



CO Statements		POs												PSOs			
CO4	Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.	-	-	2	-	-	2	3	-	-	-	-	-	-	-	-	-
CO5	Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations	-	-	2	-	-	2	3	-	-	-	-	-	-	-	-	-
<b>Course Code</b>	<b>171BS1T03 - ENGINEERING CHEMISTRY</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Explain polymeric materials their uses and moulding techniques of plastics.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO2	Analyse fuel characteristics using Calorific value, knocking characteristics and flue gas analysis.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO3	Explain the working principle of Electro chemical cells and corrosion characteristics.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO4	Explain the properties and applications of Nano, Superconductors, Semiconductors, Liquid crystals and fuel cells.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO5	Summarize water purification techniques and boiler troubles.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Course Code</b>	<b>171ES1T02 - ENGINEERING MECHANICS</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Determine the resultant force and moment for a given force system.	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	
CO2	Explain the concept of friction.	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
CO3	Calculate the forces in planar and spatial systems.	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	
CO4	Locate centroid of composite areas and centre of gravity of composite bodies.	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
CO5	Calculate the moment of inertia of composite areas and rigid bodies.	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	
CO6	Apply the concepts of kinematics, kinetics, work - energy and impulse - momentum methods to particle motion.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-	
<b>Course Code</b>	<b>171ES1T01 -COMPUTER PROGRAMMING</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Apply fundamental of C for mathematical and scientific problems.	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO2	Use Control Structures, Arrays and strings in solving complex problems.	1	2	2	3	-	-	-	-	-	-	-	-	-	-	-	
CO3	Develop modular programs to solve problems using functions.	1	3	2	2	-	-	-	-	-	-	-	-	-	-	-	
CO4	Demonstrate the pointers concept for allocating and deallocating memory dynamically.	1	2	2	3	-	-	-	-	-	-	-	-	-	-	-	
CO5	Solve real world problems using the concept of files, structures and unions.	1	2	2	2	-	-	-	-	-	-	-	-	-	-	-	
<b>Course Code</b>	<b>171HS1L01 - ENGLISH COMMUNICATION SKILLS LAB- I</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Make use of the concepts to communicate confidently and competently in English Language in all spheres.	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	
CO2	Express Creative skills to construct Dialogues / Conversations in Spoken and Written forms.	-	-	-	-	1	-	-	-	-	3	-	2	-	-	-	
CO3	Identify Accent for intelligibility.	-	-	-	-	1	-	-	-	-	3	-	2	-	-	-	
CO4	Demonstrate communicative ability in everyday Conversation, JAM Sessions and Public Speaking.	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-	



	CO Statements	POs												PSOs			
CO4	Find the gradient of a scalar function, divergence and curl of a vector function.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Apply line, surface and volume integrals to find work done by a force, flux.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	<b>171BS2T07- ENGINEERING PHYSICS</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Make use of the basic concepts of interference and relate to the principle of interferometer.	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Relate the basic concepts of diffraction to illustrate the principle of optical instruments like Telescope & microscope.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Explain the basic concepts of polarization, principle of polarimeter and the method of producing high intensity light beams.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Explain the basic concepts of sound waves, ultrasonics, crystal structure and X-ray diffraction Techniques.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Classify different types of solids, to use the appropriate solid as per its magnetic and dielectric properties.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	<b>171ES2T03 - ENGINEERING DRAWING</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Sketch the polygons, conics and scales by using the principles of drawing.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-	-
CO2	Draw Orthographic projections of points and lines.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-	-
CO3	Draw Orthographic projections of planes in various positions.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-	-
CO4	Draw Orthographic projections of solids in various positions.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-	-
CO5	Construct isometric scale and isometric projections.	3	2	1	-	2	-	-	-	-	-	-	-	1	-	-	-
CO6	Convert isometric view in to orthographic views.	3	2	1	-	2	-	-	-	-	-	-	-	1	-	-	-
Course Code	<b>171ES2T08 - THEORY OF MACHINES</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Determine the velocity and acceleration for different mechanisms by graphical and analytical methods.	3	2	1	-	-	-	-	-	-	-	-	-	3	-	-	-
CO2	Compute the parameters of mechanical components for power transmission.	3	2	1	-	-	-	-	-	-	-	-	-	3	-	-	-
CO3	Determine the parameters of gears and gear trains.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-
CO4	Determine the parameters for various types of governors.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-
CO5	Calculate the balancing forces of rotating and reciprocating masses.	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-	-
CO6	Calculate the weight and moment of inertia of fly wheels.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-
Course Code	<b>171HS2L02- ENGLISH COMMUNICATION SKILLS LAB- II</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Make effective use of Body language in all situations and contexts to enhance effective communication in all aspects.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-	-
CO2	Identify communicative competency to respond to others in different situations.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-	-
CO3	Make use of effective delivery strategies to select, compile and synthesize information for oral presentation.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-	-

