

B. Tech. (Agricultural Engineering) V Sem. III Year 4 Dean

COURSE: Strength of materials

COURSE CODE: AE-350

COURSE OBJECTIVES:

- To educate the students such that they will be able to analyze the structure and calculate the slope and deflection at various points in the structure using different methods.
- Understanding the analysis and design of columns, riveted and welded connections, masonry dams and analysis of statically indeterminate beams.
- To educate the students in a manner such that they will be able to analyze the fixed and continuous beams using various methods.

COURSE OUTCOMES (CO):

After the successful course completion, learners will develop following attributes:

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Learner will be able to analyze the structure and determine slope and deflections in the structure using various methods learned.
CO2	Utilizing the knowledge of this topic and the mathematical skills, learner will be able to classify, analyze and design the columns, riveted and welded connections, masonry dams and statically indeterminate beams.
CO3	Learner will be able to analyze the fixed and continuous beams using various methods.

CO-PO MAPPING:

		CO													
		PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
CO1	Learner will be able to analyze the structure and determine slope and deflections in the structure using various methods learned.	2	3	3	0	0	0	0	0	0	0	0	1	1	
CO2	Utilizing the knowledge of this topic and the mathematical skills, learner will be able to classify, analyze and design the columns, riveted and welded connections, masonry dams and statically indeterminate beams.	2	3	3	2	0	0	0	0	0	0	0	1	1	
CO3	Learner will be able to analyze the fixed and continuous beams using various methods.	2	3	3	0	0	0	0	0	0	0	0	1	1	
		3: Strong contribution, 2: average contribution, 1: Low contribution													

COURSE: Electrical Machines and Power Utilization
COURSE CODE: EE308

COURSE OBJECTIVES:

- Knowledge of laws of magnetic circuit and transformers
- To get knowledge of phasor diagram of transformer and DC generators
- To attain knowledge of working of DC motors
- To attain knowledge of polyphase induction motor
- To have the knowledge of working and application of single phase induction motor

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Knowledge of magnetic circuit
CO2	Analyze the performance of transformers
CO3	Evaluate the performance of DC motors and apply in field of agriculture engineering
CO4	Knowledge of polyphase induction motors
CO5	Knowledge of working and application of single phase induction motor and apply in field of agriculture engineering

CO-PO MAPPING:

	CO	PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Electrical and Electronics Engineering	PO3 Problem Solving:	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation Engineering	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Life-long learning
C01	Knowledge of magnetic circuit	1	2	2	1						1		1	2	2
C02	Analyze the performance of transformers	1	3	3	1		1	1	1		1		1	2	2
C03	Evaluate the performance of DC motors and apply in field of agriculture engineering	1	3	2	2		1	1	1		1		1	2	2
C04	Knowledge of polyphase induction motors	1	3	2	2		1	1	1		1		1	2	2
C05	Knowledge of working and application of single phase induction motor and apply in field of agriculture engineering	1	3	2	2		1	1	1		1		2	2	2
3: Strong contribution, 2: average contribution, 1: Low contribution															

COURSE: Database Management and Internet Applications

CODE: CA341

COURSE OBJECTIVES:

- ❖ To learn principles of Basic database concepts, introduction to RDBMS, SQL Commands, Data constraints, Joins, set operations, working with forms.
- ❖ To learn basics of HTML, developing web pages using meta tags, dynamic pages using Java scripts, connectivity with RDBMS.
- ❖ To learn fundamental Project. Basic database concepts; Introduction to RDBMS; SQL Commands DDL, DML; Select command, Joins and functions; Group functions, Set functions; Working with Forms; Basic of HTML.
- ❖ Learn about the development of Web pages using meta tags; Dynamic pages using Java Scripts; Connectivity of Web pages with databases; Project.

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Able to principles of Basic database concepts, introduction to RDBMS, SQL Commands, Data constraints, Joins, set operations, working with forms.
CO2	Basics of HTML, developing web pages using meta tags, dynamic pages using Java scripts, connectivity with RDBMS.
CO3	Students able to know about fundamental Project. Basic database concepts; Introduction to RDBMS; SQL Commands DDL, DML; Select command, Joins and functions; Group functions, Set functions; Working with Forms; Basic of HTML.
CO4	Upgrading skill about development of Web pages using meta tags; Dynamic pages using Java Scripts; Connectivity of Web pages with databases; Project..

