First Year Curriculum

Admission Year 2026-27

Diploma in Food Technology

Faculty of Engineering & Technology

Parul University

Vadodara, Gujarat, India

Semester 1

a. **Course Name:** Physics & Physics Lab
b. **Course Code:** 03604113 & 03604114
c. **Prerequisite:** Requires a basic foundation in mathematics, especially algebra, geometry, trigonometry, and for advanced study, calculus. Logical reasoning, problem-solving skills, and understanding of basic measurements and scientific concepts are also essential.
d. **Rationale:** Physics explains natural phenomena through observation, experimentation, and mathematical analysis, making it fundamental to understanding how the physical world works. Studying physics also develops analytical thinking and problem-solving skills that are valuable in science, engineering, and everyday life.
e. **Course Learning Objective:**

CLOBJ 1	To understand fundamental physical principles, laws, and concepts governing matter, energy, motion, and forces.
CLOBJ 2	To apply mathematical and scientific methods to analyze, solve, and interpret physical problems.
CLOBJ 3	To develop experimental skills to perform measurements, analyze data, and draw valid scientific conclusions.
CLOBJ 4	To enhance critical thinking and problem-solving abilities to apply physics concepts in real-world and technological contexts.

f. **Course Learning Outcomes:**

CLO 1	Explain fundamental concepts, laws, and principles of physics related to matter, energy, motion, and forces.
CLO 2	Solve quantitative and qualitative physics problems using appropriate mathematical methods.
CLO 3	Apply physics concepts to real-world situations and technological applications.

g. **Teaching & Examination Scheme:**

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				T	**P**	**CE**	**Theory**	**P**	
3	0	1	4	20	50	20	60	-	150

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit; **MSE-** Mid-Semester Evaluation, **CE**- Continuous Evaluation, **ESE-** End Semester Examination.

h. **Course Content:**

Unit No.	**Topic**	**Weightage**	**Teaching Hrs.**
1.	**Units of Measurement: S**ystems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. Dimensions of physical quantities.	15%	7

2.	**Kinematics and motion:** Motion in a straight line: speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Acceleration, Scalar and vector quantities Force. Inertia, Newton□s laws of motion; momentum; impulse, torque, angular momentum Equilibrium of concurrent forces. Static and kinetic friction, laws of friction, rolling friction, lubrication.	22%	11
3.	**Work:** Energy and Power - Work done by a force, energy, power; kinetic and potential energy; law of conservation of energy	8%	4
4.	**Properties of Bulk matter:** Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, Pressure due to a fluid column; Pascal's law and its applications.	9%	4
5.	**Optics and sound:** Light reflection, refraction, velocity of light; refractive index; scattering of light, diffraction, Convergence and divergence of light, Nature of sound and its propagation, speed of sound, ultrasound; reflection of sound; echo and sonar.	15%	7
6.	**Electrostatics and electric current:** Electric charges and their conservation. Coulombs law Electric field, Electric potential, potential difference Conductors and insulators, Electric current and resistance, Ohms law	11%	5
7.	**Magnetism and electro magnets:** Concept of magnetic field, Field lines Field due to a current carrying wire. Field due to current, carrying coil or solenoid. Electromagnets and Permanent magnets. Force on current carrying conductor Fleming left-hand rule. Faradays Law, Inductance, induced potential differences, induced current.	20%	10

List of Practical's

Experiment no 1	Measurement of diameter of a small spherical/cylindrical body using Vernier calipers.
Experiment no 2	Measurement of internal diameter and depth of a given beaker/calorimeter using Vernier calipers and its volume.
Experiment no 3	Measurement of diameter of a given wire using screw gauge.
Experiment no 4	Measurement of thickness of a given sheet using screw gauge.
Experiment no 5	Determination of weight and density of given bodies.
Experiment no 6	Determination of refractive index.
Experiment no 7	Determination of the surface tension of water by capillary rise method
Experiment no 8	Determination of the coefficient of viscosity of a given viscous liquid by measuring the terminal velocity of a given spherical body.
Experiment no 9	Measurement of resistance, voltage (ac/dc), current (ac) and check continuity of a given circuit using multimeter.

i. Text Book and Reference Book:

1. Halliday, Resnick & Walker - Fundamentals of Physics
2. H.C. Verma - Concepts of Physics (Vol. 1 & 2)
3. Serway & Jewett - Physics for Scientists and Engineers
4. Young & Freedman - University Physics with Modern Physics

a. **Course Name:** Chemistry & Chemistry Lab
b. **Course Code:** 03604115 & 03604116
c. **Prerequisite:** A basic understanding of mathematics, fundamental scientific concepts, and knowledge of atoms, molecules, measurements, and chemical symbols is essential for studying chemistry. Logical reasoning, observation skills, and familiarity with basic laboratory practices are also helpful.
d. **Rationale**: Chemistry helps in understanding the composition, properties, and transformations of matter, which are essential for science, technology, health, and industry. It also develops analytical, experimental, and problem-solving skills for real-world applications.

e. **Course Learning Objective:**

CLOBJ 1	To understand fundamental concepts, principles, and theories related to the composition, structure, properties, and reactions of matter.
CLOBJ 2	To apply chemical principles and mathematical methods to analyze and solve chemical problems.
CLOBJ 3	To develop practical laboratory skills for conducting experiments, observing results, and interpreting data safely.
CLOBJ 4	To enhance critical thinking and problem-solving abilities to apply chemistry concepts in scientific, industrial, and everyday contexts.

f. **Course Learning Outcomes:**

CLO 1	Explain fundamental concepts, laws, and principles of chemistry related to matter, chemical reactions, and molecular structure.
CLO 2	Solve qualitative and quantitative chemical problems using appropriate scientific and mathematical methods.
CLO 3	Perform laboratory experiments safely, analyze experimental data, and interpret results accurately.
CLO 4	Apply chemistry concepts to real-world applications in health, environment, industry, and technology.