CO Statements		POs												PSOs			
CO4	Demonstrate in mock interviews, group discussion and public speaking.	-	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-
CO5	Illustrate interpersonal skills using English language confidently and effectively for personal and professional growth.	-	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-
<b>Course Code</b>	<b>171BS2L02 - ENGINEERING PHYSICS LAB</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Use spectrometer, polarimeter, travelling microscope for making measurements.	3	2	-	-	-	-	-	-	1	-	-	1	-	-	-	
CO2	Determine energy gap of a semiconductor, draw characteristic curves to estimate thermal coefficient of a thermistor, zener diode.	2	2	-	-	-	-	-	-	1	-	-	1	-	-	-	
CO3	Determine the rigidity and determine frequency of an unknown electric vibrator.	3	1	-	-	-	-	-	-	1	-	-	1	-	-	-	
CO4	Determine wavelength of unknown source, the width of narrow slits, spacing Between close rulings using lasers and appreciate the accuracy in measurements.	3	2	-	-	-	-	-	-	1	-	-	1	-	-	-	
CO5	Verify magnetic field along the axis of a circular coil.	3	2	-	-	-	-	-	-	1	-	-	1	-	-	-	
<b>Course Code</b>	<b>171ES2L02 - ENGINEERING WORKSHOP AND IT WORKSHOP</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Prepare carpentry, fitting joints as per the given requirement using Carpentry and Fitting tools.	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-	
CO2	Convert the metal rods and sheets into final shape using black smithy and tin smithy tools.	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-	
CO3	Prepare the circuit for house wiring applications.	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-	
CO4	Install the operating system software, networking and troubleshoot the problems.	2	1	-	-	-	-	-	-	1	-	-	1	-	-	-	
CO5	Develop documents using MS-Office and LaTeX tools.	2	1	-	-	-	-	-	-	1	-	-	1	-	-	-	
<b>III SEM</b>																	
<b>Course Code</b>	<b>171AG3T01- PRINCIPLES OF SOIL SCIENCE AND AGRONOMY</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Explain about the mode of formation of rocks, minerals and processes of weathering and soil forming.	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	
CO2	Explain about importance of soil structure, soil consistency, soil air and soil temperature.	1	2	-	-	-	-	-	-	-	-	-	1	-	2	-	
CO3	Explain the role of beneficial organisms in enriching the soil, availability of plant nutrients and problematic soils.	1	-	3	-	-	-	-	-	-	-	-	2	-	3	-	
CO4	Classify crops based on origin, agronomic, ontogeny, season and special purpose.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	
CO5	Explain about tillage, types of tillage, Methods of sowing, weed management, and problems of dryland farming.	-	2	3	-	-	-	-	-	-	-	-	2	-	2	-	
<b>Course Code</b>	<b>171AG3T02- RENEWABLE ENERGY SOURCES</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Classify the different solar geometry, solar measuring devices and solar collectors.	2	1	-	-	-	-	1	-	-	-	-	-	1	-	-	



	CO Statements	POs												PSOs		
Course Code	171ES3T21 - SURVEYING AND LEVELING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Use the linear and angular distances using chain, compass instruments.	2	1		-	-	-	-	-	-	-	-	-	-	1	-
CO2	Make use of appropriate techniques in order to estimate the level of existing ground.	3	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO3	Solve height and distances problems using Theodolite and Tachometry.	2	1		-	-	-	-	-	-	-	-	-	-	1	-
CO4	Utilize various advanced surveying equipment for large projects.	3	2	2	-	-	-	-	-	-	-	-	-	-	1	-
CO5	Determine regular, irregular areas and volumes of given field	3	2	1	-	-	-	-	-	-	-	-	-	-	2	-
Course Code	171AG3L01 - SOIL SCIENCE AND AGRONOMY FIELD LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain about soil profile and collection of soil samples..	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Determine soil density, soil moisture, pH and EC using standard methods.	2	2	-	1	-	-	-	-	-	-	-	-	-	3	-
CO3	Measure infiltration and evaporation rate in soil using standard procedure.	1	1	-	-	-	-	-	-	-	-	-	-	-	2	-
CO4	Make use of different implements for practicing ploughing, seed bed preparation, sowing, weeding, fertilizer application, harvesting.	-	-	-	-	2	-	-	-	-	-	-	-	-	3	-
CO5	Identify different crops, seeds, manures and fertilizers.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	171ES3L11 - SURVEYING AND LEVELING LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	List and handle different surveying instruments.	2	1		-	-	1	-	-	-	-	-	-	-	1	-
CO2	Estimate the levels of existing ground and prepare contour plan.	3	2	1	-	-	2	-	-	-	-	-	-	-	1	-
CO3	Develop the plan or map showing the ground features from data obtained by surveying.	2	1		-	-	-	-	-	-	-	-	-	-	1	-
CO4	Make use of advanced surveying equipments to avoid manual errors.	3	2	2	-	-	1	-	-	-	-	-	-	-	1	-
CO5	Identify layout curves for roads and computation of areas and volumes.	3	2	1	-	-	2	-	-	-	-	-	-	-	1	-
Course Code	171HS3A09-Professional Ethics and Human Values	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Make use of values, morals and ethics in their day to day life.	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-
CO2	Identify what is right and wrong through moral ethics.	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-
CO3	Analyze experimental learning while developing the society with ethics.	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-
CO4	Apply ethical principles to resolve the problems that arise in work place.	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-
CO5	Apply adequate knowledge on global code of conduct.	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-
Course Code	171HS3A10 - Employability Skills – I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Solve problems of Series & Analogy for Numbers and Letters	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO2	Solve problems on Coding & Decoding and Divisibility rules	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO3	Solve problems on LCM & HCF and Simple Equations	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO4	Demonstrate Attitude, self-confidence and decision making in different situations	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-