CO-PO MAPPING:

CO		PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
CO1	Able to principles of Basic database concepts, introduction to RDBMS, SQL Commands, Data constraints, Joins, set operations, working with forms.	2	2	3	0	0	0	0	0	0	0	2	1	1	1
CO2	Basics of HTML, developing web pages using meta tags, dynamic pages using Java scripts, connectivity with RDBMS.	2	3	3	2	0	0	0	0	0	0	2	2	2	1
CO3	Students able to know about fundamental Project. Basic database concepts; Introduction to RDBMS; SQL Commands DDL, DML; Select command, Joins and functions; Group functions, Set functions; Working with Forms; Basic of HTML.	2	3	3	0	0	0	0	0	0	0	1	2	1	2

CO4	Upgrading skill about development of Web pages using meta tags; Dynamic pages using Java Scripts; Connectivity of Web pages with databases; Project..	2	3	3	0	0	0	0	0	0	0	2	2	2	2
		3: Strong contribution, 2: average contribution, 1: Low contribution													

3 Strong Contribution; 2 Average Contribution; 1 Low Contribution

COURSE: HEAT AND MASS TRANSFER
COURSE CODE: ME333

COURSE OBJECTIVES:

1. Formulate and predict heat conduction problems without heat generation in composite walls and extended surfaces subjected to convective boundaries. Analyze 1D unsteady conduction problems.
2. Explain the concept of free convection mechanics, dimensionless number and introduction to the empirical correlation.
4. Develop concept of monochromatic and total radiations, intensity of radiation, radiative heat exchange between two black bodies.
5. Calculate fluid temperatures, mass flow rates, pressure drops and heat exchange during parallel, counter and cross flow in heat exchangers.

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Formulate and predict heat conduction problems with and without heat generation in composite walls, critical insulation thickness and extended surfaces subjected to convective boundaries. Analyze 1D steady conduction problems.
CO2	Explain the concept of free convection mechanics, dimensionless number and introduction to the empirical correlation.
CO3	Explain the concept of radiation, monochromatic emissive power, total radiations, intensity of radiation and heat exchange between two black surfaces
CO4	Calculate fluid temperatures, mass flow rates and heat exchange during parallel and counter in heat exchangers.

CO-PO MAPPING:

CO		PO1 Engineering	PO2 Problem Analysis	PO3 Design/development of solutions	PO4 Conduct investigations into complex problems	PO5 Modern tool usage	PO6 Engineer and Society	PO7 Environment and Sustainability	PO8 Ethics	PO9 Individual and Team	PO10 Communication	PO11 Project Management	PO12 Lifelong learning
CO1	Formulate and predict heat conduction problems with and without heat generation in composite walls, critical insulation thickness and extended surfaces subjected to convective boundaries. Analyze 1D steady conduction problems.	3	3	3	2	2	3	3					3
CO2	Explain the concept of free convection mechanics, dimensionless number and introduction to the empirical correlation.	3	2	2	2	2							3
CO3	Explain the concept of radiation, monochromatic emissive power, total radiations, intensity of radiation and heat exchange between two black surfaces	3	1	3	2	2	3	3					3
CO4	Calculate fluid temperatures, mass flow rates and heat exchange during parallel and counter in heat exchangers.	3	2	2	2	2	3	3					3
3: Strong contribution, 2: average contribution, 1: Low contribution													

COURSE: MACHINE DESIGN

CODE: ME332

COURSE OBJECTIVES:

- Understanding the motion of the component and the basic geometry of the mechanisms
- Understanding the process and methods of design of machines and elements.
- Abilities of developing equations pertaining to the design of machines.
- Knowledge of different materials and their properties for designing the components of machine elements.
- Ability to design new machines or modify existing machine according to the need

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Apply the knowledge of Mathematics, Science and Engineering for designing machine part.
CO2	Develop fundamental knowledge of the Standards used in the design of machine elements
CO3	Propose the Engineering solutions for global progress, productivity and economic development.
CO4	List the materials and variety of mechanical components available/used to produce every day goods and services
CO5	Identify and solve the engineering challenges regarding the human needs in daily life about machines and systems.

