B. Tech. I year I Sem (As per Fourth Dean Committee)

Name of Course/ Subject: Engineering Mathematics-I

Course Code: MT110

Course objectives:

1. To provide the knowledge about Differential calculus: Taylor's and Maclaurin's expansions; indeterminate form; curvature, asymptotes, tracing of curves, function of two or more independent variables, partial differentiation, homogeneous functions and Euler's theorem, composite functions, total derivatives, derivative of an implicit function, change of variables, Jacobians, error evaluation, maxima and minima.
2. To provide the knowledge about Integral calculus: Reduction formulae; rectification of standard curves, volumes and surfaces of revolution of curves; double and triple integrals, change of order of integration, Gamma and Beta functions, application of double and triple integrals to find area and volume.
3. To educate the students about Ordinary differential equations: Exact and Bernoulli's differential equations, equations reducible to exact form by integrating factors, equations of first order and higher degree, Clairaut's equation, Differential equations of higher orders, methods of finding complementary functions and particular integrals, method of variation of parameters, Cauchy's and Legendre's linear equations, simultaneous linear differential equations with constant coefficients, series solution techniques, Bessel's and Legendre's differential equations.
4. To aware the students about the Vector calculus: Differentiation of vectors, scalar and vector point functions, vector differential operator Del, Gradient of a scalar point function, Divergence and Curl of a vector point function and their physical interpretations, identities involving Del, second order
5. To provide Knowledge regarding differential operator; line, surface and volume integrals, Stoke's, divergence and Green's theorems (without proofs).

Course Outcomes

After completion of course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	Students able to provide the knowledge about Differential calculus: Taylor's and Maclaurin's expansions; indeterminate form; curvature, asymptotes, tracing of curves, function of two or more independent variables, partial differentiation, homogeneous functions and Euler's theorem, composite functions, total derivatives, derivative of an implicit function, change of variables, Jacobians, error evaluation, maxima and minima
CO2	Able to know about provide the knowledge about Integral calculus: Reduction formulae; rectification of standard curves, volumes and surfaces of revolution of curves; double and triple integrals, change of order of integration, Gamma and Beta functions, application of double and triple integrals to find area and volume.

CO3	Student able to understand about Ordinary differential equations: Exact and Bernoulli's differential equations, equations reducible to exact form by integrating factors, equations of first order and higher degree, Clairaut's equation, Differential equations of higher orders, methods of finding complementary functions and particular integrals, method of variation of parameters, Cauchy's and Legendre's linear equations, simultaneous linear differential equations with constant coefficients, series solution techniques, Bessel's and Legendre's differential equations.
CO4	Able to know about about the Vector calculus: Differentiation of vectors, scalar and vector point functions, vector differential operator Del, Gradient of a scalar point function, Divergence and Curl of a vector point function and their physical interpretations, identities involving Del, second order
CO5	Students able to understand the basic Knowledge regarding regarding differential operator; line, surface and volume integrals, Stoke's, divergence and Green's theorems (without proofs).

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	Students able to provide the knowledge about Differential calculus: Taylor's and Maclaurin's expansions; indeterminate form; curvature, asymptotes, tracing of curves, function of two or more independent variables, partial differentiation, homogeneous functions and Euler's theorem, composite functions, total derivatives, derivative of an implicit function, change of variables, Jacobians, error evaluation, maxima and minima	3	3	3	-	-	-	-	-	-	-	3	2	-	2
CO2	Able to know about provide the knowledge about Integral calculus: Reduction formulae; rectification of standard curves, volumes and surfaces of revolution of curves; double and triple integrals, change of order of integration, Gamma and Beta functions, application of double and triple integrals to find area and volume.	3	3	3	-	-	-	-	-	-	-	2	3	-	3

CO3	Student able to understand about Ordinary differential equations: Exact and Bernoulli's differential equations, equations reducible to exact form by integrating factors, equations of first order and higher degree, Clairaut's equation, Differential equations of higher orders, methods of finding complementary functions and particular integrals, method of variation of parameters, Cauchy's and Legendre's linear equations, simultaneous linear differential equations with constant coefficients, series solution techniques, Bessel's and Legendre's differential equations.	3	3	2	-	-	-	-	-	-	-	2	3	-	3
CO4	Able to know about about the Vector calculus: Differentiation of vectors, scalar and vector point functions, vector differential operator Del, Gradient of a scalar point function, Divergence and Curl of a vector point function and their physical interpretations, identities involving Del, second order	3	3	3	-	-	-	-	-	-	-	2	3	-	3
CO5	Students able to understand the basic Knowledge regarding regarding differential operator; line, surface and volume integrals, Stoke's, divergence and Green's theorems (without proofs).	3	3	2	-	-	-	-	-	-	-	2	3	-	3

