ADITYA ENGINEERING COLLEGE
An Autonomous Instituion
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Department of Agricultural Engineering

B.Tech - AR20 - Course Articulation Matrix

Note: Correlation Levels are 1 or 2 or 3.   Where 1- Slight(Low), 2 - Moderate(Medium), 3 - Substantial (High).

	CO Statements	POs												PSOs		
I SEM																
Course Code	**201HS1T0 - Communicative English**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Identify the ways to overcome fear and use of words paradoxically, interpret the developing conditions and the core competences of the state to prioritize education system	-	-	-	-	-	-	1	-	-	3	-	-	-	-	-
CO2	Explain about world's most precious natural resources.	-	-	-	-	-	-	1	-	-	3	-	-	-	-	-
CO3	Explain about importance of unity to abolish war.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
CO4	Respond well to the changing situations in life with independent knowledge for better decision making.	-	-	-	-	-	-	-	-	2	3	-	2	-	-	-
CO5	Demonstrate writing and concepts of effective writing skills.	-	-	-	-	-	-	-	-	1	3	-	-	-	-	-
Course Code	**201BS1T01 - DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply the concepts of Mean Value theorem, Partial Differentiation and identify the maxima and minima of a given function.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Solve the linear differential equations and model various situations involving differential equations of first order.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Solve linear differential equations of higher order and model various situations involving second order differential equations.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Calculate Rank of a matrix and solve the system of Linear equations and find the Eigen values and Eigen vectors.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Compute various powers of a matrix and identify the nature of the quadratic form.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	**201BS1T02 ENGINEERING PHYSICS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the basic concepts of crystal structure and X ray diffractionTechniques.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Apply the knowledge of acoustics to improve acoustic quality of concerthalls and understand the concepts of flawdetectiontechniques using ultrasonics.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Apply the structure property relationship exhibited by solid materials within the elasticlimit.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-

	CO Statements	POs												PSOs		
CO4	Explain the basic concepts of LASERs along with its Engineering applications and familiarize with types of sensors for various engineering applications	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Explain about magnetic and dielectric properties of different materials.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	**201ES1T04 - PRINCIPLES OF AGRONOMY AND SOIL SCIENCE**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	Classify crops based on origin, agronomic, ontogeny, season and special purpose.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
CO2	Explain about tillage, types of tillage, Methods of sowing, weed management, and problems of dryland farming.	-	2	3	-	-	-	-	-	-	-	-	2	-	2	-
CO3	Explain about the mode of formation of rocks, minerals and processes of weathering and soil forming.	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
CO4	Explain about importance of soil structure, soil air, soil temperature and soil colour.	1	2	-	-	-	-	-	-	-	-	-	1	-	2	-
CO5	Explain the role of beneficial organisms in enriching the soil, availability of plant nutrients and problematic soils.	1	-	3	-	-	-	-	-	-	-	-	2	-	3	-
Course Code	**201ES1I05 - ENGINEEING GRAPHICS**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
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	-	-	-	-	-	-	-	-	-	1	-	-
Course Code	**201HS1L01 COMMUNICATIVE ENGLISH LAB**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
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	-	-	-
CO5	Demonstrate nuances of Language through Audio – Visual Experience and group activities.	-	-	-	-	1	-	-	-	-	3	-	1	-	-	-
Course Code	**201BS1L01 ENGINEERING PHYSICS LAB**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	Determine the rigidity and young's modulus to understand material properties.	3	2	-	-	-	-	-	-	3	-	-	1	-	-	-
CO2	Determine Acceleration due to Gravity and Radius of Gyration and spring constant by oscillatory mechanics.	2	2	-	-	-	-	-	-	3	-	-	1	-	-	-
CO3	Find the strength of the magnetic field.	3	1	-	-	-	-	-	-	3	-	-	1	-	-	-