CO-PO MAPPING:

	CO	PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation Engineering	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
CO1	Apply the knowledge of Mathematics, Science and Engineering for designing machine part.	3	3	2	2	-	2	2			1		2		3
CO2	Develop fundamental knowledge of the Standards used in the design of machine elements	3	3	2	2	-	3	1			1		2		3
CO3	Propose the Engineering solutions for global progress, productivity and economic development.	3	3	2	2	-	3	2			1		3		3
CO4	List the materials and variety of mechanical components available/used to produce every day goods and services	3	3	3	3	-	3	2			1		2		3
CO5	Identify and solve the engineering challenges regarding the human needs in daily life about machines and systems.	3	3		2	-	2	2			2		2		3

		3: Strong contribution, 2: average contribution, 1: Low contribution
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COURSE: Agribusiness Management and Trade
COURSE CODE: BM347

COURSE OBJECTIVES:

- To know the concepts of management and functions of management, process of management.
- To Able to understand concept of agribusiness and application of management principles to agribusiness.
- Know about agricultural processing, meaning and theories of international trade.
- Know the India's contribution to international trade in food and agri – commodities.
- To know the WTO provisions for trade in agricultural and food commodities

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Able to understand the concepts of management and functions of management, process of management.
CO2	Able to understand concept of agribusiness and application of management principles to agribusiness
CO3	Able to understand about agricultural processing, meaning and theories of international trade.
CO4	Able to understand the India's contribution to international trade in food and agri – commodities.
CO5	To know the WTO provisions for trade in agricultural and food commodities

CO-PO MAPPING:

CO		PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation Engineering	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
CO1	Able to understand the concepts of management and functions of management, process of management in the field of agriculture.	2	-	3	3	-	-	-	-	2	3	2	3	2	3
CO2	Able to understand concept of agribusiness and application of management principles to agribusiness.	3	3	2	1	-	-	-	-	-	3	2	3	2	3
CO3	Able to understand about agricultural processing, meaning and theories of international trade.	2	3	2	1	-	-	-	-	-	3	3	3	2	3
CO4	Able to understand the India's contribution to international trade in food and agri – commodities.	3	3	3	1	-	-	-	-	-	3	-	3	2	3

CO5	Able to understand the WTO provisions for trade in agricultural and food commodities	2	3	-	1	-	-	-	-	-	3	2	3	2	3
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3: Strong contribution, 2: average contribution, 1: Low contribution

Name of Course/ Subject: Drying and Storage Engineering

Course Code: BE361

Course objective:

1. To give knowledge about importance and scope of drying and different methods of drying, types of dryers and drying theory to retained quantitative and qualitative properties of agricultural crop.
2. To provide the knowledge about moisture content, determination methods, EMC and its importance in harvesting and processing of crops.
3. To educate the students about spoilage mechanisms, causes for spoilage and influencing factors (Temperature and Rh) of spoilage during storage of agriculture products.
4. To aware the students about the fundamentals of storage structures and its type and components to enhance the storability of agriculture products and also provide fundamental thinks about the designing and its developments of storage structures
5. To provide Knowledge regarding the different storage systems like air cooled refrigerated system, MAP system, CAP system and its role in storage of crops and other products.

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students able to understand the conceptual knowledge about importance and scope of drying and different methods of drying, types of dryers and drying theory to retained quantitative and qualitative properties of agricultural crop.
CO2	Able to know about the basics moisture content, determination methods, EMC and its importance in harvesting and processing of crops.
CO3	Student able to understand about spoilage mechanisms, causes for spoilage and influencing factors (Temperature and Rh) of spoilage during storage of agriculture products.
CO4	Able to know about the fundamentals of storage structures and its type and components to enhance the storability of agriculture products. Students able to know about the basics of designing and its developments of storage structures
CO5	Students able to understand the basic knowledge regarding the different storage systems like air cooled refrigerated system, MAP system, CAP system and its role in storage of crops and other products.