g. **Teaching & Examination Scheme:**

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				T	**P**	**CE**	**Theory**	**P**	
3	0	1	4	20	50	20	60	-	150

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit; **MSE-** Mid-Semester Evaluation, **CE**- Continuous Evaluation, **ESE-** End Semester Examination

h. **Course Content:**

Sr.	**Topics**	**Weightage**	**Teaching Hours**

1.	**Some Basic Concepts of Chemistry:** General Introduction: Importance and scope of chemistry. Concept of elements, atoms and molecules. Atomic and molecular masses. Mole concept and molar mass; percentage composition and empirical and molecular formula; chemical reactions.	10%	5
2.	**Solutions:** Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions.	6%	3
3.	**Colligative properties: R**elative lowering of vapour pressure, Raoult's law, elevation of B.P., depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Vant Hoff factor.	10%	5
4.	**Organic Chemistry:** Some Basic Principles and Techniques: General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds.	7%	4
5	**Hydrocarbons - Aliphatic Hydrocarbons:** Alkanes: Nomenclature, isomerism, conformations (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.	8%	4
6.	**Hydrocarbons - Alkenes:** Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation; chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.	12%	6
7.	**Hydrocarbons - Aldehydes and Ketones:** Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, and mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes; uses.	9%	5
8.	**Hydrocarbons - Carboxylic Acids:** Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses	4%	2
9.	**Biomolecules - Carbohydrates:** Classification (aldoses and ketoses), monosaccharide (glucose and fructose), D-L configuration, oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen): importance.	7%	3
10	**Biomolecules - Proteins:** Elementary idea of a - amino acids, peptide bond, polypeptides, proteins, primary structure, secondary structure, tertiary structure and quaternary structure (qualitative idea only), denaturation of proteins; enzymes	10%	5
11.	**Biomolecules - Hormones:** Elementary idea (excluding structure). Vitamins, Classification and functions. Nucleic Acids: DNA and RNA	5%	3
12.	**Chemistry in Everyday Life - Chemicals in medicines:** analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines. Chemicals in food preservatives, artificial sweetening agents, elementary idea of antioxidants. Cleansing agents soaps and detergents, cleansing action.	10%	5

i. Text Book and Reference Book:

1. O.P. Tandon — Physical Chemistry
2. Morrison & Boyd — Organic Chemistry
3. J.D. Lee — Concise Inorganic Chemistry
4. P. Bahadur — Numerical Chemistry

a. **Course Name:** Mathematics & Mathematics Lab
b. **Course Code:** 03604117 & 03604118
c. **Prerequisite:** A basic understanding of arithmetic, algebra, geometry, and logical reasoning is essential for studying mathematics. Problem-solving ability, numerical skills, and familiarity with fundamental mathematical concepts are also important.
d. **Rationale:** Mathematics provides the foundation for logical reasoning, quantitative analysis, and problem-solving essential in science, engineering, and technology. It develops analytical thinking and supports the understanding of real-world phenomena through mathematical modeling and computation.
e. **Course Learning Objective:**

CLOBJ 1	Apply fundamental mathematical concepts, formulas, and techniques to solve quantitative problems accurately.
CLOBJ 2	Analyze and interpret mathematical data, equations, and relationships using logical reasoning.
CLOBJ 3	Use appropriate mathematical methods for problem-solving in science, engineering, and real-world applications.
CLOBJ 4	Demonstrate critical thinking and analytical skills in solving mathematical and computational problems.

f. **Course Learning Outcomes:**

CLO 1	To develop understanding of fundamental mathematical concepts, principles, and computational techniques.
CLO 2	To enhance logical reasoning and analytical skills for solving mathematical problems systematically.
CLO 3	To apply mathematical methods and tools to solve problems in science, engineering, and real-life contexts.
CLO 4	To build problem-solving ability and quantitative aptitude for academic and professional applications.

e. **Teaching & Examination Scheme:**

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				T	**P**	**CE**	**Theory**	**P**	
3	0	1	4	20	50	20	60	-	150

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit; **MSE-** Mid-Semester Evaluation, **CE**- Continuous Evaluation, **ESE-** End Semester Examination

f. **Course Content:**

Sr. No.	**Topics**	**Weightage %**	**Teaching hours**
1	**Trigonometric Functions:** Introduction of trigonometric functions, angles, expressing sin and cos, trigonometric equations, introduction to inverse trigonometric functions.	**8%**	**4**
2	**Complex Numbers and Quadratic Equations:** complex numbers; quadratic equations, algebra of complex numbers, quadratic equations, square-root of a complex number.	**9%**	**4**

3	**Binomial Theorem:** Introduction, binomial theorem for positive integral indices, general and middle term, simple applications**.**	**7%**	**3**
4	**Limits and derivatives:** Introduction, intuitive idea of derivatives, limits, derivatives, derivative of sum, difference, product and quotient of functions, derivatives of polynomial and trigonometric functions.	**10%**	**5**
5.	**Matrices:** Introduction of matrices, types and operations of matrices, transpose of matrices, transformation of a matrix, invertible matrices.	**7%**	**4**
6.	**Continuity and Differentiability:** Continuity, differentiability, concepts of exponential and logarithmic function, brief introduction of order derivatives	**7%**	**3**
7.	**Integrals:** Integration as inverse process of differentiation, methods of integration, integration of a variety of functions by substitution, basic properties of definite integrals**.**	**10%**	**5**
8.	**Differential equations:** Definition, order and degree, general and particular solutions of a differential equation.	**6%**	**3**
9.	**Vectors:** Vectors and scalars; types of vectors, position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, scalar (dot) product of vectors, cross product of vectors.	**17%**	**8**
10.	**Statistics:** definition of statistics, mean, mode, median, measures of dispersion, range, mean deviation, variance and standard deviation, analysis of frequency distribution.	**9%**	**4**
11.	**Probability:** probability, conditional probability, multiplications theorem on probability, independent events, total probability, random variable and its probability distribution, repeated independent (Bernoulli) trials and Binomial distribution.	**10%**	**5**

g. List of Practical:

Experiment no1	Tutorial on trigonometric equations; tutorial on algebra of complex numbers and quadratic equations.
Experiment no2	Tutorial on derivatives of polynomial and trigonometric functions, operations of matrices
Experiment no3	Analysis of frequency distribution.
Experiment no4	Tutorial on integrals and differential equations; solving simple statistical and probability problems using mean, mode, median and probability.

h. Text Book and Reference Book:

1. B.S. Grewal — Higher Engineering Mathematics
2. Erwin Kreyszig — Advanced Engineering Mathematics
3. R.K. Jain & S.R.K. Iyengar — Advanced Engineering Mathematics
4. H.K. Dass — Higher Engineering Mathematics
5. Thomas & Finney — Calculus and Analytic Geometry

a. **Course Name:** Fundamentals of Microbiology & Fundamentals of Microbiology Lab
b. **Course Code:** 03604121 & 03604122
c. **Prerequisite:** A basic understanding of biology, chemistry, and laboratory safety practices is essential for studying microbiology. Knowledge of cell structure, biomolecules, and fundamental scientific concepts is also helpful.
d. **Rationale:** Fundamentals of Microbiology provides understanding of microorganisms, their structure, functions, and roles in health, environment, and industry. It develops scientific knowledge and laboratory skills essential for biological research, healthcare, and biotechnology applications.
e. **Course Learning Objective:**

CLOBJ 1	Develop understanding of the classification, structure, physiology, and growth of microorganisms.
CLOBJ 2	To explain the role of microorganisms in health, disease, environment, and industrial applications.
CLOBJ 3	To develop practical laboratory skills for microbial observation, cultivation, identification, and safe handling techniques.
CLOBJ 4	To apply microbiological principles and analytical thinking to solve biological and health-related problems.

f. **Course Learning Outcomes:**

CLO 1	Explain the classification, structure, growth, and functions of various microorganisms.
CLO 2	Identify the role of microorganisms in health, disease, environmental processes, and industrial applications.
CLO 3	Perform basic microbiological laboratory techniques safely and interpret experimental observations accurately.
CLO 4	Apply microbiological knowledge to analyze and solve biological, healthcare, and biotechnology-related problems.

g. **Teaching & Examination Scheme:**

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				T	**CE**	**P**	**Theory**	**P**	
2	-	1	3	20	20	50	60	-	150

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit, **CE**- Continuous Evaluation, **ESE-** End Semester Examination

h. **Course Content:**

Sl. No.	**Content**	**Weightage (%)**	**Teaching Hours**
1	**Microbiology:** history and scope; contributions of Leeuwenhoek, Pasteur and Koch.	**9**	**3**

2	**Principle of microbiology:** Light Microscopy (Bright field, dark field, phase contrast, fluorescence); preparation and staining of specimens; electron microscopy.	**13**	**4**
3	**Microbial taxonomy:** principles; numerical taxonomy; major characteristics used in taxonomy; classification according to Bergey's manual of systematic bacteriology	**9**	**3**
4	**Structure and functions of prokaryotic cells:** difference between prokaryotes and eukaryotes.	**13**	**4**
5	**Microbial growth and nutrition:** The growth curve; factors affecting growth of microorganisms.	**13**	**4**
6	**Estimation of bacterial growth:** Bacteriostatic and bactericidal agents.	**9**	**3**
7	**The common nutrient requirements and nutritional types of microorganisms.:** The common nutrient requirements and nutritional types of microorganisms.	**9**	**3**
8	**Bacterial genetics:** DNA as the genetic material; structure of DNA; bacterial mutations (spontaneous and induced); genetic recombination- (transformation, transduction, conjugation).	**13**	**4**
9	**Micro flora of air, soil and water: M**ethods for controlling microorganisms in air; water as carrier of pathogens.	**13**	**4**

i. List of Practical

Sr. No.	Practical
1	General instruction for microbiological laboratory.
2	Microscope- simple and compound; Microbiological equipments; autoclave, hot air oven, incubator, centrifuge, colorimeter, laminar airflow, membrane filter
3	Simple staining- methylene blue; crystal violate; negative staining.
4	Differential staining (Gram, spore, acid fast). Mortality of microorganisms; hanging drop technique.
5	Measurement of microorganisms by micrometry.
6	Preparation of commonly used growth media liquid and solid: simple and differential media.
7	Isolation technique for microorganisms - streak & pour plate Enumeration of microorganisms in air and soil.
8	Enumeration of microorganisms in water: total viable count, coliform (MPN).

j. Text Book and Reference Book:

Pelczar, Chan & Krieg — Microbiology
Prescott, Harley & Klein — Microbiology
Ananthanarayan & Paniker — Textbook of Microbiology
Tortora, Funke & Case — Microbiology: An Introduction
Dubey & Maheshwari — A Textbook of Microbiology

a. **Course Name:** Environmental Science
b. **Course Code:** 03605101
c. **Prerequisite:** A basic understanding of biology, chemistry, geography, and general scientific concepts is helpful for studying environmental science. Awareness of natural resources, ecosystems, and environmental issues supports better understanding of the subject.
d. **Rationale**: Environmental Science helps in understanding the relationship between humans and the environment, natural resource conservation, and sustainable development. It develops awareness and problem-solving skills to address environmental challenges and promote responsible decision-making.
e. **Course Learning Objective:**