CO4	Determine wavelength of unknown source, particle size using lasers.	3	2	-	-	-	-	-	-	3	-	-	1	-	-	-
CO5	Determination of velocity of sound, moment of inertia.	3	2	-	-	-	-	-	-	3	-	-	1	-	-	-
Course Code	**201ES1L04 SOIL SCIENCE AND AGRONOMY FIELD LAB**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	Describe soil profile and collection of soil samples.	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Determine pH and EC using standard methods.	2	2	-	1	-	-	-	-	-	-	-	-	-	3	-

	CO Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
	CO Statements					POs									PSOs	
CO3	Make use of different implements for practicing ploughing, seed bed preparation, sowing, weeding and fertilizer application.	1	1	-	-	-	-	-	-	-	-	-	-	-	3	-
CO4	Identify different nutrient deficiency symptoms in the crops.	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	Measure infiltration and evaporation rate in soil using standard procedure.	-	-	-	-	2	-	-	-	-	-	-	-	-	2	-
CO6	Classify different crops, manures and fertilizers.	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-
Course Code	**201MC1T01 - ENVIRONMENTAL SCIENCE**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Outline the natural resources and their importance for the sustenance of the life.	-	-	-	-	-	1	2	-	-	-	-	-	-	1	-
CO2	Explain about the biodiversity of India, threats and its conservation methods.	-	-	-	-	-	1	2	-	-	-	-	-	-	1	-
CO3	Illustrate various attributes of the pollution, impacts and measures to control the pollution along with waste management practices.	-	-	-	-	-	1	2	-	-	-	-	-	-	1	-
CO4	Describe social issues of both rural and urban environment to combat the challenges and the legislations of India in environmental protection.	-	-	-	-	-	1	2	-	-	-	-	-	-	1	-
CO5	Explain the population growth and its implications.	-	-	-	-	-	1	2	-	-	-	-	-	-	1	-
II SEM																
Course Code	**201BS2T05 PARTIAL DIFFERENTAIL EQUATIONS AND VECTOR CALCULAS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Solve improper integrals using beta and gamma functions	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Solve partial differential equations of first order.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Compute the double integral over a region and triple integral over a volume.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Calculate the gradient of a scalar function, divergence and curl of a vector function	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Calculate line, surface and volume integrals.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	**201BS2T08 CHEMISTRY OF MATERIALS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Compare the quality of drinking water and problems associated with hard water.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	1
CO2	Explain the fundamentals and applications of Electrochemical energy systems.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Explain fundamentals and applications of polymers and building materials.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	1
CO4	Explain the fundamentals and controlling methods of corrosion.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1
CO5	Explain the properties and applications of nano materials, conductors, Semiconductors and Super conductors.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	**201ES2T06 - ENGINEERING MECHANICS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Determine the resultant force and moment for a given force system.	3	1	1	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Solve the member forces in trusses.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-
CO3	Apply concept of Virtual work to find the work done by force and couple.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-
CO4	Solve the centre of gravity and moment of inertia for various geometric Shapes.	2	2	1	-	-	-	-	-	-	-	-	-	1	-	-

	CO Statements	POs												PSOs		
CO5	Determine the displacement, velocity and acceleration relations in dynamic systems	2	2	1	-	-	-	-	-	-	-	-	-	1	-	-
Course Code	**201ES2T08 - PROGRAMMING FOR PROBLEM SOLVING USING C**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Develop the basic programs in C and draw the flowcharts using Raptor.	2	3	-	-	1	-	-	-	-	-	-	2	-	-	-
CO2	Make use of conditional and iterative statements to solve real time scenarios in C.	3	2	-	-	2	-	-	-	-	-	-	2	-	-	-
CO3	Apply the concept of arrays, modularity and strings to handle complex problems.	2	2	3	-	-	-	-	-	-	-	-	1	-	-	-
CO4	Apply the dynamic memory allocation functions using pointers.	2	3	-	-	2	-	-	-	-	-	-	2	-	-	-