	CO Statements	POs												PSOs			
CO5	Develop out of box and lateral thinking, better goal setting and time management	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
<b>IV SEM</b>																	
Course Code	171AG4T04- THERMODYNAMICS AND REFRIGERATION SYSTEMS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain the basic concepts and laws of thermodynamics.	3	2	1	-	-	2	-	-	-	-	-	-	-	-	3	
CO2	Discuss the working principle and performance of 4 stroke and 2-stroke Diesel and Petrol Engines.	3	2	-	-	-	2	-	-	-	1	-	-	-	-	3	
CO3	Explain the various refrigeration cycles, their applications and performance.	3	1	-	-	-	2	1	-	-	-	-	-	-	-	3	
CO4	Distinguish working principles various refrigeration systems.	3	1	-	-	-	-	-	-	-	2	-	-	-	-	3	
CO5	Discuss various Psychometric processes, their Properties and storage.	3	2	1	-	-	2	-	-	-	-	-	-	-	-	3	
Course Code	171AG4T05 - HEAT AND MASS TRANSFER	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain the basic modes of heat transfer and the principles of conductive heat transfer for different bodies.	3	2	1	1	-	-	-	-	-	-	-	-	-	-	1	
CO2	Interpret forced and free convection heat transfer mechanism.	3	2	1	1	-	-	-	-	-	-	-	-	-	-	2	
CO3	Determine the heat transfer performance of the extended surfaces.	3	2	2	2	-	-	-	-	-	-	-	-	-	-	3	
CO4	Apply LMTD & NTU for designing of heat exchangers.	3	2	1	1	-	-	-	-	-	-	-	-	-	-	2	
CO5	Explain the principles of radiation heat transfer and mass transfer.	3	1	-	2	-	-	-	-	-	-	-	-	-	-	2	
Course Code	171ES4T25 - FLUID MECHANICS AND OPEN CHANNEL HYDRAULICS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Interpret the various properties of fluids and their influence on fluid motion.	2	1	-	-	-	-	2	-	-	-	-	-	-	2	-	
CO2	Solve problems on pressure measurement, hydrostatic forces on submerged bodies and continuity equation.	3	1	-	-	-	-	2	-	-	-	-	-	-	2	-	
CO3	Apply the knowledge of Dynamics to Solve problems on Bernoulli's equation and its applications and also calculating thickness of boundary layer.	2	1	-	-	-	-	-	-	-	-	-	-	-	2	-	
CO4	Solve problems on meta centric heights of floating bodies and measurement of discharge in closed and open channels.	3	2	-	-	-	-	2	-	-	-	-	-	-	2	-	
CO5	Determine losses and discharges in simple and compound pipes.	2	2	-	-	-	-	2	-	-	-	-	-	-	2	-	
CO6	Solve the problems on economical sections, critical depth and specific energy for various channels.	1	2	-	-	-	-	3	-	-	-	-	-	-	2	-	
Course Code	171AG4T06 - SOIL MECHANICS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Classify the soil at field conditions and able to determine nature of soil it exist.	2	1	-	-	-	2	-	-	-	-	2	-	-	1	-	
CO2	Calculate the vertical pressure distribution for different load conditions	2	1	-	-	-	2	-	-	-	-	2	-	-	1	-	
CO3	Determine the shear strength of soils through theoretical shear parameters.	3	2	-	-	-	2	-	-	-	-	2	-	-	1	-	



	CO Statements	POs												PSOs		
CO4	Calculating the different engineering properties of the soil such as compaction, consolidation determines them in the laboratory.	3	2	-	-	-	2	-	-	-	-	2	-	-	1	-
CO5	Calculate the factor of safety for various retaining structures.	3	2	-	-	-	2	-	-	-	-	2	-	-	1	-
Course Code	<b>171AG4T07 - SURFACE WATER HYDROLOGY</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
CO1	Calculate the mean areal precipitation using various methods.	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Explain rainfall characteristics and measuring devices in India.	2	1	-	-	2	-	-	-	-	-	-	-	-	2	-
CO3	Explain runoff and stream flow measurement methods.	2	1	-	-	2	-	-	-	-	-	-	-	-	2	-
CO4	Estimate the discharge volume of runoff using hydrographs and unit hydrographs.	2	-	-	2	3	-	-	-	-	-	-	-	-	2	-
CO5	Apply various hydrograph techniques to convert multiple duration graph into single duration vice-versa.	1	2	-	-	3	-	-	-	-	-	-	-	-	2	-
CO6	Plan a reservoir using flood routing techniques for management of natural resources.	2	2	-	-	3	-	-	-	-	-	-	2	-	3	-
Course Code	<b>171AG4T08 - ENGINEERING PROPERTIES OF BIOLOGICAL MATERIALS AND FOOD QUALITY</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
CO1	Choose the basic applications and importance of engineering properties in handling and processing equipment and also storage structures.	2	2	3	2	-	-	-	-	-	-	-	-	-	-	3
CO2	Analyze the Maxwell and Kelvin model equations in the rheology for important biological materials.	3	1	1	-	1	-	-	-	-	-	-	-	-	-	3
CO3	Explain about frictional, electrical, thermal and aerodynamics properties of food and biological materials to process design and quality control.	3	2	2	2	-	-	-	-	-	-	-	-	-	-	3
CO4	Classify the different types of sampling techniques and sampling procedures for liquid, powdered and granular materials.	2	3	2	2	-	-	-	-	-	-	-	-	-	-	3
CO5	Explain total quality management (TQM), food laws, food standards and HACCP.	3	2	-	-	-	-	-	2	-	-	1	-	-	-	3
Course Code	<b>171ES4L14 - FLUID MECHANICS AND OPEN CHANNEL HYDRAULICS LAB</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
CO1	Explain Fluid Properties.	2	1	-	-	2	1	-	-	-	-	-	-	-	1	-
CO2	Illustrate Flow Measuring Devices used in pipes, channels and Tanks.	2	1	-	-	3	2	-	-	-	-	-	-	-	2	-
CO3	Determine major and minor losses in pipes.	3	2	-	-	2	-	-	-	-	-	-	-	-	1	-
CO4	Demonstrate the flow behaviour in open channels.	2	2	-	-	2	1	-	-	-	-	-	-	-	3	-
CO5	Examine the performance characteristics of pumps.	3	2	-	-	2	2	-	-	-	-	-	-	-	3	-
Course Code	<b>171ES4L15- MACHINE DRAWING AND COMPUTER GRAPHICS LAB</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
CO1	Explain the conventional representation of materials and machine components.	2	-	-	-	-	-	-	-	-	2	-	-	-	-	-
CO2	Assemble the drawings of various machine components.	3	-	-	-	-	-	-	-	-	2	-	-	1	-	-