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

Name of Course/ Subject: Engineering Physics

Course Code: PY110

Course objectives:

1. To analyze the connection between daily life observations and science. To realize that apparently different ideas of Dia, Para and ferromagnetism. To realize the simplicity of ideas involved in explaining complex phenomenon. To grow in ideas of different aspect of magnetism and develop connection between daily life applications and science.

2. To analyze the process of development of a new theory while dealing with metals. insulators and semiconductors. To correlate that the conceptualization of an idea is far ahead than its practical realization while dealing with LASER and Holography. To grow in realization of totally different manifestation of Langevin theory. To find the most recent applications of light in terms of communication and storage of data.

3. To realize that how the design of complex systems is based on the simple ideas. To realize that the conceptualization of an idea is far ahead than its practical realization while dealing with Optical Fibers. To grow in developing connection between philosophy and science. To find that seemingly different ideas such as Illumination and interrelationship between them.

4. To understand the process of development of a new theory and its application in day to day life. To find that seemingly different ideas such as de-Broglie hypothesis and Quantum theory and interrelationship between them. To understand and analyze the process of development of a new theory and how the development of one idea leads to the development of an apparently different idea. To realize and appreciate the efforts made by the individuals to give a new understanding of science that led to the modern day applications.

5. To grow in developing connection between daily life utility and material science. To realize that apparently different materials with respect to Electric and Magnetic properties have inter relationship between them. To evaluate that how totally different manifestation of Modern Science leads to new technology. To do the evaluation that how an idea is far ahead than its practical realization while dealing with Nano Technology and Super Conductivity.

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 magnetic properties of materials, principles and methods of difference of magnetic properties of materials.

CO2	Able to analyze the process of development of a new theory while dealing with metals. insulators and semiconductors. To correlate that the conceptualization of an idea is far ahead than its practical realization while dealing with LASER and Holography. To grow in realization of totally different manifestation of Langevin theory. To find the most recent applications of light in terms of communication and storage of data.
CO3	Student able to understand about the design of complex systems is based on the simple ideas. To realize that the conceptualization of an idea is far ahead than its practical realization while dealing with Optical Fibers. To grow in developing connection between philosophy and science. To find that seemingly different ideas such as Illumination and interrelationship between them.
CO4	Able to know about the process of development of a new theory and its application in day to day life. To find that seemingly different ideas such as de-Broglie hypothesis and Quantum theory and interrelationship between them. To understand and analyze the process of development of a new theory and how the development of one idea leads to the development of an apparently different idea. To realize and appreciate the efforts made by the individuals to give a new understanding of science that led to the modern day applications.
CO5	Students able to understand the basic Knowledge regarding daily life utility of material science. To realize that apparently different materials with respect to Electric and Magnetic properties have inter relationship between them. To evaluate that how totally different manifestation of Modern Science leads to new technology. To do the evaluation that how an idea is far ahead than its practical realization while dealing with Nano Technology and Super Conductivity.

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	Students able to understand the conceptual knowledge about importance and scope of magnetic properties of materials, principles and methods of difference of magnetic properties of materials.	2	3	3	2	2	1	2	3	3	2	2	3	2	3
CO2	Able to analyze the process of development of a new theory while dealing with metals. insulators and semiconductors. To correlate that the conceptualization of an idea is far ahead than its practical realization while dealing with LASER and Holography. To grow in realization of totally different manifestation of Langevin theory. To find the most recent applications of light in terms of communication and storage of data.	2	3	3	2	2	1	2	3	3	2	2	3	2	3

