                               |                                   |                                                                                                 |           |                                                                     | Launch your campaign in your WhatsApp<br>community      |
|                                               |                                   |                                                                                                 |           |                                                                     | Attempt task 03 quiz                                    |
|                                               |                                   |                                                                                                 | 4         | Promote<br>your<br>campaign to<br>make it<br>viral                  | Share your campaign in other groups and<br>forums       |
|                                               |                                   |                                                                                                 |           |                                                                     | Measure your campaign performance                       |
|                                               |                                   |                                                                                                 |           |                                                                     | Learn how to improve your campaign                      |
|                                               |                                   |                                                                                                 |           |                                                                     | Analyze your campaign and record final<br>metrics       |
|                                               |                                   |                                                                                                 |           |                                                                     | Enter the summary of your campaign                      |
| Share your experience of doing this milestone |                                   |                                                                                                 |           |                                                                     |                                                         |
| Attempt task 04 quiz                          |                                   |                                                                                                 |           |                                                                     |                                                         |

### Milestone 19: BTL/Offline Marketing

BTL/Offline Marketing milestone focuses on helping users learn about BTL (below the line) or offline marketing and use it to reach out to local customers and generate revenue.

| Milestone # | Milestone Name                              | Milestone Description                                              | Task # | Task Title                                | Activity title                                              |
|-------------|---------------------------------------------|--------------------------------------------------------------------|--------|-------------------------------------------|-------------------------------------------------------------|
| 19          | Drive revenue through offline/BTL marketing | Use offline activities to reach local customers and generate sales | 1      | Understand offline or BTL marketing       | Watch a video on what is BTL marketing                      |
|             |                                             |                                                                    |        |                                           | Read about famous BTL marketing campaigns                   |
|             |                                             |                                                                    |        |                                           | Write how you can use BTL marketing for your business       |
|             |                                             |                                                                    |        |                                           | Attempt task 01 quiz                                        |
|             |                                             |                                                                    | 2      | Pick your offline marketing idea          | Learn about common offline tactics for your business        |
|             |                                             |                                                                    |        |                                           | Write 1 offline marketing idea you can execute              |
|             |                                             |                                                                    |        |                                           | Design your brand poster for offline marketing              |
|             |                                             |                                                                    |        |                                           | Create your offline marketing offer or pitch                |
|             |                                             |                                                                    |        |                                           | Practice your pitch with friends and take feedback          |
|             |                                             |                                                                    |        |                                           | Attempt task 02 quiz                                        |
|             |                                             |                                                                    | 3      | Execute offline marketing in local market | Identify people or locations in local for offline marketing |
|             |                                             |                                                                    |        |                                           | Pitch to at least 10 real customers                         |
|             |                                             |                                                                    |        |                                           | Collect contact details for WhatsApp Community invite       |
|             |                                             |                                                                    |        |                                           | Close at least one sale                                     |
|             |                                             |                                                                    |        |                                           | Write your offline marketing metrics                        |
|             |                                             |                                                                    |        |                                           | Share your experience of doing this milestone               |
|             |                                             | Attempt task 03 quiz                                               |        |                                           |                                                             |

## Milestone 20: Collaboration and Affiliate Marketing

Collaboration and Affiliate Marketing milestone focuses on helping users learn about affiliate marketing and how to collaborate with individuals/businesses to reach more customers and generate revenue.

| Milestone #             | Milestone Name                                       | Milestone Description                                                 | Task # | Task Title                                        | Activity title                                                                  |
|-------------------------|------------------------------------------------------|-----------------------------------------------------------------------|--------|---------------------------------------------------|---------------------------------------------------------------------------------|
| 20                      | Grow through collaboration and affiliation marketing | Use partners and affiliates to reach new audiences and generate sales | 1      | Understand affiliate marketing and collaboration  | Watch a video on what is affiliate marketing                                    |
|                         |                                                      |                                                                       |        |                                                   | Read about top collaboration or affiliate marketing campaigns                   |
|                         |                                                      |                                                                       |        |                                                   | Learn 10 common types of collaboration or affiliate marketing for your business |
|                         |                                                      |                                                                       |        |                                                   | Pick 3 types that can work for your business                                    |
|                         |                                                      |                                                                       |        |                                                   | Attempt task 01 quiz                                                            |
|                         |                                                      |                                                                       | 2      | Design your affiliation model                     | Learn how to start an affiliation program                                       |
|                         |                                                      |                                                                       |        |                                                   | Decide your commission structure                                                |
|                         |                                                      |                                                                       |        |                                                   | Write a pitch for partnership                                                   |
|                         |                                                      |                                                                       |        |                                                   | Attempt task 03 quiz                                                            |
|                         |                                                      |                                                                       | 3      | Finalize one person or business for collaboration | Learn how to find a right partner for collaboration                             |
|                         |                                                      |                                                                       |        |                                                   | Create a list of 5 to 10 people or businesses for collaboration                 |
|                         |                                                      |                                                                       |        |                                                   | Send your partnership pitch to potential partners                               |
|                         |                                                      |                                                                       |        |                                                   | Write the name of one final partner                                             |
|                         |                                                      |                                                                       |        |                                                   | Attempt task 03 quiz                                                            |
|                         |                                                      |                                                                       | 4      | Execute the collaboration                         | Explain how will the partner market your brand                                  |
|                         |                                                      |                                                                       |        |                                                   | Post the link or screenshot of successful collaboration                         |
|                         |                                                      |                                                                       |        |                                                   | Respond to new leads within 24 hours                                            |
| Close at least one sale |                                                      |                                                                       |        |                                                   |                                                                                 |
| Attempt task 04 quiz    |                                                      |                                                                       |        |                                                   |                                                                                 |