CO5	Develop programs using structures, and Files.	3	2	2	-	-	-	-	-	-	-	-	2	-	-	-
Course Code	**201ES2L07 - ENGINEERING WORKSHOP**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Construct the various wooden joints.	1	-	-	-	-	-	-	-	1	-	-	1	1	-	-
CO2	Develop various fitting joints.	1	-	-	-	-	-	-	-	1	-	-	1	1	-	-
CO3	Develop components for making the various sheet metal models.	1	-	-	-	-	-	-	-	1	-	-	1	1	-	-
CO4	Develop applications using Tree Data Structures.	1	-	-	-	-	-	-	-	1	-	-	1	1	-	-
CO5	Experiment with the various house wiring connections.	1	-	-	-	-	-	-	-	1	-	-	1	1	-	-
Course Code	**201ES2L12 - COMPUTER AIDED DRAFTING LAB**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the basic functions of drawing software.	1	-	-	-	-	-	-	-	-	2	-	-	1	-	-
CO2	Select the Construction and editing commands for specified drawings.	1	-	-	-	-	-	-	-	-	2	-	-	1	-	-
CO3	Apply the concepts of Blocks, Hatching and Layers.	1	-	-	-	-	-	-	-	-	2	-	-	1	-	-
CO4	Draw the isometric views & orthographic views with dimensions	1	-	-	-	-	-	-	-	-	2	-	2	1	-	-
CO5	Draw the 3D Model for mechanical components	1	-	-	-	-	-	-	-	-	2	-	2	1	-	-
Course Code	**201HS2L02 PROFESSIONAL COMMUNICATION SKILLS LAB**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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	-	-	-
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	-	-	-
Course Code	**201BS2L05 ENGINEERING CHEMISTRY LAB**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Demonstrate Complexometric titrations by volumetric analysis.	2	-	-	-	-	-	-	-	1	-	-	1	-	-	-
CO2	Demonstrate Acid – Base titrations by instrumental analysis.	2	-	-	-	-	-	-	-	1	-	-	1	-	-	-
CO3	Estimate Vitamin C using volumetric analysis	2	-	-	-	-	-	-	-	1	-	-	1	-	-	-
CO4	Prepare polymer like Bakelite.	2	-	-	-	-	-	-	-	1	-	-	1	-	-	-
CO5	Prepare alternative fuel like Bio-Diesel.	2	-	-	-	-	-	-	-	1	-	-	1	-	-	-

Course Code	CO Statements	POs												PSOs		
	201ES2L10 - PROGRAMMING FOR PROBLEM SOLVING USING C LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Develop the basic programs in C and draw the flowcharts using Raptor.	2	1	-	-	3	-	-	-	-	2	-	-	-	-	-
CO2	Make use of conditional and iterative statements to solve real time scenarios in C.	3	2	-	-	-	-	-	-	-	-	1	2	-	-	-
CO3	Apply the concept of arrays, modularity and strings to handle complex problems.	3	2	-	-	-	-	-	-	-	-	1	2	-	-	-
CO4	Apply the dynamic memory allocation functions using pointers.	2	3	-	-	-	-	-	-	-	2	-	1	-	-	-
CO5	Develop programs using structures, and Files.	3	2	-	-	-	-	-	-	-	-	2	2	-	-	-
Course Code	201MC2T02 - CONSTITUTION OF INDIA	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain historical background of the constitution making and its importance for building a democratic India.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
CO2	Compare the functioning of three wings of the government i.e., executive, legislative and judiciary.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
CO3	Interpret the value of the fundamental rights and duties for becoming good citizen of India.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
CO4	Compare the decentralization of power between central, state and local self- government.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
CO5	Extend the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
III SEM																
Course Code	201BS3T12 INTEGRAL TRANSFORMS AND APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Compute the Fourier series of a function.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Compute the Fourier transform of a function.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Compute Laplace transform of a function.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Apply Laplace transform to solve initial value problems.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Solve one dimensional heat equation, wave equation and two dimensional Laplace equation.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	201AG3T01 - SURVEYING AND LEVELLING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the fundamentals of surveying.	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Solve the problems on chain and compass survey.	3	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO3	Describe graphical field work and prepare reports.	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO4	Estimate the levels of existing ground and prepare contour plan.	3	3	2	-	-	-	-	-	-	-	-	-	-	1	-
CO5	Solve problems on height and distance using different principles, to discuss about various advanced surveying equipment, to produce layout curves for roads, Calculate regular, irregular areas and volumes.	3	2	1	-	-	-	-	-	-	-	-	-	-	1	-