CO3	Student able to understand about the design of complex systems is based on the simple ideas. To realize that the conceptualization of an idea is far ahead than its practical realization while dealing with Optical Fibers. To grow in developing connection between philosophy and science. To find that seemingly different ideas such as Illumination and interrelationship between them.	2	3	3	2	2	1	2	3	3	2	2	3	2	3
CO4	Able to know about the process of development of a new theory and its application in day to day life. To find that seemingly different ideas such as de-Broglie hypothesis and Quantum theory and interrelationship between them. To understand and analyze the process of development of a new theory and how the development of one idea leads to the development of an apparently different idea. To realize and appreciate the efforts made by the individuals to give a new understanding of science that led to the modern day applications.	2	3	3	2	2	1	2	3	3	2	2	3	2	3
CO5	Students able to understand the basic Knowledge regarding daily life utility of material science. To realize that apparently different materials with respect to Electric and Magnetic properties have inter relationship between them. To evaluate that how totally different manifestation of Modern Science leads to new technology. To do the evaluation that how an idea is far ahead than its practical realization while dealing with Nano Technology and Super Conductivity.	2	3	3	2	2	1	2	3	3	2	2	3	2	3

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

Name of Course/ Subject: Engineering Chemistry

Course Code: CH116

Course objectives:

1. To provide the knowledge about the phase rules, fuels and colloids: its type and significance with their quantitative and qualitative analysis correlated with the agricultural field.
2. To give knowledge about the causes, types, control and future aspects of corrosion and water quality analysis, temporary and permanent hardness, disadvantages of hard water, scale and sludge formation in boilers and boiler corrosion.
3. To provide the knowledge about the principles of food chemistry, chemistry of lipids, proteins, carbohydrates, vitamins, coloring and flavoring reagents of food. Food preservation, methods and principles. Enzyme action and their role in the manufacturing of ethanol and acetic acid.
4. To educate the students about the properties, mechanisms, classification, types and tests of lubricants and polymers.
5. To aware the students about the fundamentals of thermo-gravimetric, polarographic, nuclear radiation, radioactive materials and IR spectroscopy with their significance and role in the characterization and analysis of organic and inorganic materials.

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students are able to know about the role, advantage, significance and prospect of the chemistry related with the phase rules, fuels and colloids. That is provided extra strength to the students, to freely work in the field of agriculture.
CO2	Students are aware about the different types of chemical behavior/reactivity of corrosion and water quality; types of corrosion, theories of corrosion, corrosion control, and determination of water quality parameters, hardness, treatment as well as control of water contamination.
CO3	Students are able to know about the chemical composition, behavior, structure and types of lipids, proteins and carbohydrate, vitamin, coloring as well as flavoring reagents of food. They are also learned about the mechanism of enzyme action and its role in the chemical manufacturing such as EtOH and CH_3COOH.
C4	Students are aware about the fundamentals of the polymers and lubricant. Its properties, mechanisms, classification, types and tests. Role of polymers and lubricant in the domestic and agricultural practices. Also possess the knowledge of synthesis of polymers and preparation of lubricants.
CO5O	Students able to know about the basics of thermo-gravimetric, polarographic, nuclear radiation, radioactive materials and IR spectroscopy. There instrumentation and fundamental principles with their roles in the characterization of chemical composition.

CO-PO MAPPING: ENGINEERING CHEMISTRY (CH116)

	CO	**PO1** Knowledge of phase rules	**PO2** Knowledge of Fuels and Colloids	**PO3** Knowledge of Corrosion	**PO4** Knowledge of Water Quality/Parameters	**PO5** Knowledge of Food chemistry and enzymes	**PO6** Knowledge of Lubricants	**PO7** Knowledge of Polymers	**PO8** Knowledge of Radioactive Materials	**PO9** Knowledge of IR spectroscopy	**PO10** Problem Solving and Experimentations	**PO11** Ethics	**PO12** Individual and team work	**PO13** Communication and skill development	**PO14** Lifelong learning
CO1	Students are able to know about the role, advantage, significance and prospect of the chemistry related with the phase rules, fuels and colloids.	1	2	3	3	3	-	1	-	1	3				3
CO2	Students are aware about the different types of chemical behavior/reactivity of corrosion and water quality; types of corrosion, theories of corrosion, corrosion control, water quality parameters, hardness, treatment and control.	1	2	3	3	3	-	1	-	1	3				3
CO3	Students are able to know about the chemical composition, behavior, structure and types of lipids, proteins, carbohydrate, vitamin, coloring and flavoring reagents. Also learned about the mechanism of enzyme action and manufacturing such as EtOH and CH_3COOH through enzymes.	1	2	3	3	3	-	1	-	1	3				3
CO4	Students are aware about the fundamentals of the polymers and lubricant. Its properties, mechanisms, classification, types and tests. Role and synthesis of polymers and lubricant.	1	2	3	3	3	-	1	-	1	3				3