	CO Statements	POs												PSOs			
CO2	Describe the manufacturing of alcohol processes and production of furfural.	2	1	-	1	-	-	3	-	-	-	-	-	-	-	-	2
CO3	Explain by-products of coconut, mango, cashew nut and banana.	2	1	-	-	-	-	-	-	1	-	3	-	-	-	3	
CO4	Explain about the feed manufacturing equipments, paper making process and different types of sugarcane bi-products.	2	1	-	-	-	-	-	-	1	-	3	-	-	-	3	
CO5	Explain the biological treatment with their advantages and disadvantages.	3	-	-	1	-	1	-	1	-	-	-	-	-	-	1	
CO6	Explain the types of aeration systems and briquetting process, principles and factors affecting for establishing of agro processing.	3	2	-	1	-	-	1	-	-	-	-	-	-	-	2	
Course Code	<b>171HS5E01 - MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS (PROFESSIONAL ELECTIVE - I)</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain the Managerial Economic concepts for decision making and forward planning.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	
CO2	Illustrate the law of demand and its exceptions, to use different forecasting methods for predicting demand for various products and services	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	
CO3	Identify the cost behaviour, costs useful for managerial decision making and Break Even Point (BEP) of an enterprise.	1	1	-	-	-	-	-	-	-	-	1	-	-	-	-	
CO4	Outline the different types of business organizations along with basic knowledge on business cycle.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	
CO5	Make use of the process & principles of accounting and prepare Journal, Ledger, Trial Balance, Trading A/c., Profit & Loss A/c. and Balance Sheet of an enterprise.	1	1	-	-	-	-	-	-	-	3	-	-	-	-	-	
CO6	Utilize various techniques on investment project proposals with the help of capital budgeting techniques for decision making.	1	1	-	-	-	-	-	-	-	-	2	-	-	-	-	
Course Code	<b>171AG5E02 - RURAL WATER SUPPLY, SANITATION AND ENVIRONMENTAL ENGINEERING (PROFESSIONAL ELECTIVE - I)</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain rural water quality monitoring and surveillance.	-	-	-	-	1	2	-	-	-	2	-	-	-	1	-	
CO2	Explain wastewater collection system, treatment and disposal of wastewater in rural areas.	-	-	-	-	-	2	-	-	-	2	-	3	-	1	-	
CO3	Apply eco-friendly technologies in order to maintain hygienic conditions.	-	-	-	-	2	2	-	-	-	1	-	1	-	1	-	
CO4	Demonstrate the human activities that are detrimental to environment.	-	-	1	-	2	-	-	-	-	2	-	1	-	1	-	
CO5	Create solutions that conserve and help to maintain biodiversity in the long term.	-	-	2	-	-	-	-	-	-	2	-	3	-	1	-	
Course Code	<b>171HS5T06 - Employability Skills – III</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain different types of puzzles,group reasoning,clock and calender problems	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	
CO2	Solve problems on cubes & dice, partnership, percentages.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	