|  |  |  |   |                            |                                                    |
|--|--|--|---|----------------------------|----------------------------------------------------|
|  |  |  | 5 | Measure your collaboration | Write number of leads generated                    |
|  |  |  |   |                            | Write number of sales closed and revenue generated |
|  |  |  |   |                            | Write what worked and how to improve collaboration |
|  |  |  |   |                            | Share your experience of doing this milestone      |
|  |  |  |   |                            | Attempt task 05 quiz                               |

## Milestone 21: Advertising Marketing (Meta)

Advertising Marketing milestone focuses on helping users learn how to post a paid ad on Meta (Instagram and Facebook) promoting their business and reach to more users or generate revenue.

| Milestone # | Milestone Name                 | Milestone Description                                                 | Task # | Task Title                             | Activity title                                                  |
|-------------|--------------------------------|-----------------------------------------------------------------------|--------|----------------------------------------|-----------------------------------------------------------------|
| 21          | Run your first ad on Instagram | Learn how to boost posts or run simple video ads to reach new viewers | 1      | Setup your Meta Business Suite         | Watch a video on why to run ads on Meta                         |
|             |                                |                                                                       |        |                                        | Learn different types of ads                                    |
|             |                                |                                                                       |        |                                        | Read the guide on Meta Ad account setup                         |
|             |                                |                                                                       |        |                                        | Setup your Meta Ad account                                      |
|             |                                |                                                                       |        |                                        | Attempt task 01 quiz                                            |
|             |                                |                                                                       | 2      | Design your first paid ad              | Watch samples of good ad designs for your business              |
|             |                                |                                                                       |        |                                        | Finalize your ad objective                                      |
|             |                                |                                                                       |        |                                        | Upload the final draft of your ad with final copy and creatives |
|             |                                |                                                                       |        |                                        | Attempt task 02 quiz                                            |
|             |                                |                                                                       | 3      | Define your target audience and budget | Watch a video on 'how to target the right people for ad'        |
|             |                                |                                                                       |        |                                        | Define your target audience                                     |
|             |                                |                                                                       |        |                                        | Learn how to decide the right budget for your ad                |
|             |                                |                                                                       |        |                                        | Decide your final budget                                        |
|             |                                |                                                                       |        |                                        | Attempt task 03 quiz                                            |
|             |                                |                                                                       | 4      | Launch your ad                         | Learn how to create and launch your ad                          |
|             |                                |                                                                       |        |                                        | Create your ad and review ad preview                            |
|             |                                |                                                                       |        |                                        | Upload the screenshot of launched ad                            |
|             |                                |                                                                       |        |                                        | Attempt task 04 quiz                                            |
|             |                                |                                                                       | 5      | Manage incoming leads from ad          | Draft a message for incoming leads                              |
|             |                                |                                                                       |        |                                        | Send draft message to leads within 24 hours                     |
|             |                                |                                                                       |        |                                        | Pitch your offer to leads and follow                            |

|  |  |  |   |                             |                                                    |
|--|--|--|---|-----------------------------|----------------------------------------------------|
|  |  |  |   |                             | up                                                 |
|  |  |  |   |                             | Close at least one sale                            |
|  |  |  |   |                             | Attempt task 05 quiz                               |
|  |  |  | 6 | Measure your ad performance | Learn metrics to measure ad performance            |
|  |  |  |   |                             | Write money spent and leads or impressions         |
|  |  |  |   |                             | Mention CPL or CPM                                 |
|  |  |  |   |                             | Write revenue generated and number of sales closed |
|  |  |  |   |                             | Write what worked and how to improve ads in future |
|  |  |  |   |                             | Share your experience of doing this milestone      |
|  |  |  |   |                             | Attempt task 06 quiz                               |

## Milestone 22: Psychological Marketing

Psychological Marketing milestone focuses on helping users identify psychological triggers like urgency, pricing, and offers, and use them to increase conversions and revenue.