	CO Statements	POs												PSOs		
Course Code	201AG3T02 - 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 solve problems on pressure measurement, hydrostatic forces on submerged bodies and Solve problems on meta centric heights of floating bodies.	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Apply the knowledge of Dynamics to Solve problems on Bernoulli's equation and its applications and also calculating thickness of boundary layer.	3	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO3	Solve flow measurement problems using appropriate equations.	3	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO4	Identify concepts on laminar and turbulent flows and various losses in pipes.	3	2	-	-	-	-	-	-	-	-	-	-	-	1	-
CO5	Solve the problems on economical sections, critical depth and specificenergy for various channels.	2	2	-	-	-	-	-	-	-	-	-	-	-	1	-
Course Code	201AG3T03 - THERMODYNAMICS, REFRIGERATION AND AIR CONDITIONING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Solve problems based on the basic concepts and laws of thermodynamics.	2	1	2	-	-	-	3	-	-	-	-	-	-	-	3
CO2	Explain the working principle of 2 stroke and 4 stroke engines and evaluate performance of air cycles.	2	1	2	-	-	-	3	-	-	-	-	-	-	-	2
CO3	Explain the working principle of refrigeration system and their applications.	2	1	2	-	-	-	3	-	-	-	-	-	-	-	2
CO4	Explain the working of vapor compression and vapor absorption refrigeration cycle, their applications and analyze their performance.	2	3	2	-	-	-	1	-	-	-	-	-	-	-	3
CO5	Explain psychometric processes and principle involved in air conditioning.	2	1	2	-	-	-	3	-	-	-	-	-	-	-	3
Course Code	201AG3T04 - STRENGTH OF MATERIALS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the behavior of basic materials under the influence of different external loading conditions and the support conditions.	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Develop the diagrams indicating the variation of the key performance features like bending moment and shear forces.	3	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO3	Analyse the deflections in beams under various loading and support conditions.	3	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO4	Solve the load carrying capacity of columns using different empirical formulae.	2	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5	Design of riveted and welded joints.	2	3	2	-	-	-	-	-	-	-	-	-	-	1	-
Course Code	201AG3L01 SURVEYING AND LEVELLING 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	2	-	-	-	-	-	-	-	-	2	-
CO2	Estimate the levels of existing ground and prepare contour plan.	3	-	-	1	2	-	-	-	-	-	-	-	-	3	-
CO3	Develop the plan or map showing the ground features from data obtained by surveying.	1	-	-	2	1	-	-	-	-	-	-	-	-	2	-
CO4	Make use of advanced surveying equipment to avoid manual errors.	2	-	-	1	2	-	-	-	-	-	-	-	-	2	-
CO5	Identify layout curves for roads and computation of areas and volumes.	3	-	-	1	2	-	-	-	-	-	-	-	-	3	-

Course Code	CO Statements	POs												PSOs		
201AG3L02 - FLUID MECHANICS AND OPEN CHANNEL HYDRAULICS LAB		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain Fluid Properties.	3	-	-	2	-	-	-	-	-	-	-	-	-	1	-
CO2	Illustrate Flow Measuring Devices used in pipes, channels and tanks.	2	-	-	3	-	-	-	-	-	-	-	-	-	3	-
CO3	Determine major and minor losses in pipes.	3	-	-	2	-	-	-	-	-	-	-	-	-	3	-
CO4	Demonstrate the flow behavior in open channels.	3	-	-	2	-	-	-	-	-	-	-	-	-	3	-
CO5	Examine the performance characteristics of pumps.	3	-	-	1	-	-	-	-	-	-	-	-	-	3	-
201AG3L03 - THERMODYNAMICS, REFRIGERATION AND AIR CONDITIONING LAB		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the construction and components of internal combustion engine.	3	1	-	2	-	-	-	-	-	-	-	-	-	-	1
CO2	Illustrate heat balance sheet of petrol and diesel engine.	2	1	-	2	-	-	3	-	-	-	-	-	-	-	1
CO3	Explain port and valve timing diagram of 2 stroke and 4 stroke engine.	3	2	-	1	-	-	-	-	-	-	-	-	-	-	1
CO4	Evaluate performance of two-stage air compressor.	3	1	-	2	-	-	-	-	-	-	-	-	-	-	1
CO5	Classify different types of boilers.	3	2	-	2	-	-	-	-	-	-	-	-	-	-	1
201SC3L11 - COMPUTER AIDED MANUFACTURING		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Build concrete foundation for their core branch as a thinker, inter disciplinary thoughts.	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Explain the basic concepts of Computer Aided Manufacturing.	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO3	Create strong skills of writing CNC programs, PLC programs.	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	Explain different advances in manufacturing system like:GT, CAPP and FMS.	2	1	-	2	-	-	-	-	-	-	-	-	1	-	-