	CO Statements	POs												PSOs		
<b>Course Code</b>	<b>171AG6E04 - HUMAN ENGINEERING AND SAFETY (PROFESSIONAL ELECTIVE - II)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Explain man-machine-environmental factors.	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-
<b>CO2</b>	Explain anthropometric principles for work space design.	1	-	3	-	-	-	2	-	-	-	-	-	3	-	-
<b>CO3</b>	Explain Skeletal and Muscular System of Human body.	1	-	-	3	-	2	-	-	-	-	-	-	2	-	-
<b>CO4</b>	Explain the factors affecting the work capacity.	1	-	-	-	-	1	-	-	-	-	-	-	2	-	-
<b>CO5</b>	Measure the sound and noise levels at work place.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO6</b>	Demonstrate safety measures and regulation acts.	3	2	-	-	-	-	1	-	-	-	-	-	3	-	-
<b>Course Code</b>	<b>171AG6E05 - PRODUCTION TECHNOLOGY OF AGRICULTURAL MACHINERY (PROFESSIONAL ELECTIVE - II)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Calculate the stresses in agricultural machinery components.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO2</b>	Select the type of cutting and finishing tool based on the conditions	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-
<b>CO3</b>	Explain the preparation and characteristics of metal powders.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO4</b>	Illustrate the Limits fits & tolerances and also essential features of jigs & fixtures.	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO5</b>	Explain the CNC controlling and part programming in machine control units.	1	2	-	-	1	-	-	-	-	-	-	1	1	-	-
<b>Course Code</b>	<b>171AG6E06- GREEN HOUSE/POLYHOUSE TECHNOLOGY (PROFESSIONAL ELECTIVE - III)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Design small scale polyhouse for drying purpose.	3	2	1	-	-	-	-	-	-	-	2	-	-	3	-
<b>CO2</b>	Select polyhouses based on construction materials.	3	2	-	-	-	-	-	1	-	-	-	-	-	2	-
<b>CO3</b>	Explain the scenario of protective cultivation around the globe and in India.	3	1	-	-	1	-	-	-	-	-	-	-	-	3	-
<b>CO4</b>	Make use of non-chemical and chemical pesticides and growth regulators effectively in an environmentally responsible way.	1	-	1	-	-	-	2	3	-	-	-	-	-	2	-
<b>CO5</b>	Assess the basic production requirements and the knowledge of horticulture crop cultivation in greenhouse	3	-	-	-	-	-	2	-	-	-	-	-	-	1	1
<b>Course Code</b>	<b>171AG6E07 - OPTIMIZATION, OPERATION RESEARCH AND SYSTEMS ENGINEERING (PROFESSIONAL ELECTIVE - III)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Solve linear programming problems using graphical and simplex methods.	2	2	-	-	-	-	-	-	-	-	-	1	-	-	-
<b>CO2</b>	Solve non-linear programming problems using search and gradient methods.	2	2	-	-	-	-	-	-	-	-	-	1	-	-	-
<b>CO3</b>	Find the critical path and project cost using PERT & CPM Networks.	2	2	-	-	-	-	-	-	-	-	-	1	1	-	-
<b>CO4</b>	Find the optimal solutions in transportation and assignment problems.	2	2	-	-	-	-	-	-	-	-	-	1	1	-	-
<b>CO5</b>	Calculate optimum Parameters in sequencing, replacement and dynamic programming applications.	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-

	CO Statements	POs												PSOs		
Course Code	171AG6E08 - INDUSTRIAL ENGINEERING AND MANAGEMENT (PROFESSIONAL ELECTIVE - III)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the role of an industrial engineer and required managerial skill set.	1	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Select suitable plant layout in the light of industrial safety aspects.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Develop the efficient work system using principles of work study.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Analyze control charts for variables and attributes for process control.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Explain the quantitative methods of human resources management.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	Find the critical path of estimate project cost using PERT & CPM Network.	1	1	-	-	-	-	-	-	-	-	-	-	1	-	-
Course Code	171HS6T07 - Employability Skills – IV	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Solve problems of seating arrangements ,syllogism	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO2	Solve problems of Time and Work, Pipes and Cisterns, Time and Distance, Races and trains	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO3	Solve Problems on Boats and Streams, Permutation and Combination, Probability and Data Interpretation	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO4	Apply processes of Group discussion ,Phonetics, Leadership skills in real world	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-
CO5	Apply principles of Group Dynamics, Interview Skills & Evaluation criteria in organizations	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-
Course Code	171AG6L04 - FARM MACHINERY LAB-1	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the different types of equipment for tillage operations.	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Measure the specifications and operational parameters of different tillage equipments.	-	1	-	-	3	-	-	-	-	-	-	-	2	-	-
CO3	Select the ploughing method suitable for tillage operations in particular fields.	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO4	Determine soil properties and furrow area indifferent farms before and after tillage Operations.	3	-	-	-	1	-	-	-	-	-	-	-	2	-	-
CO5	Estimate the calibration of seed cum fertilizer drills and sprayers.	1	-	-	2	-	-	-	-	-	-	-	-	2	-	-
Course Code	171AG6L05 - SOIL AND WATER ENGINEERING LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Determine sediment concentration, rate of sedimentation and infiltration characteristics of soil.	2	1	-	-	1	-	-	-	-	-	-	-	-	2	-
CO2	Estimate soil loss using erosivity index and erodibility index.	1	-	-	-	-	-	-	-	-	-	-	-	-	3	-
CO3	Estimation of runoff water using H-flume and evaporation rate using pan evaporimeter	1	-	1	-	2	-	-	-	-	-	-	1	-	2	-
CO4	Make use of current meter and water meter for measurement of flow.	1	-	1	-	2	-	-	-	-	-	-	1	-	2	-
CO5	Explain about soil conservation and gully control structures.	1	-	3	2	-	-	-	-	-	-	-	1	-	3	-