CLOBJ 1	Develop understanding of environmental concepts, ecosystems, natural resources, biodiversity, and sustainability principles.
CLOBJ 2	Analyze environmental issues such as pollution, climate change, and resource depletion using scientific approaches.
CLOBJ 3	Promote environmental awareness, responsible decision-making, and sustainable practices for societal well-being.

f. **Course Learning Outcomes:**

CLO 1	Explain fundamental environmental concepts, ecosystems, biodiversity, natural resources, and sustainability principles.
CLO 2	Analyze environmental problems such as pollution, climate change, and resource management, and propose suitable solutions.
CLO 3	Demonstrate environmental awareness and apply sustainable practices in personal, social, and professional contexts.

g. **Teaching & Examination Scheme:**

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				MSE	**CE**	**P**	**Theory**	**P**	
2	**-**	**0**	**0**	**20**	**20**	**-**	**-**	**-**	**40**

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit; **MSE-** Mid-Semester Evaluation, **CE**- Continuous Evaluation, **ESE-** End Semester Examination

h. **Course Content:**

Sl. No	**Topics**	**Weightage**	**Teaching Hours**
1	**Ecosystem:** Structure of ecosystem, Biotic & Abiotic components, Food chain and food web Carbon, Nitrogen, Sulphur, Phosphorus cycle. Global warming -Causes, effects, process, Green House Effect, Ozone depletion.	15	3

2	**Air and Noise Pollution:** Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refrigerants, I.C., Boiler). Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator,Electrostatic Precipitator). Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler, Noise pollution: sources of pollution, measurement of pollution level, Effects Noise pollution,Noise pollution (Regulation and Control) Rules, 2000	24	8
3	**Water and Soil Pollution:** Sources of water pollution, Types of water pollutants, Characteristics of water pollutants Turbidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation. Waste Water Treatment: Primary methods: sedimentation, froth floatation, Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor, Tertiary Method: Membrane separation technology, RO (reverse osmosis), Causes, Effects and Preventive measures of Soil Pollution: Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.	24	8
4	**Renewable Sources of energy Solar Energy:** Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector.Importance of coating. Advanced collector. Solar pond. Solar water heater, solar dryer.Solar stills. Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel. Anaerobic digestion. Biogas production mechanism. Utilization and storage of biogas. Wind energy: Current status and future prospects of wind energy. Wind energy in India. Environmental benefits and problem of wind energy. New Energy Sources: Need of new sources. Different types new energy sources. Applications of (Hydrogen energy, Ocean energy resources, Tidal energy conversion.) Concept, origin and power plants of geothermal energy.	24	8
5	**Solid Waste management** Solid waste generation- Sources and characteristics of : Municipal solid waste, E- waste, biomedical waste.Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries.Collection and disposal: MSW (3R, principles, energy recovery, sanitary landfill), Hazardous waste.	15	3

i. Text Book and Reference Book:

1. Cunningham, W. P., & Cunningham, M. A. (2018). Environmental science: A global concern (14th ed.). McGraw-Hill Education.
2. Miller, G. T., & Spoolman, S. E. (2019). Environmental science (16th ed.). Cengage Learning.
3. Odum, E. P., & Barrett, G. W. (2005). Fundamentals of ecology (5th ed.). Cengage Learning.
4. Bharucha, E. (2013). Textbook of environmental studies for undergraduate courses (2nd ed.). Universities Press.
5. Rajagopalan, R. (2011). Environmental studies: From crisis to cure. Oxford University Press.

a. **Course Name:** Introduction to IT Systems Lab
b. **Course Code:** 03606102
c. **Prerequisite:** Basic knowledge of computer fundamentals, operating systems, and common software applications is helpful for this laboratory course. Familiarity with basic hardware components, file management, and safe computer usage practices is also beneficial.
d. **Rationale**: Introduction to IT Systems Lab provides practical understanding of computer hardware, software, operating systems, and basic networking concepts through hands-on activities. It develops technical skills, problem-solving ability, and familiarity with IT tools essential for academic and professional applications.

e. Course Learning Objective:

CLOBJ 1	Demonstrate basic skills in operating computer systems, managing files, and using common software applications effectively.
CLOBJ 2	Perform basic hardware, operating system, and networking tasks using appropriate IT tools and laboratory practices.
CLOBJ 3	Apply troubleshooting and problem-solving skills to identify and resolve common IT system issues.

f. Course Learning Outcomes:

CLO 1	Develop practical understanding of computer hardware, software, operating systems, and basic networking concepts.
CLO 2	Build hands-on skills in using IT tools, system management, and routine troubleshooting techniques.
CLO 3	Enhance technical competency, problem-solving ability, and safe laboratory practices in IT system operations.

g. Teaching Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				MSE	**CE**	**P**	**Theory**	**P**	
0	**0**	**2**	**2**	**0**	**0**	**100**	**0**	**-**	**100**

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit; **CE**- Continuous Evaluation, **ESE-** End Semester Examination

h. Course Content:

Sr.	**Topics**	**W**	**T**
1	**Introduction to Computers:** Basic applications of computer. Computer organization and its components - Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output devices, Computer Memory.	18	5
2	**Hardware and software concepts and Terminologies:** Introduction about Operating Systems.	7	2
3	**Introduction about Programming languages**: Database concepts - definition different types hierarchical, network and relational databases	10	3

4	Introduction to commonly used MS Office application software's MS Word, Power Point, Excel.: Introduction to commonly used MS Office application software's MS Word, Power Point, Excel.	9	3
5	**Introduction to management information:** systems concepts, development of MIS of dairy industry.	8	3
6	**Basic of Computer networks:** LAN, WAN; Application of modern Information Communication Technologies (ICT) tools/software in Dairy Industry	12	4
7	**Concept of Internet:** Applications of Internet; Connecting to Internet; World Wide Web (WWW); Web Browsing software URL; Domain name; IP Address	16	5
8	**Introduction about HTTP and HTML:** Introduction to Blogs and web page development.	8	3
9	**Basics of Electronic mail:** Instant Messaging and Chatting.	5	2
10	**Video Conferencing Basics:** requirements, applications and Its potential Use	6	2

i. Reference Books:

1. Andrews, J., Dark, J., & West, J. (2019). CompTIA A+ guide to IT technical support (10th ed.). Cengage Learning.
2. Mueller, S. (2015). Upgrading and repairing PCs (22nd ed.). Pearson.
3. Shelly, G. B., Vermaat, M. E., & Quasney, J. J. (2018). Discovering computers: Digital technology, data, and devices. Cengage Learning.
4. White, C. M. (2017). Data communications and computer networks: A business user's approach (8th ed.). Cengage Learning.
5. Andrews, J. (2016). A+ guide to hardware: Managing, maintaining, and troubleshooting (9th ed.). Cengage Learning.

a. **Course Name:** Introduction to Food Technology
b. **Course Code:** 03635109
c. **Prerequisite:** A basic understanding of biology, chemistry, and general scientific concepts is helpful for studying food technology. Familiarity with food composition, hygiene, and basic laboratory practices is also beneficial.
d. **Rationale:** Introduction to Food Technology provides foundational knowledge of food composition, processing, preservation, quality control, and food safety. It develops scientific understanding and practical awareness essential for food production, quality assurance, and industrial applications.

e. **Course Learning Objective:**

CLOBJ 1	To develop understanding of fundamental concepts related to food composition, processing, preservation, and food safety.
CLOBJ 2	To explain the principles and applications of food technology in food production, quality control, and storage.
CLOBJ 3	To enhance analytical and practical skills for evaluating food quality and applying food technology concepts in real-world contexts.
CLOBJ 4	To develop awareness of food hygiene, quality standards, and regulatory practices essential in the food industry.

f. **Course Learning Outcomes:**

CLO 1	Explain fundamental concepts of food composition, processing, preservation, and food safety.
CLO 2	Apply food technology principles in food production, storage, quality control, and quality assurance practices.
CLO 3	Evaluate food quality, hygiene, and safety parameters using appropriate scientific approaches.
CLO 4	Demonstrate understanding of food industry standards, regulations, and practical applications in food technology.

g. **Teaching & Examination Scheme:**

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				T	**CE**	**P**	**Theory**	**P**	
2	-	-	2	20	20	-	60	-	100

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit, **CE**- Continuous Evaluation, **ESE-** End Semester Examination

h. **Course Content:**

Sl. No.	**Content**	**Weightage (%)**	**Teaching Hours**
1	**Introduction:** Historical development of food science and technology. Evolution of food processing from prehistoric times till date.	**4**	**1**
2	**Introduction to various branches of food science and technology:** Introduction to various branches of food science and technology	**4**	**1**

3	**Compositional, Nutritional and Technological aspects of foods Cereals and Millets:** Introduction, structure, composition and uses and by-products of cereals and coarse cereals**.**	**8**	**3**
4	**Wheat:** Structure and composition of wheat, types (hard, soft/ strong, weak). Diagrammatic representation of longitudinal structure of wheat grain and process of malting, Gelatinization of starch, types of browning.	**8**	**3**
5	**Microbial growth and nutrition:** The growth curve; factors affecting growth of microorganisms.	**13**	**4**
6	**Estimation of bacterial growth:** Bacteriostatic and bactericidal agents.	**9**	**3**
7	**The common nutrient requirements and nutritional types of microorganisms.:** The common nutrient requirements and nutritional types of microorganisms.	**9**	**3**
8	**Bacterial genetics:** DNA as the genetic material; structure of DNA; bacterial mutations (spontaneous and induced); genetic recombination- (transformation, transduction, conjugation).	**13**	**4**
9	**Micro flora of air, soil and water:** Methods for controlling microorganisms in air; water as carrier of pathogens.	**13**	**4**
10	**Fats and Oils:** Classification of lipids, types of fatty acids - saturated fatty acids, unsaturated fatty acids, essential fatty acids, trans fatty acids.	**8**	**3**
11	**Refining of oils, types:** steam refining, alkali refining, bleaching, steam deodorization, hydrogenation.	**10**	**4**
12	**Rancidity:** hydrolytic and oxidative rancidity and its prevention. Define - margarine, butter, hydrogenated vegetable oil, lard	**8**	**1**
13	**Fruits and Vegetables:** Classification of fruits and vegetables, general composition, enzymatic browning, names and sources of pigments, Dietary fibre.	**8**	**3**
14	**Post-harvest changes in fruits and vegetables:** Climacteric rise, horticultural maturity, physiological maturity, physiological changes, physical changes, chemical changes, pathological changes during the storage of fruits and vegetables.	**13**	**4**

i. Text Book and Reference Book:

1. Fellows, P. J. (2017). Food processing technology: Principles and practice (4th ed.). Woodhead Publishing.
2. Potter, N. N., & Hotchkiss, J. H. (2012). Food science (5th ed.). Springer.
3. Rao, D. G. (2010). Fundamentals of food engineering. PHI Learning.
4. Srilakshmi, B. (2018). Food science (7th ed.). New Age International Publishers.
5. Manay, N. S., & Shadaksharaswamy, M. (2008). Foods: Facts and principles (2nd ed.). New Age International Publishers.

a. Course Name: Communication Skills - I
b. Course Code: 03693103
c. Prerequisite: Basic proficiency in language comprehension, reading, writing, and listening is helpful for developing communication skills. Willingness to interact, express ideas clearly, and participate in discussions also supports effective learning.
d. Rationale: Communication Skills enhances the ability to express ideas clearly and effectively through verbal, non-verbal, written, and interpersonal communication. It develops confidence, professional competence, and collaboration skills essential for academic, social, and workplace success.