CO5	Explain the concept of robotics and different material handling system required in manufacturing shop floor.	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO6	Explain different Integrated production management system.	3	-	-	-	-	-	-	-	-	-	1	-	1	-	-
201SC3L12 - COMPUTER AIDED DESIGN USING SOLID WORKS		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain CAD system including the principles and practice of computer aided solid modeling and its applications.	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Use commercial CAD software (Solid Works).	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
CO3	Describe various standards pertaining to CAD software.	2	1	2	-	-	-	-	-	-	-	-	-	1	-	-
CO4	Explain the mathematical formulations and properties of different modeling of curves and surfaces.	2	1	-	2	-	-	-	-	-	-	-	-	1	-	-
CO5	Make use of basic and advanced features of CAD software to construct parts, make assembly models and carry out all phase of design and analysis.	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
201MC3T03 - BIOLOGY FOR ENGINEERS		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply biological engineering principles, procedures needed to solve real-world problems.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Demonstrate the fundamentals of living things, their classification, cell structure and biochemical constituents.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Apply the concept of plant, animal and microbial systems and growth in real life Situations.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	CO Statements	POs												PSOs		
CO4	Explain genetics and the immune system to know the cause, symptoms, diagnosis and treatment of common diseases.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Demonstrate basic knowledge of the applications of biological systems in relevant industries.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IV SEM																
Course Code	**201ES4T21 - SOIL MECHANICS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Identify the type of soil at field conditions and able to determine nature of soil.	2	1	-	-	-	2	-	-	-	-	2	-	-	2	-
CO2	Calculate the vertical stresses condition for different load conditions.	2	1	-	-	-	2	-	-	-	-	2	-	-	2	-
CO3	Determine the shear strength of soils through theoretical shear parameters.	3	1	-	-	-	2	-	-	-	-	2	-	-	2	-
CO4	Calculating the different engineering properties of the soil such as compaction, consolidation determines them in the laboratory.	3	2	-	-	-	2	-	-	-	-	2	-	-	2	-
CO5	Calculate the factor of safety for various retaining structures.	3	2	-	-	-	2	-	-	-	-	2	-	-	2	-
Course Code	**201BS4T15 - NUMERICAL METHODS AND STATISTICAL TECHNIQUES**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply numerical methods to solve equations and interpolation of polynomials.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Apply numerical methods to solve initial value problems and problems involving integration.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Apply discrete and continuous probability distributions.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Compute the components of a classical hypothesis test.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Apply the statistical inferential methods based on small and large sampling tests.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	**201AG4T05 - HEAT AND MASS TRANSFER**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Describe the basic modes of heat transfer and determine steady state heat conduction in varying geometries.	3	2	1	1	-	-	-	-	-	-	-	-	-	-	1
CO2	Determine heat transfer coefficient in free and forced convection	3	2	1	1	-	-	-	-	-	-	-	-	-	-	2
CO3	Determine the rate of heat transfer of the extended surfaces.	3	2	1	1	-	-	-	-	-	-	-	-	-	-	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	2	1	1	-	-	-	-	-	-	-	-	-	-	1
Course Code	**201AG4T06 TRACTOR SYSTEMS AND CONTROLS**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain about various types of energy sources of farm power and types of IC engines.	1	-	-	-	-	2	3	-	-	-	-	-	2	-	-
CO2	Explain and demonstrate various IC engine system and transmission system.	2	-	2	-	-	-	-	-	-	-	2	-	2	-	-
CO3	Illustrate about hydraulic system and its functional requirements.	-	1	-	-	-	-	3	-	-	-	2	-	2	-	-
CO4	Explain about traction termnology and mechanics of tractor.	-	-	-	-	-	-	2	-	-	-	3	-	3	-	-
CO5	Explain the methods used to find the centre of gravity of tractor.	1	1	-	-	-	2	2	-	-	-	-	-	2	-	-