CO-PO MAPPING:

		CO													
		PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
CO1	Students able to understand the conceptual knowledge about importance and scope of drying and different methods of drying, types of dryers and drying theory to retained quantitative and qualitative properties of agricultural crop.	2	3	2	2	-	-	-	3	-	3	2	2	2	2
CO2	Able to know about the basics moisture content, determination methods, EMC and its importance in harvesting and processing of crops.	3	3	3	2	-	-	-	3	-	2	2	3	2	3
CO3	Student able to understand about spoilage mechanisms, causes for spoilage and influencing factors (Temperature and Rh) of spoilage	3	3	2	1	-	-	-			3	2	3	2	3

	during storage of agriculture products.								3	-					
CO4	Able to know about the fundamentals of storage structures and its type and components to enhance the storability of agriculture products. Students able to know about the basics of designing and its developments of storage structures	3	3	3	1	-	-	-	3	-	3	2	3	2	3
CO5	Students able to understand the basic knowledge regarding the different storage systems like air cooled refrigerated system, MAP system, CAP system and its role in storage of crops and other products.	3	2	3	1	-	-	-	3	-	3	2	3	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution															

COURSE: Drainage Engineering
COURSE CODE: AE351

COURSE OBJECTIVES:

- To understand basic concept of Objective of Drainage, Types and design of channel.
- To understand basic concept of design parameters and concept of ellipse and Ernst's drain spacing equations.
- To understand basic concept of drainage material and design of surface drainage.
- To understand the basic concept of salt balance, leaching requirement and consumptive use of fresh and saline water. **COURSE OUTCOMES (CO):**

After the successful course completion, learners will develop following attributes:

COURSE OUTCOME (CO)	DESCRIPTION
CO1	The Students will learn the basic concept of Objective of Drainage, Types and design of channel.
CO2	The Students will learn the basic concept of design parameters and concept of ellipse and Ernst's drain spacing equations.
CO3	The students will learn the basic concept of concept of drainage material and design of surface drainage
CO4	The Students will learn the basic concept of salt balance, leaching requirement and consumptive use of fresh and saline water.

CO-PO MAPPING:

CO		PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
C01	The Students will learn the basic concept of Objective of Drainage, Types and design of channel.	3	2	2	2	3	3	2	1	0	1	1	2	3	3
C02	The Students will learn the basic concept of design parameters and concept of ellipse and Ernst's drain spacing equations.	2	3	2	2	2	2	2	1	0	2	1	2	3	3
C03	The students will learn the basic concept of concept of drainage material and design of surface drainage	2	3	3	2	2	3	2	1	0	2	1	2	2	3
C04	The Students will learn the basic concept of salt balance, leaching requirement and consumptive use of fresh and saline water.	2	2	3	1	2	2	2	1	0	2	1	2	2	3
C0															
3: Strong contribution, 2: average contribution, 1: Low contribution															

B.Tech. (Agricultural Engineering) VI Sem. III Year 4 Dean

Agricultural Structures and Environmental Control

Course Code: AE 325

Course Objective

1. To impart knowledge about Planning and layout of farmstead.
2. To understand the Physiological reactions of livestock to solar radiation
3. To learn Sources of water supply, norms of water supply for human being and animals
4. To understand the concept of ecosystem, biodiversity of its conservation, environmental pollution
5. To analysis the estimation of power requirement for domestic and irrigation, source of power supply

Course Outcome:

After completion of the course, a student will be able to

COURSE (CO)	OUTCOME	DESCRIPTION
CO1		Understand the basic concepts of Planning and layout of farmstead
CO2		Understand the mechanism of solid waste management system, BOD and COD of food plant waste
CO3		Acquaint with the community sanitation system; sewage system its design, cost and maintenance
CO4		Understand Scope, importance and need for environmental control, renewable and non-renewable resources and their equitable use
CO5		Acquaint with estimation of power requirement for domestic and irrigation

CO-PO MAPPING:

CO1	Understand the basic concepts of Planning and layout of farmstead	3	3	3	-	2	2	-	-	3	2	2	-	-
		3	3	3	-	2	2	-	-	2	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
CO2	Understand the mechanism of solid waste management system, BOD and COD of food plant waste	3	3	3	-	2	2	-	-	2	2	3	-	-
		3	3	3	-	2	2	-	-	2	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
CO3	Acquaint with the community sanitation system; sewage system its design, cost and maintenance	3	3	2	-	3	3	-	-	3	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
CO	CO	3	3	3	-	2	2	-	-	3	2	2	-	-
		3	3	3	-	2	2	-	-	3	2	2	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-
		3	3	2	-	3	3	-	-	3	2	3	-	-

C04	Understand Scope, importance and need for environmental control, renewable and non-renewable resources and their equitable use	3	3	3	-	3	2	-	-	-	2	2	3	-	-		
C05	Acquaint with estimation of power requirement for domestic and irrigation	3	3	2	-	3	3	-	-	-	3	2	3	-	-		
3: Strong contribution, 2: average contribution, 1: Low contribution																	