e. Course Learning Objective:

CLOBJ 1	To develop effective verbal, non-verbal, written, and interpersonal communication skills.
CLOBJ 2	To enhance listening, speaking, reading, and writing abilities for academic and professional communication.
CLOBJ 3	To build confidence in presenting ideas, participating in discussions, and communicating in diverse settings.
CLOBJ 4	To strengthen professional communication, teamwork, and interpersonal skills for workplace and social interactions.

f. Course Learning Outcomes:

CLO 1	Demonstrate effective verbal, non-verbal, written, and interpersonal communication in academic and professional contexts.
CLO 2	Apply listening, speaking, reading, and writing skills to communicate ideas clearly and confidently.
CLO 3	Participate effectively in discussions, presentations, teamwork, and professional interactions.
CLO 4	Use appropriate communication strategies for interpersonal, workplace, and social communication situations.

g. Teaching & Examination Scheme:

Teaching Scheme				**Evaluation Scheme**					
L	**T**	**P**	**C**	**Internal Evaluation**			**ESE**		**Total**
				T	**CE**	**P**	**Theory**	**P**	
1	-	-	1	100	-	-	-	-	100

L- Lectures; **T**- Tutorial; **P-** Practical; **C**- Credit, **CE**- Continuous Evaluation, **ESE-** End Semester Examination

h. Course Content:

Sl. No.	**Content**	**Weightage (%)**	**Teaching Hours**
1	**Parts of speech composition:** Analysis, transformation and synthesis	**16**	**5**
2	**Parts of speech composition:** correct usages and structures	**16**	**5**

3	**Written composition:** case writing and letter writing	**11**	**3**
4	**Comprehension, precis writing and essay writing: Comprehension, precis writing and essay writing**	**21**	**7**
5	**Public Speaking □□extempore: Public Speaking □□extempore**	**5**	**2**
6	**ublic Speaking □□prepared: Public Speaking □□prepared**	**5**	**2**
7	**ublic Speaking □□debate: Public Speaking □□debate**	**5**	**2**
8	**Public Speaking □□group discussion: Public Speaking □□group discussion**	**11**	**3**
9	**Group dynamics and Team work: Group dynamics and Team work**	**11**	**3**

i. Text Book and Reference Book:

1. Raman, M., & Sharma, S. (2018). Technical communication: Principles and practice (3rd ed.). Oxford University Press.
2. Rizvi, A. M. (2017). Effective technical communication. McGraw-Hill Education.
3. Kumar, S., & Lata, P. (2018). Communication skills. Oxford University Press.

Semester 2

(1)

Course Name: Food Chemistry and Nutrition

Course Code: 3635159

Prerequisite: Basic knowledge of chemistry and biology, including fundamentals of organic chemis-try, biochemistry, and human physiology.

Rationale: This course provides an understanding of the chemical composition of foods and the nutritional significance of macro- and micronutrients. It equips students with essential knowledge of food components, their reactions during processing and storage, and their role in human health. The course forms a strong foundation for advanced studies in food science, nutrition, quality control, and food safety.

Teaching and Examination Scheme		
Teaching Scheme	**Examination Scheme**	

Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		Total
					T	CE	P	T	P	
2	-	-	-	2	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
2	**Water:** Water binding and chemical reaction mediated by water. Food proteins: Classification and physico-chemical and structural properties.	12	6
3	**Lipids:** Definition, classification of lipids, Unsaponifiable matter contents in various fats and oils, classification and chemical composition.	15	6
4	**Simple Sugars:** mono and disaccharides, Properties, Caramelization, Maillard reaction; Sugar alcohols; Oligosaccharides: structure, nomenclature, occurrence, uses in foods.	15	5
5	**Polysaccharides:** Starch- Structure, Properties, Functional role in food system, Modified starches, Resistant starch, Starch hydrolysates, Applications in food industry.	15	6
6	**Non-starch polysaccharides:** Pectins, Gums &Hydrocolloid, Fiber – Cellulose and hemicellulose; Food sources, functional role and uses in foods.	15	5
7	**Digestion and absorption of carbohydrates, lactose intolerance:** glycemic and non-glycemic carbohydrates, blood glucose.	12	5
	Energy balance and body composition: Energy balance; body weight and body composition; health implications; obesity, BMR and BMI calculations	16	6
	Total	100	39

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	-	2	-	1	-	-	50	-	-	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

List of Practical

1.	**Determination of the order of hydrolysis of an ester/carbohydrate and measurement of activation energy.**
2.	**Determination of the calories from food.**
3.	**Measurement of pH and buffering of different foods.**
4.	**To study the gel formation and gel stability of milk proteins.**
5.	**Determination of moisture content.**

(2)

Course Name: Principles of Food Processing and Perservation
Course Code: 3635161
Prerequisite: Basic understanding of food science, chemistry, and microbiology, including knowledge of food components and general hygiene practices.