	CO Statements	POs												PSOs		
VII SEM																
Course Code	171AG7T18 - MICRO IRRIGATION ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain scenario, types and different components of sprinkler irrigation system.	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Inspect performance evaluation and design of sprinkler irrigation system.	1	-	3	-	2	-	-	-	-	-	-	1	-	3	-
CO3	Explain scenario and components of drip irrigation system.	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-
CO4	Identify performance evaluation and head losses calculation of drip irrigation.	-	-	3	-	2	-	-	-	-	-	-	-	-	3	-
CO5	Evaluate design of drip irrigation system.	-	-	3	-	2	-	-	-	-	-	-	-	-	3	-
Course Code	171AG7T19- FARM MACHINERY AND EQUIPMENT-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Demonstrate different crop harvesting and windrowing methods and machineries.	3	-	-	-	-	-	-	-	-	-	2	-	2	-	-
CO2	Explain working principles and construction details of forage harvesting and threshing machinery.	3	1	-	-	-	-	-	-	-	-	2	-	2	-	-
CO3	Evaluate performance of crop harvesters and threshers	-	2	1	3	1	-	-	-	-	-	-	-	3	-	-
CO4	Explain working principles and construction details of combine harvester, corn harvester and sugarcane harvester.	3	2	-	1	-	-	-	-	-	-	-	1	3	-	-
CO5	Explain working principles and construction details of root crop harvesting equipment.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO6	Demonstrate about different cotton and fruit harvesters.	3	1	-	-	-	-	-	-	-	-	2	-	1	-	-
Course Code	171AG7T20 - DAIRY AND FOOD ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain dairy plant layouts and design parameters.	2	2	3	1	-	-	-	-	-	-	-	-	-	-	3
CO2	Identify the preliminary processing steps in dairy industry.	3	1	1	-	-	2	-	-	-	-	-	-	-	-	2
CO3	Compare different thermal treatments of milk.	3	2	2	-	-	2	-	-	-	-	-	-	-	-	2
CO4	Select the accurate processing technique during milk processing.	3	2	1	-	-	2	-	-	-	-	-	-	-	-	3
CO5	Distinguish the changes in milk during preservation.	3	2	2	-	-	2	-	-	-	-	-	-	-	-	2
Course Code	171ES7T26- MECHANICAL MEASUREMENTS AND INSTRUMENTATION	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the methods of measurement system, instruments and errors in measurements.	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Differentiate various mechanical, electrical and electro-mechanical type pressure measuring transducers.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Analyze the concepts of strain, force and torque measurements.	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO4	Categorize the methods and principles of temperature measuring transducers.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Differentiate different instruments for measuring sound, speed and motion.	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	171AG7E09- SEED PROCESSING AND STORAGE ENGINEERING (PROFESSIONAL ELECTIVE - IV)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Illustrate seed plant layout, and various seed cleaning equipment.	2	1	-	-	-	-	-	-	-	3	2	-	-	-	3

	CO Statements	POs												PSOs			
CO2	Select drying equipment based on different drying techniques.	3	2	1	1	-	-	-	-	-	-	-	-	-	-	-	2
CO3	Categorize various unit operations in seed processing industry.	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	2
CO4	Explain the changes during seed storage and concepts of storage.	2	1	1	-	-	3	-	-	-	-	-	-	-	-	-	2
CO5	Explain the seed storage structures and their importance.	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	3
Course Code	<b>171AG7E10 - FOOD PROCESSING PLANT DESIGN AND LAYOUT (PROFESSIONAL ELECTIVE - IV)</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain the parameters to be considered in a food plant layout.	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	2
CO2	Compare different food processing plants layouts.	2	1	1	3	-	-	-	-	-	-	-	-	-	-	-	3
CO3	Design specifications of food processing plant.	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO4	Design the machinery required in process control of the food processing plant.	2	2	3	1	-	-	-	-	-	-	-	-	-	-	-	3
CO5	Explain sanitation procedures used in the food processing plant and report making.	2	-	-	-	-	2	-	-	-	-	2	3	-	-	-	3
CO6	Estimate the cost of plant set up and operation.	3	2	-	2	-	-	-	-	-	2	-	-	-	-	-	3
Course Code	<b>171AG7E11- FOOD PACKAGING TECHNOLOGY (PROFESSIONAL ELECTIVE - IV)</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain the importance of packaging in food industry.	3	1	-	-	-	1	2	-	-	-	-	-	-	-	-	2
CO2	Explain food packaging laws and regulations.	-	-	-	-	-	2	3	2	-	-	-	-	-	-	-	3
CO3	Categorize paper and glass packaging material for manufacturing process.	3	-	-	-	-	1	1	-	-	-	-	-	-	-	-	2
CO4	Select metal and plastic packaging material recommended for food packaging.	3	-	-	-	-	1	1	-	-	-	-	-	-	-	-	2
CO5	Assess knowledge on advanced packaging technologies and testing of packaging material.	3	1	-	2	-	-	1	-	-	-	-	-	-	-	-	3
Course Code	<b>171AG7E12 - AQUACULTURAL ENGINEERING (PROFESSIONAL ELECTIVE - V)</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Select site for aquaculture pond.	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Analyze soil characteristics that are required for aqua farm construction.	-	1	2	2	-	-	-	-	-	-	-	-	-	1	-	-
CO3	Design an aqua farm and modern aquaculture farm system with aquaculture equipment.	-	-	3	1	1	-	-	-	-	-	-	-	-	2	-	-
CO4	Explain the feeding systems for fishes in culture ponds.	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO5	Explain the water treatment techniques in aqua culture ponds.	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-
Course Code	<b>171AG7E13- SOIL DYNAMICS IN TILLAGE AND TRACTION (PROFESSIONAL ELECTIVE - V)</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Distinguish various dynamic properties of soil and their methods of measurement.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
CO2	Analyze the concept of soil tool interaction.	2	3	-	2	-	-	-	-	-	-	-	-	3	-	-	-
CO3	Interpret traction mechanics and prediction models.	2	1	-	-	3	-	-	-	-	-	-	2	2	-	-	-
CO4	Select different traction devices and their method of selection based on load and furrow type.	3	2	-	2	-	-	-	-	-	-	1	-	3	-	-	-