Ground Water, Wells and Pumps

Course Code: AE 326

Course Objective

1. To impart knowledge about Occurrence and movement of ground water, aquifer and its types
2. To understand the Design of open well, groundwater exploration techniques, methods of drilling of wells
3. To learn Artificial groundwater recharge planning, modeling, ground water project formulation
4. To understand the concept Effect of change of impeller dimensions on performance characteristics
5. To get knowledge about the application of the Verification of Darcy's Law

Course Outcome:

After completion of the course, a student will be able to

COURSE (CO)	OUTCOME	DESCRIPTION
CO1		Understand the basic concepts of Occurrence and movement of ground water and wells
CO2		Understand the mechanism of groundwater hydraulics-determination of aquifer parameters
CO3		Acquaint with the Design of open well, groundwater exploration techniques
CO4		Understand the concept of Estimating ground water balance; Study of artificial ground water
CO5		Acquaint with propeller pumps, mixed flow pumps and their performance characteristics

CO-PO MAPPING:

			CO
CO2	Understand the mechanism of groundwater hydraulics-determination of aquifer parameters	3	PO1 Knowledge of Applied Science in Agricultural Engineering PO2 Knowledge of Basic Engineering PO3 Problem Solving PO4 Field Experimentations PO5 Knowledge of Soil and Water Conservation Engineering PO6 Knowledge of Irrigation and Drainage Engineering PO7 Knowledge of Farm Machinery, equipments and techniques PO8 Knowledge of Process and Food Engineering equipments and techniques PO9 Knowledge of Renewable Energy Engineering PO10 Environment and sustainability PO11 Ethics PO12 Individual and team work PO13 Communication and skill development PO14 Lifelong learning
CO1	Understand the basic concepts of Occurrence and movement of ground water and wells	3	

C03	Acquaint with the Design of open well, groundwater exploration techniques	3	3	2	-	3	3	-	-	-	3	2	3	1	-
C04	Understand the concept of Estimating ground water balance; Study of artificial ground water	3	3	3	-	3	2	-	-	-	2	2	3	1	-
C05	Acquaint with propeller pumps, mixed flow pumps and their performance characteristics	3	3	2	-	3	3	-	-	-	3	2	3	1	-
3: Strong contribution, 2: average contribution, 1: Low contribution															

Design of Structures

Course Code: AE 327

Course Objectives

1. To impart knowledge about Loads and use of BIS Codes
2. To understand the Design of steel roof truss
3. To learn Design of Flanged Beams, Slabs, Columns
4. To understand the Design and drawing of RCC building
5. To get knowledge about the Analysis and design of singly and doubly reinforced sections

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Understand the basic concepts of Loads and use of BIS Codes
CO2	Understand the mechanism of Design of steel roof truss
CO3	Acquaint with the Design of Flanged Beams, Slabs, Columns
CO4	Understand the Design and drawing of RCC building
CO5	Acquaint with Foundations, Retaining walls and Silos

CO-PO MAPPING:

	CO	PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
CO1	Understand the basic concepts of Loads and use of BIS Codes	3	3	3	2	3	3	-	-	-	3	2	2	1	-
CO2	Understand the mechanism of Design of steel roof truss	3	3	3	3	2	2	-	-	-	2	2	3	2	-
CO3	Acquaint with the Design of Flanged Beams, Slabs, Columns	3	3	2	3	3	3	-	-	-	3	2	3	1	-

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C04	Understand the Design and drawing of RCC building	3	3	3	3	3	2	-			2	2	3	1	-		
C05	Acquaint with Foundations, Retaining walls and Silos	3	3	2	2	3	3	-			3	2	3	1	-		
3: Strong contribution, 2: average contribution, 1: Low contribution																	

COURSE: MACHINE DRAWING AND COMPUTER GRAPHICS
COURSE CODE: ME335

COURSE OBJECTIVES:

- Understanding of various drawing considerations.
- Illustrate of basic principles of machine drawing and computer graphics.
- Design machine elements for static as well as dynamic loading.
- To understand Basic components of NC system, NC coordinates and motion control systems.