CO5	Students able to know about the basics of thermo-gravimetric, polarographic, nuclear radiation, radioactive materials and IR spectroscopy with instrumentation, fundamental principles and roles in the characterization of chemical composition.	1	1	1	3	3	-	1	-	1	3				3
	3: Strong contribution, 2: average contribution, 1: Low contribution														

Name of Course/ Subject: Workshop Practice in Agriculture

Course Code: ME 107

Course objectives:

1. To provide the knowledge about Introduction to various carpentry tools, materials, types of wood and their characteristics and Processes OR operations in wood working; Preparation of simple joints
2. To provide the knowledge about Cross half Lap joint and T-Halving joint; Preparation of Dovetail joint, Mortise and tenor joint; Introduction to Smithy tools and operations
3. To educate the students about Jobs on Bending, shaping etc.; Jobs on Drawing, Punching, Rivetting; Introduction to tools and measuring instruments for fitting
4. To provide Knowledge regarding Jobs on sawing, filing and right angle fitting of MS Flat; Practical in more complex fitting job; Operations of drilling,, reaming, and threading with tap and dies.
5. To provide the knowledge about Practical test; Introduction to tools and operations in sheet metal work; Making different types of sheet metal joints using G.I. sheets.

Course Outcomes

After completion of course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	Students able to know about Introduction to various carpentry tools, materials, types of wood and their characteristics and Processes OR operations in wood working; Preparation of simple joints
CO2	Able to know about the Cross half Lap joint and T-Halving joint; Preparation of Dovetail joint, Mortise and tenor joint; Introduction to Smithy tools and operations
CO3	Students able to know the Jobs on Bending, shaping etc.; Jobs on Drawing, Punching, Rivetting; Introduction to tools and measuring instruments for fitting
CO4	Able to know about Jobs on sawing, filing and right angle fitting of MS Flat; Practical in more complex fitting job; Operations of drilling,, reaming, and threading with tap and dies
CO5	Students able to understand the basic Knowledge regarding Practical test; Introduction to tools and operations in sheet metal work; Making different types of sheet metal joints using G.I. sheets.

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	Students able to know about Introduction to various carpentry tools, materials, types of wood and their characteristics and Processes OR operations in wood working; Preparation of simple joints	3	3	3	-	2	3	3	-	-	3	3	2	-	2
CO2	Able to know about the Cross half Lap joint and T-Halving joint; Preparation of Dovetail joint, Mortise and tenor joint; Introduction to Smithy tools and operations	3	3	3	-	1	3	2	-	2	3	2	3	-	3

CO3	Students able to know the Jobs on Bending, shaping etc.; Jobs on Drawing, Punching, Rivetting; Introduction to tools and measuring instruments for fitting	3	3	2	-	1	2	3	-	-	3	2	3	-	3
CO4	Able to know about Jobs on sawing, filing and right angle fitting of MS Flat; Practical in more complex fitting job; Operations of drilling,, reaming, and threading with tap and dies	3	3	3	-	2	3	2	-	2	3	2	3	-	3
CO5	Students able to understand the basic Knowledge regarding Practical test; Introduction to tools and operations in sheet metal work; Making different types of sheet metal joints using G.I. sheets.	3	3	2	-	2	3	3	-	-	3	2	3	-	3

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

COURSE: Surveying and Levelling
COURSE CODE: AE101

COURSE OBJECTIVES:

1. Students will able to understand the importance of surveying and the basics of linear methods like chain surveying, Tape surveying and Modern Instruments.
2. Students will understand about compass coordinates and different methods of calculating the horizontal and vertical angles.
3. Student will be able to understand the fundamentals of plane table survey.
4. Student will know the fundamentals of leveling work and to calculate the levels of different points above or below the earth surface.
5. Students have an ability to understand the basics of contour and use modern equipment like total station, electronic theodolite and GPS.