Rationale: This course introduces fundamental principles and methods of food processing and preservation used to enhance shelf life, safety, and quality of foods. It provides stu-dents with essential knowledge of thermal and non-thermal processing techniques, spoilage prevention, and preservation strategies, forming a foundation for advanced studies in food technology, quality assurance, and food safety.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Basic considerations:**aims and objectives of preservation & processing of foods, characteristics of tissues and non-tissues foods, degree of perishability of unmodified foods, causes of quality deterioration and spoilage of perishable foods, intermediate moisture foods, wastage of foods.	14	4
2	**Preservation of foods by low temperatures:**(a) chilling temperatures: consideration relating to storage of foods at chilling temperatures, applications and procedures, freezing temperatures: freezing process, slow and fast freezing of foods and its consequence, other occurrences associated with freezingof foods	16	4
3	**Preservation of foods by high temperatures:**Basic concepts in thermal destruction of microorganisms D, Z, F values. Heat resistance and thermophilic microorganisms. Cooking, Blanching.	19	4
4	**Preservation of foods by high temperatures:**Basic concepts in thermal destruction of microorganisms D, Z, F values. Heat resistance and thermophilic microorganisms. Cooking, Blanching.	20	5
5	**Pasteurization and Sterilization of foods:**Assessing adequacy of thermal processing of foods, General process of caning of foods, Spoilage in canned foods.	18	5

6	**Preservation by water removal:** (a) Principles, Technological aspects and application of evaporative concentration process; Freeze concentration and membrane process for food concentrations.	**13**	**4**
	Total	**100**	**26**

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
-	-	2	-	1	-	-	50	-	-	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

List of Practical

1.	**Demonstration of various machineries used in processing**
2.	**Demonstration of effect of blanching on quality of foods**
3.	**Preservation of food by heat treatment- canning**
4.	**Preservation of food by high concentration of sugar i.e., preparation of jam**
5.	**Preservation of food by using acidulants i.e., pickling by acid, vinegar or acetic acid**
6.	**Drying of pineapple slices, apple slices in cabinet drier**

(3)

Course Name: Engineering Graphics
Course Code: 3604173
Prerequisite: Basic knowledge of mathematics, geometry, and visualization of shapes and objects.

Rationale: Engineering Graphics develops the ability to visualize, interpret, and communicate technical ideas through drawings. It provides fundamental skills required for engineering design, planning, and effective technical communication in various engineering and technology disciplines.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
1	-	-	-	1	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**USE OF DRAWING INSTRUMENTS**Teacher will demonstrate: Use of drawing instruments, Planning and layout as per IS, Scaling technique. Draw following: - Drawing horizontal, vertical, 30 degree, 45 degree, 60 & 75 degrees lines using Tee and Set squares/ drafter, Types of lines, Types of dimensioning. Alphabets & numerical (Vertical& inclined as Per I.S.).	27	4
2	**GEOMETRIC CONSTRUCTION**Drawing of set of lines with different conditions (Two problems). Drawing Polygons (Three Problems). Drawing circles and arcs with different geometric. Conditions and with line constraints (Three problems).	13	2
3	**ENGINEERING CURVES ' I**Construction of ellipse using any two methods from arc of circle method, four centre method, rectangular method, eccentricity method and concentric circle method. Construction of parabola with any one method from rectangular method, tangent method and eccentricity method. Construction of hyperbola with any one method from eccentricity method and rectangular method. Construction of spiral.	13	2
4	**ENGINEERING CURVES ' II**Construction of cycloid. Construction of hypocycloid & epicycloids. Construction of involute (circle). Construction of involute (polygon).	7	1

5	**PROJECTIONS OF POINTS AND LINE**Draw projection of points-For 10 various conditions (One problem).Draw projection of lines with different conditions (Four problems).	**7**	**1**
6	**PROJECTIONS OF PLANE**Draw projection of different planes with different conditions (triangle, square / rectangular, pentagonal / hexagonal, and circular -one for each) (Four problems).	**7**	**1**
7	**ORTHOGRAPHIC PROJECTIONS**Draw Orthographic projections of different objects (Two problems) (Draw four views of each object).	**7**	**1**
8	**ISOMETRIC DRAWINGS**Draw isometric drawings from given orthographic views (Three problems).	**7**	**1**
Total		**88**	**13**

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
-	-	4	-	2	-	-	50	-	-	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

(4)

Course Name: Engineering Workshop Practice Lab

Course Code: 3604176

Prerequisite: Basic knowledge of engineering materials, safety practices, and fundamental concepts of tools and machines.

Rationale: This laboratory provides hands-on experience in the use of tools, machines, and workshop practices. It helps students develop practical skills, understand manufacturing processes, follow safety procedures, and apply theoretical knowledge to real engineering applications.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
-	-	4	-	2	-	-	100	-	-	100

(5)

Course Name: Fluid Mechanics
Course Code: 3604177
Prerequisite: Basic knowledge of mathematics, physics, and fundamental concepts of mechanics.

Rationale: Fluid Mechanics provides an understanding of the behavior of fluids at rest and in motion. It forms the foundation for analyzing fluid flow, pressure, and energy transfer, which are essential for the design and operation of engineering systems in civil, mechanical, chemical, and dairy engineering applications.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction**Units and dimensions, Properties of fluids.	6	2
2	**Static pressure of liquids:**Hydraulic pressure, absolute and gauge pressure, pressure head of a liquid. Compressible and non compressible fluids. Surface tension, capillarity	12	4
3	**Pressure measuring devices**simple, differential, micro, inclined manometer, mechanical gauges, Piezometer.	9	3
4	**Fluid flow:**Classification, steady uniform and non uniform flow, Laminar and turbulent, continuity equation, Bernoulli□s theorem and its applications	12	4
5	**Flow through pipes:**Loss of head, determination of pipe diameter. Determination of discharge, friction factor, critical velocity,Flow through orifices, mouthpieces, notches and weirs, Vena contracta, hydraulic coefficients, discharge losses, Time for emptying a tank. Loss of head due to contraction, enlargement at entrance and exit of pipe. External and internal mouthpieces, types of notches, rectangular and triangular notches, rectangular weirs	16	5
6	**Flow measurement:**Venturimeters, pitot tube, Rota meter. Water level point gauge, hook gauge.	13	4
7	**Dimensional analysis:**Buckingham"s theorem application to fluid flow phenomena. Froude Number, Reynolds number. Weber number and hydraulic similitude.	16	5
8	**Pumps:**Classification, reciprocating, centrifugal pump. Pressure variation, work efficiency. Pump selection and sizing.	16	5

Total	**100**	**32**

List of Practical

1.	**Study of various types of pipes and pipe fittings.**
2.	**Study of different types of valves**
3.	**Study of reciprocating pump**
4.	**Determination of frictional coefficient of given pipe.**
5.	**Determination of minor head loss**
6.	**Study the construction and working principle of centrifugal pump.**
7.	**Study and measurement of flow of liquid by V- notch**

(6)

Course Name: Economic Analysis
Course Code: 3604179

Prerequisite: Basic knowledge of mathematics, statistics, and fundamental concepts of microeconomics and macroeconomics.