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students become able to understand the Meaning of drawing, Phases of drawing, Know the Standard conventions and Construction of various Engineering curves through Auto CAD.
CO2	Students become able to understand the various types of joints like riveted, welded joints. Nomenclature of various threads, thread profile, Square headed and hexagonal nuts.
CO3	Students become able to understand Design process, application of computers for design, definition of CAD, benefits of CAD, CAD system components. Computer hardware for CAD
CO4	Students become able to understand Points and lines, Polygons, filling of polygons. Text primitive. Other primitives. Windowing and clipping, view port. Homogeneous coordinates. Transformations.
CO5	Basic components of NC system, NC coordinates and motion control systems. Computer numerical control, direct numerical control, combined CNC/DNC. NC machine tools and control units. Tooling.

CO-PO MAPPING:

		CO													
		PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipment and techniques	PO8 Knowledge of Process and Food Engineering equipment and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
CO1	Students become able to understand the Meaning of drawing, Phases of drawing, Know the Standard conventions and Construction of various Engineering curves through Auto CAD.	2	3	2	1	-	-	2			-	-	-	-	2
CO2	Students become able to understand the various types of joints like riveted, welded joints. Nomenclature of various threads, thread profile, Square headed and hexagonal nuts.	2	3	2	1	-	-	2			-				2

C03	Students become able to understand Design process, application of computers for design, definition of CAD, benefits of CAD, CAD system components. Computer hardware for CAD	2	3	2	1	-	-	2		-				2
C04	Students become able to understand Points and lines, Polygons, filling of polygons. Text primitive. Other primitives. Windowing and clipping, view port. Homogeneous coordinates. Transformations.	2	3	2	1	-	-	2		-				2
C05	Basic components of NC system, NC coordinates and motion control systems. Computer numerical control, direct numerical control, combined CNC/DNC. NC machine tools and control units.	2	2	1	1	-	-	1		-	-	-	-	2
3: Strong contribution, 2: average contribution, 1: Low contribution														

Name of Course/subject: Soil and Water Conservation Structures

Course Code: AE328

Course Objective:

1. To introduce the basic concept of Soil and water conservation and erosion control structures.
2. To impart basic knowledge of flow in open channel and runoff measuring structures.
3. To introduce basic knowledge of hydraulic jump and its application.
4. To know about design of different permanent structure of soil erosion control and.
5. To know about design of diversions and earth embankment and its type.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Know the basic knowledge of soil and water conservation and erosion control structures.
CO2	Have the ability to have the knowledge of flow in open channel runoff measuring structures.
CO3	Know the practical application of hydraulic jump.
CO4	Have the ability to design of different permanent structure of soil erosion control.
CO5	Have the basic knowledge for designing of diversions and earth embankment and its type.

CO-PO MAPPING:

CO		PO1 Knowledge of Applied Science in Agricultural Engineering	PO2 Knowledge of Basic Engineering	PO3 Problem Solving	PO4 Field Experimentations	PO5 Knowledge of Soil and Water Conservation Engineering	PO6 Knowledge of Irrigation and Drainage Engineering	PO7 Knowledge of Farm Machinery, equipments and techniques	PO8 Knowledge of Process and Food Engineering equipments and techniques	PO9 Knowledge of Renewable Energy Engineering	PO10 Environment and sustainability	PO11 Ethics	PO12 Individual and team work	PO13 Communication and skill development	PO14 Lifelong learning
C01	Understand the basic concepts of Loads and use of BIS Codes	3	3	3	2	3	3	-	-	-	3	1	2	1	1
C02	Understand the mechanism of Design of steel roof truss	3	3	3	3	2	2	-	-	-	2	2	3	2	1
C03	Acquaint with the Design of Flanged Beams, Slabs, Columns	3	3	2	3	3	3	-	-	-	3	1	3	1	2
C04	Understand the Design and drawing of RCC building	3	3	3	3	3	2	-	-	-	2	1	3	1	1

CO5	Acquaint with Foundations, Retaining walls and Silos	3	3	2	2	3	3	-	-	-	3	1	3	1	1
		3: Strong contribution, 2: average contribution, 1: Low contribution													

Refrigeration and Air Conditioning

Course Code: ME 334

Course Objective

1. To impart knowledge about Definition of refrigeration and air conditioning, necessity of refrigeration
2. To understand the different Components of vapour compression refrigeration system, evaporator, compressor, condenser and expansion valve
3. To learn Applications of refrigeration in different food products
4. To understand the concept Direct contact systems, air blast immersion, frozen food properties, density, thermal conductivity enthalpy
5. To know about specific heat and thermal diffusivity, freezing time