	CO Statements	POs												PSOs			
CO5	Evaluation of traction device performance.	3	1	-	-	-	-	-	-	-	-	-	-	2	3	-	-
Course Code	<b>171AG7E14 - COMPUTATIONAL FLUID DYNAMICS (PROFESSIONAL ELECTIVE - V)</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain the numerical systems and errors involved in computational fluid dynamics.	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-	
CO2	Summarize applied numerical methods, governing equations related to fluid flow and heat transfer.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO3	Develop several equations involved in the fluid flow modeling.	1	3	2	-	2	-	-	-	-	-	-	-	-	1	-	
CO4	Apply FDM concepts for CFD problems.	2	2	-	-	2	-	-	-	-	-	-	-	-	1	-	
CO5	Make use of the concepts of finite volume method for computational fluid dynamics problems.	2	2	-	-	2	-	-	-	-	-	-	-	-	1	-	
Course Code	<b>171AG7L06 - FARM MACHINERY LAB – II</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Demonstrate working principles of various harvesting and threshing machinery.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO2	Measure harvesting and threshing capacity, efficiency and operational losses of farm machinery.	2	3	2	1	-	-	-	-	-	-	-	-	3	-	-	
CO3	Test the harvesters and threshers based on IS standards.	-	2	-	3	-	1	-	-	-	-	-	2	2	-	-	
CO4	Select suitable harvesting and threshing method for different crops and fruits.	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
CO5	Explain constructional details of mowers, reapers, various crop combines and threshers.	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
CO6	Explain safety measures, adjustments, care and maintenance of harvesters and threshers.	3	-	-	-	-	1	-	1	-	-	-	-	3	-	-	
Course Code	<b>171AG7L07 - DAIRY AND FOOD ENGINEERING LAB</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Explain Milk Properties	3	1	1	1	-	-	-	-	-	-	-	-	-	-	2	
CO2	Illustrate heat treatment processes used in milk preservation..	3	1	1	1	-	-	-	-	-	-	-	-	-	-	2	
CO3	Determine the energy required to process the freshmilk.	2	3	2	1	-	-	-	-	-	-	-	-	-	-	2	
CO4	Demonstrate the working of homogenizer and cream separator.	2	1	3	1	-	-	-	-	-	-	-	-	-	-	3	
CO5	Examine the design and layout of dairyplant.	2	1	-	-	-	-	2	-	-	-	3	-	-	-	3	
Course Code	<b>171AG7P01 - INDUSTRY ORIENTED (INTERNSHIP) MINOR PROJECT</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
CO1	Conduct a technical survey to identify a real world engineering problem	1	1								1		1	1	-	-	
CO2	Analyze the industrial plant layout using technical expertise	2					1	1					1	-	2	-	
CO3	Compare theoretical and real work environments in technical perspective	2									1	1	1	-	2	-	
CO4	Identify the challenges in the execution of operations	1	1	1	1									-	2	-	
CO5	Execute the operations and report the results of assigned tasks using modern tools adhering to professional ethics					2			2	1	1			-	-	1	

	CO Statements	POs												PSOs		
<b>VIII SEM</b>																
<b>Course Code</b>	<b>171AG8E15 - HYDRAULIC DEVICES AND CONTROL (PROFESSIONAL ELECTIVE - VI)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Explain the fundamental concepts of hydraulic system.	3	1	-	-	2	-	-	-	-	-	-	-	2	-	-
<b>CO2</b>	Explain basic components in hydraulic system.	3	1	-	-	-	-	-	-	-	-	-	-	1	-	-
<b>CO3</b>	Identify various hydraulic control valves and accessories.	3	2	1	-	-	-	-	-	-	-	-	-	3	-	-
<b>CO4</b>	Analyze the hydraulic circuit design.	2	3	2	1	-	-	-	-	-	-	-	-	3	-	-
<b>CO5</b>	Explain the maintenance of hydraulic system.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO6</b>	Classify various hydraulic devices and their application.	2	1	-	-	2	-	-	-	-	-	-	-	2	-	-
<b>Course Code</b>	<b>171AG8E16- WATERSHED MANAGEMENT (PROFESSIONAL ELECTIVE - VI)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Explain concept, importance and components of watershed.	-	-	1	-	-	-	-	-	-	-	-	-	-	3	-
<b>CO2</b>	Explain erosion types, soil loss estimation and erosion measurement.	1	1	2	-	-	-	-	-	-	-	-	-	-	3	-
<b>CO3</b>	Estimate runoff and water harvesting structures.	1	1	2	-	-	-	-	-	-	-	-	-	-	3	-
<b>CO4</b>	Explain forest and grass land management.	1	-	2	-	-	1	2	-	-	-	-	-	-	2	-
<b>CO5</b>	Explain importance of ecosystem management.	-	-	-	-	-	2	3	-	-	-	-	-	-	2	-
<b>Course Code</b>	<b>171AG8E17 - DESIGN OF AGRICULTURAL MACHINERY (PROFESSIONAL ELECTIVE - VI)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Explain the basic concept of machine design.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO2</b>	Examine basic principles in designing of cotter joint, knuckle joint, levers and springs.	3	1	2	2	-	-	-	-	-	-	-	-	3	-	-
<b>CO3</b>	Apply principles of design to mechanical power transmission elements such as shafts, keys & couplings, bearings.	1	2	3	-	1	-	-	-	-	-	-	-	3	-	-
<b>CO4</b>	Explain the design procedure of flywheel.	2	1	3	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO5</b>	Classify the types of bearing used in machine design.	3	-	-	-	1	-	-	-	-	-	-	-	2	-	-
<b>CO6</b>	Apply principles of design in designing farm machinery implements.	2	2	1	-	3	-	-	-	-	-	-	-	3	-	-
<b>Course Code</b>	<b>171AG8O01 -DIGITAL CONTROL SYSTEMS (OPEN ELECTIVE)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Explain the advantages of discrete time control systems.	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO2</b>	Use z-transformations in the mathematical analysis of different systems.	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO3</b>	Apply the discrete-time systems in state-space model.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO4</b>	Analyze the significance stability of the system using different tests.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO5</b>	Use conventional method of analyzing digital control systems in the w-plane.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO6</b>	Design the state feedback control by the pole placement method.	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-
<b>Course Code</b>	<b>171AG8O02- INDUSTRIAL POLLUTION CONTROL ENGINEERING (OPEN ELECTIVE)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>
<b>CO1</b>	Identify different types of wastes generated in an industry, their effects on living and non-living things.	3	1	-	-	-	-	2	-	-	-	1	-	-	-	-
<b>CO2</b>	Identify the standards for ambient air, noise emission and effluents.	2	2	-	-	-	-	3	-	-	-	1	-	-	-	-