Course Code	**201HS4T07 - ENTREPRENEURSHIP DEVELOPMENT AND BUSINESS MANAGEMENT**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Classify different types of entrepreneur, management functions and importance of financial statements.	-	-	-	-	-	-	3	-	2	2	2	-	-	-	2
CO2	Make use of agro based industries with various projects.	-	-	-	-	-	-	-	-	3	2	2	-	-	-	2

	CO Statements						POs								PSOs	
CO3	Explain WTO and trade related agreements.	-	-	-	-	-	-	3	-	-	2	-	-	-	-	2
CO4	Explain entrepreneurship development and business skills in field.	-	-	-	-	-	2	3	-	-	2	2	-	-	-	2
CO5	Recall various government policies in agricultural engineering.	-	-	-	-	-	-	3	-	-	2	2	-	-	-	2
Course Code	**201ES4L17 - SOIL MECHANICS LAB**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply the knowledge of soil mechanics in the field of civil engineering.	2	1	-	-	-	2	-	-	-	-	2	-	-	1	-
CO2	Determine the identification of physical properties of various soils.	2	1	-	-	-	2	-	-	-	-	2	-	-	1	-
CO3	Interpret with permeability characteristics of soils.	3	2	-	-	-	2	-	-	-	-	2	-	-	1	-
CO4	Identify various types of drainage conditions.	2	2	-	-	-	2	-	-	-	-	2	-	-	1	-
CO5	Distinguish various types of shear parameters by using Tri-axial tests.	2	2	-	-	-	2	-	-	-	-	2	-	-	1	-
Course Code	**201AG4L04 - TRACTOR SYSTEMS AND CONTROLS LAB**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain about different types of engines and its process, functions of its components.	2	-	-	-	-	-	3	-	-	-	2	-	3	-	-
CO2	Identify the different components of tractor and understand its functions.	2	3	-	2	-	-	1	-	-	-	2	-	3	-	-
CO3	Design of gear box, clutch and brake system and determine center of gravity of tractor.	2	1	2	-	-	-	2	-	-	-	2	-	3	-	-
CO4	Explain various controls of tractor and traction.	2	-	-	-	-	-	3	-	-	-	2	-	3	-	-
CO5	Determine centre of gravity of the Tractor and Traction performance	-	3	1	1	-	-	-	-	-	-	2	-	3	-	-
Course Code	**201AG4L05 - HEAT AND MASS TRANSFER LAB**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Determine thermal conductivity of various materials.	3	2	-	1	-	-	-	-	-	-	-	-	-	-	3
CO2	Estimate convective heat transfer coefficient in various conditions.	3	2	-	1	-	-	-	-	-	1	-	-	-	-	3
CO3	Evaluate the performance of heat exchanger in various arrangements.	3	2	-	-	-	-	-	-	-	1	-	-	-	-	2
CO4	Calculate the heat transfer through a pin-fin.	3	2	-	1	-	-	-	-	-	1	-	-	-	-	2
CO5	Compute the emissivity of different bodies and drying of agricultural commodities.	3	2	-	1	-	-	-	-	-	1	-	-	-	-	2
Course Code	**201SC4L22 - ANALYSIS/SIMULATION USING MATLAB**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Analyze and visualize data by using MATLAB.	2	3	-	-	2	-	-	-	-	-	-	-	2	-	-
CO2	Apply numeric techniques and computer simulations to solve engineering- related problems.	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	Design and document computer programs in a careful and complete manner.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
CO4	Demonstrate use of fundamental data structures (classes).	-	-	-	-	-	-	1	-	-	-	-	1	2	-	-
CO5	Create and control simple plot and user-interface graphics objects in MATLAB.	1	-	-	-	2	-	-	-	-	-	-	-	2	-	-
Course Code	**201SC4L23 - FOOD QUALITY AND CONTROL**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the application of food quality and food safety system.	-	-	-	-	1	2	2	-	-	-	-	-	-	-	3
CO2	Outline the key regulatory standards that ensure food safety and quality.	-	-	-	1	-	1	-	1	-	-	1	-	-	-	3
CO3	Explain safety and quality management systems that ensure integrity through the food chain.	-	-	1	1	-	-	-	2	-	-	2	-	-	-	3
CO4	Explain the process of food auditing.	2	-	-	-	-	2	2	2	-	-	-	-	-	-	2
CO5	Evaluate the food samples through chemical analysis for food quality.	1	2	2	2	-	-	-	-	-	-	-	-	-	-	3
Course Code	**201MC4T04 - ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

	CO Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
							POs								PSOs	
CO1	Identify the concept of Traditional knowledge and its importance.	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
CO2	Explain the need and importance of protecting traditional knowledge.	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
CO3	Illustrate the various enactments related to the protection of traditional knowledge	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
CO4	Interpret the concepts of Intellectual property to protect the traditional knowledge.	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