Course Outcome:

After completion of the course, a student will be able to

COURSE (CO)	OUTCOME	DESCRIPTION
CO1		Understand the basic concepts of refrigeration and air conditioning
CO2		Understand the mechanism of vapour compression refrigeration system
CO3		Acquaint with the Applications of refrigeration in different food products
CO4		Understand the concept Direct contact systems
CO5		Acquaint with the concept of specific heat and thermal diffusivity

CO-PO MAPPING:

C04	Understand Scope, importance and need for environmental control, renewable and non-renewable resources and their equitable use	3	3	3	-	-	-	3	-	-	2	2	3	2	-
C05	Acquaint with estimation of power requirement for domestic and irrigation	3	3	2	-	-	-	2	-	-	3	2	3	1	-

3: Strong contribution, 2: average contribution, 1: Low contribution

Name of Course/subject: Entrepreneurship Development and Communication Skills

Course Code: BM339

Course Objective

1. To introduce the basic knowledge regarding entrepreneurship development.
2. To introduce the different types of entrepreneurship.
3. To make differentiation between intra-preneurship and entrepreneurship.
4. To focus on different types of agro based industries
5. To introduce the concepts of MSME.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students know the basic knowledge regarding entrepreneurship development.
CO2	Students have knowledge about different types of entrepreneurship.
CO3	Students can easily differentiation between intra-preneurship and entrepreneurship.
CO4	Students are able to figure out benefits of agro based industries for Indian economic system and society.
CO5	Students are familiar with different types of agro based industries.

CO-PO MAPPING:

		CO														
CO1	Students know the basic knowledge regarding entrepreneurship development.	2	-	2	-	-	-	-	-	-	-	1	2	2	3	3
CO2	Students have knowledge about different types of entrepreneurship.	1	-	3	-	-	-	-	-	-	-	2	2	3	3	3
CO3	Students can easily differentiation between intra-preneurship and entrepreneurship.	2	-	2	-	-	-	-	-	-	-	1	1	3	3	2
CO4		2	-	3	-	-	-	-	-	-	-	2	1	3	2	3
		PO1	Knowledge of Applied Science in Agricultural Engineering													
		PO2	Knowledge of Basic Engineering													
		PO3	Problem Solving													
		PO4	Field Experimentations													
		PO5	Knowledge of Soil and Water Conservation Engineering													
		PO6	Knowledge of Irrigation and Drainage Engineering													
		PO7	Knowledge of Farm Machinery, equipments and techniques													
		PO8	Knowledge of Process and Food Engineering equipments and techniques													
		PO9	Knowledge of Renewable Energy Engineering													
		PO10	Environment and sustainability													
		PO11	Ethics													
		PO12	Individual and team work													
		PO13	Communication and skill development													
		PO14	Lifelong learning													

CO5	Students are able to figure out benefits of agro based industries for Indian economic system and society.	2	-	2	-	-	-	-	-	-	1	2	3	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution															

Name of Course/ Subject: Dairy and Food Engineering

Course Code: AE330

Course objective:

1. To give knowledge about importance and scope of dairy technology, planning dairy development in India and engineering, thermal and chemical properties of milk and milk products.
2. To provide the knowledge about Unit operation of various dairy and food processing systems, process flow charts for product manufacture.
3. To educate the students about working principles of equipment for receiving, pasteurization sterilization, homogenisation, filling & packaging, butter manufacture.
4. To aware the students about the dairy plant design and layout, composition and proximate analysis of food products.
5. To provide Knowledge regarding the evaporation, drying, freezing juice extraction, filtration, membrane separation, thermal processing, plant utilities requirement.

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students able to understand the conceptual knowledge about importance and scope of dairy technology, planning dairy development in India and engineering, thermal and chemical properties of milk and milk products.
CO2	Able to know about Unit operation of various dairy and food processing systems, process flow charts for product manufacture.
CO3	Student able to understand about working principles of equipment for receiving, pasteurization sterilization, homogenisation, filling & packaging, butter manufacture.
CO4	Able to know about about the dairy plant design and layout, composition and proximate analysis of food products.
CO5	Students able to understand the basic Knowledge regarding the evaporation, drying, freezing juice extraction, filtration, membrane separation, thermal processing, plant utilities requirement.