| Milestone #                                   | Milestone Name                               | Milestone Description                                                             | Task # | Task Title                                       | Activity title                                                  |
|-----------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------|--------|--------------------------------------------------|-----------------------------------------------------------------|
| 22                                            | Use Psychological Triggers to Increase Sales | Learn how to use urgency, pricing, and offers to increase conversions and revenue | 1      | Understand the psychological triggers            | Learn why people buy products                                   |
|                                               |                                              |                                                                                   |        |                                                  | Share a story of one product you purchased because of a trigger |
|                                               |                                              |                                                                                   |        |                                                  | Identify buying triggers for your business                      |
|                                               |                                              |                                                                                   |        |                                                  | Attempt task 01 quiz                                            |
|                                               |                                              |                                                                                   | 2      | Execute FOMO or urgency marketing                | Learn how to create a FOMO or urgency marketing campaign        |
|                                               |                                              |                                                                                   |        |                                                  | Write how will you create FOMO or urgency for your customers    |
|                                               |                                              |                                                                                   |        |                                                  | Create one FOMO/urgency marketing campaign                      |
|                                               |                                              |                                                                                   |        |                                                  | Launch your campaign on social media and community              |
|                                               |                                              |                                                                                   |        |                                                  | Attempt task 02 quiz                                            |
|                                               |                                              |                                                                                   | 3      | Execute one offer or discount marketing campaign | Learn how to create offer or discounting marketing campaigns    |
|                                               |                                              |                                                                                   |        |                                                  | Write how will you create an offer/discount campaign            |
|                                               |                                              |                                                                                   |        |                                                  | Create one offer/discount campaign for your customers           |
|                                               |                                              |                                                                                   |        |                                                  | Launch your campaign on social media and community              |
| Share your experience of doing this milestone |                                              |                                                                                   |        |                                                  |                                                                 |
| Attempt task 03 quiz                          |                                              |                                                                                   |        |                                                  |                                                                 |

### Milestone 23: Data-Driven Marketing

Data-Driven Marketing milestone focuses on helping users analyze the data of the last 10 milestones and run specific campaigns or ideas that resulted in lead generation or revenue.

| Milestone #                                   | Milestone Name                           | Milestone Description                                                                                                    | Task # | Task Title                                          | Activity title                                               |
|-----------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------|--------------------------------------------------------------|
| 23                                            | Use Data-Driven Marketing to Grow Faster | Analyze data of the last 10 milestones to identify top campaigns or ideas and decide what to continue, improve, or stop. | 1      | Analyze your marketing data                         | Learn how businesses make decisions using data               |
|                                               |                                          |                                                                                                                          |        |                                                     | List 3 things that worked well and why                       |
|                                               |                                          |                                                                                                                          |        |                                                     | List 3 things that didn't work well and why                  |
|                                               |                                          |                                                                                                                          |        |                                                     | Attempt task 01 quiz                                         |
|                                               |                                          |                                                                                                                          | 2      | Re-execute top performing campaign                  | Re-execute top 1-2 campaigns for 1 week                      |
|                                               |                                          |                                                                                                                          |        |                                                     | Write how it helped generate leads or revenue                |
|                                               |                                          |                                                                                                                          |        |                                                     | Attempt task 02 quiz                                         |
|                                               |                                          |                                                                                                                          | 3      | Improve one low performing campaign and relaunch it | Pick one low performing campaign and write how to improve it |
|                                               |                                          |                                                                                                                          |        |                                                     | Improve the campaign and relaunch it                         |
|                                               |                                          |                                                                                                                          |        |                                                     | Measure its performance and see if it was better             |
| Share your experience of doing this milestone |                                          |                                                                                                                          |        |                                                     |                                                              |
|                                               |                                          | Attempt task 03 quiz                                                                                                     |        |                                                     |                                                              |

### Milestone 24: Closure and Next Step

The final milestone focuses on helping users reflect on their learnings and also create an action plan for the next few months to continue to scale and grow their business.

| Milestone # | Milestone Name              | Milestone Description                                                                        | Task # | Task Title                         | Activity title                                           |
|-------------|-----------------------------|----------------------------------------------------------------------------------------------|--------|------------------------------------|----------------------------------------------------------|
| 24          | Plan your next growth phase | Document your 12 weeks of learning and create a 1 month plan to scale and grow your business | 1      | Review your progress               | List all the ideas you executed                          |
|             |                             |                                                                                              |        |                                    | Write which milestone helped you the most and how        |
|             |                             |                                                                                              |        |                                    | Write which milestone helped you the least and why       |
|             |                             |                                                                                              |        |                                    | Write your key learnings from this semester              |
|             |                             |                                                                                              |        |                                    | Create a not-to-do list for your business                |
|             |                             |                                                                                              |        |                                    | Attempt task 01 quiz                                     |
|             |                             |                                                                                              | 2      | Create your 1 month marketing plan | Learn how to create a 1 month marketing plan             |
|             |                             |                                                                                              |        |                                    | Set your marketing goal                                  |
|             |                             |                                                                                              |        |                                    | Create and upload your 1 month plan to achieve this goal |
|             |                             |                                                                                              |        |                                    | Share your experience of doing this milestone            |
|             |                             |                                                                                              |        |                                    | Attempt final semester quiz                              |