CO5	Explain the importance of Traditional knowledge in Agriculture and Medicine.	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Course Code	**201AG4H01 - WATER QUALITY AND MANAGEMENT MEASURES**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain different water quality parameters and methods of testing.	-	-	-	-	2	2	-	-	-	-	-	-	-	2	-
CO2	Classify drinking and irrigation water quality according to USSL and AICRP criteria.	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-
CO3	Identify the sources of contamination of water.	-	-	-	-	-	-	2	-	-	-	-	-	-	3	-
CO4	Select appropriate techniques of decontamination of water based on its nature.	-	-	-	-	2	1	1	-	-	-	-	-	-	3	
CO5	Make use of cultural and management practices for usage of poor water quality for irrigation.	-	-	-	-	-	2	-	2	-	-	-	-	-	3	-
Course Code	**201AG4H02 - MACHINE DESIGN**	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the concept of design and behavior of material under varying load conditions, Use of design data books while designing machine components.	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Design of bolts, nuts, and riveted joints subjected to direct stresses and analyze the type of stresses induced under different load conditions.	2	2	-	1	3	-	-	-	-	-	-	-	3	-	-
CO3	Design of machine elements subjected to direct and twisting moments and analyze the type of stresses induced under different load conditions.	2	1	2	-	-	-	-	-	-	-	-	-	2	-	-
CO4	Design of machine element like Solid Muff Coupling- flange coupling subjected to direct and twisting moments and Knuckle joint-Cotter joint subjected to direct stress and analyze the various modes of failure.	2	1	-	3	-	-	-	-	-	-	-	-	2	-	-
CO5	Design procedure of machine elements subjected to twisting moment and analyze the type of stresses induced in them.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
Course Code	**201AG4H03 - FOOD PLANT DESIGN AND MANAGEMENT**	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	Outline the design specifications of food processing plant.	2	1	3	-	-	-	-	-	-	-	-	-	-	-	3
CO4	Plan the machinery required in process control of the food processing plant.	2	2	3	1	-	-	-	-	-	-	-	-	-	-	3
CO5	Estimate the cost of plant set up and operation.	2	-	-	-	-	-	-	-	-	-	2	3	-	-	3
CO6	Explain sanitation procedures used in the food processing plant.	3	1	-	2	-	-	-	-	-	2	-	-	-	-	3

	CO Statements	POs												PSOs		
Course Code	**201AG4M01 - GROUNDWATER, WELLS AND PUMPS**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	Explain scenario, types and properties of various water bearing formations.	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Select appropriate method for exploration and replenishment of groundwater.	-	2	-	-	3	-	1	-	-	-	-	-	-	2	-
CO3	Explain design, development and construction of wells.	-	-	3	2	-	-	-	-	-	-	-	-	-	3	-
CO4	Determine the aquifer properties under unsteady state and steady state subsurface flow conditions.	1	-	2	-	-	-	-	-	-	-	-	-	-	2	-
CO5	Explain the types, working principles with components and diagram of various water lifting devices and pumps.	1	1	-	-	-	-	-	-	-	-	-	-	-	2	-
CO6	Select the pump for irrigation by considering performance characteristics, installation and troubleshooting.	-	3	1	-	2	-	-	-	-	-	-	1	-	3	-
Course Code	**201AG4M02 - TRACTOR AND AUTOMOTIVE ENGINES**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	Discuss about the fundamentals and working of IC engine.	3	1	-	-	-	-	-	-	-	-	2	2	2	-	-
CO2	Apply their knowledge and identify the working mechanism of different components of IC engine.	-	-	2	2	2	-	-	-	-	-	-	-	1	-	-
CO3	Analyze the problems in using right amount of fuel and lubricants for better efficiency and economy.	-	3	2	1	1	-	-	-	-	-	-	-	3	-	-
CO4	Evaluate heat engine balance of engine for maintaining at right temperature for different type of work.	2	2	-	-	3	-	-	-	-	2	-	-	1	-	-
CO5	Analyze problems faced during, starting of ignition system.	-	2	1	1	3	-	-	-	-	-	-	-	3	-	-
Course Code	**201AG4M03 - ENGINEERING PROPERTIES OF AGRICULTURAL PRODUCE**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	Calculate the basic engineering properties of a biological material.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Analyze the flow behavior of biological materials and force deformation.	3	1	1	-	1	-	-	-	-	-	-	-	-	-	3
CO3	Analyze the Maxwell and Kelvin model equations in the rheology for important biological materials.	3	2	2	2	-	-	-	-	-	-	-	-	-	-	3
CO4	Explain the applications of frictional and aerodynamic properties in the design of processing equipment.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3
CO5	Explain the applications of electrical and thermal properties in the design of processing equipment.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3