CO-PO MAPPING:

	CO																			
		PO1 Knowledge of Applied Science in Agricultural Engineering																		
		PO2 Knowledge of Basic Engineering																		
		PO3 Problem Solving																		
		PO4 Field Experimentations																		
		PO5 Knowledge of Soil and Water Conservation																		
		PO6 Knowledge of Irrigation and Drainage Engineering																		
		PO7 Knowledge of Farm Machinery, equipments and techniques																		
		PO8 Knowledge of Process and Food Engineering equipments and techniques																		
		PO9 Knowledge of Renewable Energy Engineering																		
		PO10 Environment and sustainability																		
		PO11 Ethics																		
		PO12 Individual and team work																		
		PO13 Communication and skill development																		
		PO14 Lifelong learning																		
C01	Students able to understand the conceptual knowledge about importance and scope of dairy technology, planning dairy development in India and engineering, thermal and chemical properties of milk and milk products.		3	3	3	2	-	-	-	-	3	-	3	3	2	3	2			
C02	Able to know about Unit operation of various dairy and food processing systems, process flow charts for product manufacture.		3	3	3	2	-	-	-	-	3	-	2	2	3	2	3			
C03	Student able to understand about working principles of equipment for receiving, pasteurization		3	3	2	2	-	-	-	-	-	3	2	3	2	3				

	sterilization, homogenisation, filling & packaging, butter manufacture.								3	-						
C04	Able to know about about the dairy plant design and layout, composition and proximate analysis of food products.	3	3	3	1	-	-	-	3	-	3	2	3	2	3	
C05	Students able to understand the basic Knowledge regarding the evaporation, drying, freezing juice extraction, filtration, membrane separation, thermal processing, plant utilities requirement.	3	3	2	3	-	-	-	3	-	3	2	3	2	3	
3: Strong contribution, 2: average contribution, 1: Low contribution																

COURSE: e-Agriculture
COURSE CODE: AG316

COURSE OBJECTIVES:

- Understand analogy of computer.
- Basic knowledge of MS Office.
- Knowledge and concept e-Agriculture.
- Use of IT application and different IT tools in Agriculture
- Knowledge Innovative Information sources

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Introduction to Computers, Anatomy of computer, Operating Systems, definition and types
CO2	Applications of MS Office for document creation & Editing, Data presentation, interpretation and graph creation, statistical analysis, mathematical expressions, Database, concepts and types, uses of DBMS in Agriculture.
CO3	Use of Information and Communication Technology in Agriculture
CO4	Know about Computer Models for understanding plant processes. Computer-controlled devices (automated systems) for Agri-input management, Smartphone Apps in Agriculture for farm advises, market price, postharvest management etc.
CO5	Know about Group contact methods, Mass contact Methods and individual contact methods, Kissan Call center and e-Chaupal.

CO-PO MAPPING:

CO		PO1. Basic Agriculture	PO2 .Problem Solving	PO3 .Field Experimentations	PO4 .Modern implementation	PO5 Modern tool usage	PO6 Engineer and Society	PO7 Environment and	PO8 Ethics	PO9 Individual and Team	PO10 Communication	PO11 Project Management	PO12 Lifelong learning
C01	Knowledge of Computers, Anatomy of computer, Operating Systems, definition and types	3	3	2	1	1	3	1	2	3	3	1	2
C02	Applications of MS Office for document creation & Editing, Data presentation, interpretation and graph creation, statistical analysis, mathematical expressions, Database, concepts and types, uses of DBMS in Agriculture.	3	3	1	2	1	1	1	2	2	3	1	2
C03	Use of Information and Communication Technology in Agriculture	3	2	1	1	2	2	2	1	2	3	2	1
C04	Know about Computer Models for understanding plant processes. Computer-controlled devices (automated systems) for Agri-input management, Smartphone Apps in Agriculture for farm advises, market price, postharvest management etc.	3	2	2	2	3	3	1	1	3	3	1	2
C05	Know about Group contact methods, Mass contact Methods and individual contact methods, Kissan Call center and e-Chaupal.	3	1	1	1	1	2	1	2	3	3	1	2
3: Strong contribution, 2: average contribution, 1: Low contribution													