Rationale: Economic Analysis provides tools to evaluate costs, benefits, efficiency, and decision-making in resource allocation. It helps students understand economic behavior, assess projects and policies, and make informed managerial and planning decisions in various sectors.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
2	-	-	-	2	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Basic concepts-wants**Basic concepts-wants, goods, wealth, utility, consumption, demand and supply	**15**	**5**
2	**Consumer behaviour.**Consumer behaviour-law of diminishing marginal utility and equi- marginal utility, cardinal and ordinal utility approach for consumer's behavior.	**20**	**6**
3	**Theory of demand**Theory of demand-law of demand, demand schedule, demand function, determinates of demand, individual consumer demand and market demand, demand forecasting, elasticity of demand, price elasticity, income elasticity and cross elasticity, Consumer's surplus.	**25**	**8**
4	**Theory of production**Theory of production- concepts of firm and industry, basic factors of production and their role, production function for a single product, nature of production function, laws of returns.	**25**	**8**
5	**Concepts of costs**Concepts of costs-fixed and variable costs, short run and long run costs.	**15**	**5**
	Total	**100**	**32**

(7)

Course Name: Food Microbiology
Course Code: 3635165

P

Prerequisite: Basic knowledge of microbiology, biology, and food science, including an understanding of microorganisms and general laboratory practices.

Rationale: This course provides fundamental knowledge of microorganisms associated with foods, their role in food spoilage, fermentation, and food-borne diseases. It equips students with an understanding of microbial control, food safety, and hygiene practices, forming a strong foundation for careers in food processing, quality assurance, and public health.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
1	-	-	-	1	20	20	-	60	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction and scope of food microbiology and its relevance to everyday life.:**Introduction and scope of food microbiology and its relevance to everyday life.	10	6
2	**General characteristics:**General characteristics:	12	5
3	**Identification of microorganisms:**morphological characteristics important in food bacteriology and its industrial importance	15	6
4	**Growth of microorganisms:**growth curve - intrinsic factors (substrate limitations) nutrient content pH, buffering capacity antimicrobial barriers and constituents, water activity, intrinsic factors (substrate limitations), relative humidity tem-perature gaseous atmosphere	20	5
5	**Microbiology of deficient food:**cereal and cereal products, sugar and sugar products, vegetables and fruits, meat and meat products, fish, egg and poultry. Milk and milk products, canned foods.	20	6
6	**Environmental microbiology:**water and water borne diseases, air and air borne diseases, soil and soil borne diseases, sewage and diseases.	13	4
7	**Beneficial effect of organism:**some applications of microorganisms in food products e.g., alcoholic drinks, dairy products, bread, vinegar, pickled foods, mushrooms, single-cell protein	10	5
	Total	100	37

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme		
					Internal Marks	External Marks	Total
Lecture	Tutorial	Lab	Seminar	Credit			

Hrs/Week	Hrs/Week	Hrs/Week	Hrs/Week		T	CE	P	T	P	
-	-	2	-	1	-	-	50	-	-	50

SEE - Semester End Examination, **T** - Theory, **P** - Practical

(8)

Course Name: Communication Skills – II
Course Code: 3693153

Prerequisite: Students should have prior knowledge of: Basic Physics and Engineering Principles, Food Engineering, basic understanding of sensors, transducers, control valves, and automation components.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					
					Internal Marks			External Marks		Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Seminar Hrs/Week	Credit	T	CE	P	T	P	
1	-	-	-	1	-	100	-	-	-	100

SEE - Semester End Examination, **T** - Theory, **P** - Practical

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Listening Skills** Listening Process and Practice - Introduction, importance of good Listening Skills, difference between listening and hearing,types of listening, Barriers to effective Listening, traits of a good listener.	15	6
2	**Listening Skills – Questions** With audio aids, Students will be able to listen to dialogues,improve in gathering information and to summarize the content. To listen and understand day-to-day conversations and to solve questions based on audio files.	10	1
3	**Building Vocabulary** Synonyms, Antonyms, Homophones, Homonyms, Homographs, Phrasal verbs, idioms & phrases, One word substitution.	15	1
4	**Introduction to Phonetics** Sounds: Consonant, Vowel, Diphthongs, transcription of words(IPA) weak forms, syllable division, word stress, intonation and voice.	15	6
5	**Speaking Skill Building Introduction** To enable students to eliminate stage fright and engage in conversation with others.	5	2
6	**Speaking Skill Building Activity** Enables students to engage in formal communication as well as to participate in events like debate, extempore etc, and to introduce them to various international Language testing systems.	5	1
7	**Tourism Pitch** Classroom activity which helps students to express their feelings and experiences in English. Encouraging students to overcome stage fear.	5	1
8	**Lifeboat** Classroom Activity to encourage Communication and Convincing Skills.	5	1
9	**Reporter** Classroom activity to encourage Communication and Convincing Skills.	5	1

	10	**Paragraph Jumble**			**5**
	11	**Life Skills**			**5**
	12	**Reading Comprehension**			
		10			
		2 A Day's Wait- Ernest Hemingway, My Lost Dollar - Stephen Leacock.			
P	**Total**				
	100	**30** a			

a.