	CO Statements	POs												PSOs			
CO3	Explain about quantification and analysis of waste water treatment.	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Categorize different unit operations and unit processes involved in conversion of highly polluted water to potable standards and solid waste disposal.	2	2	3	-	-	-	-	-	-	-	-	2	-	-	-	
CO5	Explain atmospheric dispersion of air pollutants, and operating principles, design calculations of particulate control devices.	2	2	3	-	-	-	-	-	-	-	-	2	-	-	-	
Course Code	<b>171AG8003 - MECHATRONICS (OPEN ELECTIVE)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Summarize the different types of mechatronics systems and sensors.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO2	Classify the different types of solid state electronic devices.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO3	Describe various types of actuators.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO4	Choose the appropriate controller or processor.	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
CO5	Make use of data interfacing and data acquisition in the design of mechatronics systems.	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
Course Code	<b>171AG8004 - WATER RESOURCES SYSTEMS PLANNING AND MANAGEMENT (OPEN ELECTIVE)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Apply optimization models to solve problems related to water resource systems.	-	2	-	1	2	-	-	-	-	-	3	-	-	-	-	
CO2	Make use of linear programming methods to evaluate the feasibility of water resource projects.	1	2	-	-	2	-	-	-	-	-	3	-	-	-	-	
CO3	Apply dynamic programming for water resource allocation.	1	2	-	1	2	-	-	-	-	-	-	-	-	-	-	
CO4	Demonstrate the nonlinear programming techniques and its different methods.	1	1	-	-	2	-	-	-	-	-	1	-	-	-	-	
CO5	Apply the basics of engineering economics and economic analysis in water management, simulation techniques in water resources.	2	1	-	-	2	-	-	-	-	-	3	-	-	-	-	
Course Code	<b>171CS8004 - OPERATIONS RESEARCH (OPEN ELECTIVE)</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	
CO1	Apply mathematical modeling to formulate and solve real-world problems involving decision making as linear programming problem using graphical and simplex methods.	2	2	-	-	-	1	-	-	-	-	-	2	-	-	-	
CO2	Find the optimal parameters in transportation problem, assignment problem and replacement problem.	2	-	-	-	-	1	-	-	-	-	-	2	-	-	-	
CO3	Find the optimal quantities in inventory control problem and job sequencing problem.	2	-	-	-	-	1	-	-	-	-	-	2	-	-	-	
CO4	Apply game theory, queuing theory in decision making problems.	2	2	-	-	-	1	-	-	-	-	-	2	-	-	-	
CO5	Apply dynamic programming and simulation techniques in real world problems.	1	1	-	-	-	1	-	-	-	-	-	2	-	-	-	

	CO Statements	POs												PSOs		
Course Code	171AG8005 - IMAGE PROCESSING TECHNIQUES (OPEN ELECTIVE)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the concepts of digital image processing.	1	-	-	1	2	-	-	-	-	-	-	-	-	-	-
CO2	Identify various image enhancement and image restoration techniques.	1	-	2	1	3	-	-	-	-	-	-	-	-	-	-
CO3	Outline the color fundamentals and different color image processing methods.	1	1	-	1	2	-	-	-	-	-	-	-	-	-	-
CO4	Utilize different morphological operators for image processing.	1	1	-	2	3	-	-	-	-	-	-	-	-	-	-
CO5	Analyze different image segmentation techniques for image processing.	1	2	-	2	3	-	-	-	-	-	-	-	-	-	-
Course Code	171EC8P02-MAJOR PROJECT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	Develop technical procedure of planning and scheduling of an identified project work through technical survey in line with societal and environmental implications.	1	2	-	-	-	2	2	-	-	-	1	1	1	-	
CO2	Demonstrate technical skills of data collection and data analysis adhering to professional ethics	1	-	-	-	-	-	-	2	-	-	1	1	1	-	
CO3	Design the solutions for the critical problem areas marked in data analysis	2	2	3	2	-	-	-	-	-	-	-	1	1	-	
CO4	Build a team of people to work together and communicate well in the critical stages of project progress.	-	-	-	-	-	-	-	-	1	2	1	1	1	1	
CO5	Use modern tools to derive conclusions and communicating the results of the project work effectively	-	-	-	-	3	-	-	-	-	2	1	1	2	1	