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	The students have the ability to understand the measurement techniques and equipment used in land surveying. They will take the liner measurement by chain and tape.
CO2	The students have the ability to take angular measurement from compass and correct them from different errors.
CO3	The students have an ability to find out the Reduced levels of different point on the ground.
CO4	The students will Gain the ability to prepare a map of the area.
CO5	The students will be able to represent the topography of the land graphically.

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	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	The students have the ability to understand the measurement techniques and equipment used in land surveying. They will take the liner measurement by chain and tape.	1	2	1	2	0	0	1	0	0	0	0	2	1	1
CO2	The students have the ability to take angular measurement from compass and correct them from different errors.	0	1	1	2	0	0	1	0	0	0	0	2	0	1
CO3	The students have an ability to find out the Reduced levels of different point on the ground.	1	1	1	2	0	0	0	0	0	0	0	2	1	1
CO4	The students will Gain the ability to prepare a map of the area	1	2	1	2	0	0	0	0	0	0	0	2	1	1
CO5	The students will be able to represent the topography of the land graphically.	1	1	0	1	0	0	0	0	0	0	0	1	1	1
		3: Strong contribution, 2: average contribution, 1: Low contribution													

COURSE: Engineering Drawing
COURSE CODE: ME108

COURSE OBJECTIVES:

1. To educate the students about drawing scales, orthographic projections and drawing of points, lines, planes and solids.
2. To educate the students about sections of solids, interpenetration of solid surfaces and development of surfaces.
3. To educate the students about Isometric projections and drawing of missing views.
4. To teach the students about preparation of working drawing from models
5. Understanding different methods of dimentioning.
6. Understanding the concept of sectioning, revolved and oblique sections.
7. To educate the students about sectional drawing of simple machine parts.
8. Types of rivets, welds, and their joints.
9. Learning symbols for different welded joints.
10. To educate the students about types of threads, bolts, nuts, screws, foundation bolts, etc.

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Learner will be able to understand drawing scales and draw orthographic projections and drawing of points, lines, planes and solids.
CO2	Learner will be able to draw sections of solids, interpenetration of solid surfaces and development of surfaces.
CO3	Learner will be able to draw Isometric projections and drawing of missing views.
CO4	Learner will be able to prepare working drawing from models.
CO5	Learner will be able to understand different methods of dimentioning.
CO6	Learner will be able to understand concept of sectioning, revolved and oblique sections.
CO7	Learner will be able to draw sectional drawing of simple machine parts.
CO8	Learner will be able to understand and draw types of rivets, welds, and connections.
CO9	Learner will be able to understand symbols for different welded joints.
CO10	Learner will be able to understand and draw types of threads, bolts, nuts, screws, foundation bolts, etc.

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	Learner will be able to understand drawing scales and draw orthographic projections and drawing of points, lines, planes and solids.	2	2	2	0	0	0	1	0	0	0	1	1	0	1
CO2	Learner will be able to draw sections of solids, interpenetration of solid surfaces and development of surfaces.	2	2	2	0	0	0	1	0	0	0	1	1	0	1
CO3	Learner will be able to draw Isometric projections and drawing of missing views.	2	2	2	0	0	0	1	0	0	0	1	1	0	1
CO4	Learner will be able to prepare working drawing from models.	2	2	2	0	0	0	1	0	0	0	1	1	0	1
CO5	Learner will be able to understand different methods of dimentioning.	2	2	1	0	0	0	1	0	0	0	1	1	0	1
CO6	Learner will be able to understand concept of sectioning, revolved and oblique sections.	2	2	1	0	0	0	1	0	0	0	1	1	0	1
CO7	Learner will be able to draw sectional drawing of simple machine parts.	3	3	3	0	0	0	1	0	0	0	1	1	0	1
CO8	Learner will be able to understand and draw types of rivets, welds, and connections.	3	3	3	0	0	0	1	0	0	0	1	1	0	1

CO9	Learner will be able to understand symbols for different welded joints.	2	2	1	0	0	0	1	0	0	0	1	1	0	1
C10	Learner will be able to understand and draw types of threads, bolts, nuts, screws, foundation bolts, etc.	2	2	1	0	0	0	1	0	0	0	1	1	0	1
		3: Strong contribution, 2: average contribution, 1: Low contribution													

Name of Course/ Subject: Electrical Circuits

Course Code: EE 101

Course objectives:

1. To provide the knowledge about Average and effective value of sinusoidal and linear periodic wave forms. Independent and dependent sources, loop current and loop equations (Mesh current method)
2. To provide the knowledge about node voltage and node equations (Nodal voltage method), Network theorems: Thevenin's, Norton's, Superposition.
3. To educate the students about Reciprocity and Maximum power transfer, Star- Delta conversion solution of DC circuit by Network theorems, Sinusoidal steady state response of circuits.
4. To provide Knowledge regarding Instantaneous and average power, power factor, reactive and apparent power, Concept and analysis of balanced polyphase circuits, Laplace transform method of finding step response of DC circuits.
5. To provide the knowledge about Series and parallel resonance, Classification of filters, constant-k, m-derived, terminating half network and composite filters.

Course Outcomes

After completion of course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	Students able to know about Average and effective value of sinusoidal and linear periodic wave forms. Independent and dependent sources, loop current and loop equations (Mesh current method).
CO2	Able to know about the node voltage and node equations (Nodal voltage method), Network theorems: Thevenin's, Norton's, Superposition.
CO3	Students able to know the Reciprocity and Maximum power transfer, Star- Delta conversion solution of DC circuit by Network theorems, Sinusoidal steady state response of circuits.
CO4	Able to know about Instantaneous and average power, power factor, reactive and apparent power, Concept and analysis of balanced polyphase circuits, Laplace transform method of finding step response of DC circuits.
CO5	Students able to understand the basic Knowledge regarding Series and parallel resonance, Classification of filters, constant-k, m-derived, terminating half network and composite filters.

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
CO1	Students able to know about Average and effective value of sinusoidal and linear periodic wave forms. Independent and dependent sources, loop current and loop equations (Mesh current method).	3	3	3	-	2	-	-	-	-	3	1	2	-
CO2	Able to know about the node voltage and node equations (Nodal voltage method), Network theorems: Thevenin's, Norton's, Superposition.	3	3	3	-	1	-	-	-	2	3	2	3	-

CO3	Students able to know the Reciprocity and Maximum power transfer, Star- Delta conversion solution of DC circuit by Network theorems, Sinusoidal steady state response of circuits.	3	3	2	-	1	-	-	-	-	3	2	3	-
CO4	Able to know about Instantaneous and average power, power factor, reactive and apparent power, Concept and analysis of balanced polyphase circuits, Laplace transform method of finding step response of DC circuits.	3	3	3	-	2	-	-	-	2	3	2	3	-
CO5	Students able to understand the basic Knowledge regarding Series and parallel resonance, Classification of filters, constant-k, m-derived, terminating half network and composite filters.	3	3	2	-	2	-	-	-	-	3	2	3	-

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

Name of Course/ Subject: Human Values and Agricultural Ethics

Paper Code: BM121

Course objectives:

1. To provide the knowledge about Human Value Education: Understanding the need, basic guidelines, content and process for value education, self-exploration- its content and process: natural acceptance experiential validation- as the mechanism for self-exploration, continuous happiness and prosperity
2. To provide the knowledge about A look at basic human aspiration, right understanding, relationship and physical facilities-the basic requirement for fulfillment of aspirations of every human being with their correct priority, understanding happiness and prosperity correctly.
3. To educate the students about Domestic supply, market access, export subsidies agreements on sanitary and phyto-sanitary (SPS) measures, Trade related intellectual property rights (TRIPS). Development (ED): Concept of entrepreneur and entrepreneurship Assessing overall business environment in Indian economy Entrepreneurial and managerial characteristics
4. To provide Knowledge regarding Introduction to ethical concept: Definition of agricultural ethics and values, ethical rules of agricultural workers. Farm structure ethics, Animal ethics, ethics of food safety, Environmental impact of agricultural practices and ethical concern, Ethics of international trade, Food security, Social justice in farming, Research ethics.
5. To provide the knowledge about Values and value jugdements. Moral rights and moral rules, Moral character and responsibilities, privacy, confidentiality. Ethics as Law. Professional responsibility: The basis and scope of professional responsibility, profession and norms of professional conducts, ethical standards versus profession, culpable mistakes, the autonomy of professions and codes of ethics. Employee status and professionalism. Valuing time–co-operation commitment. Global issues: A Glimpse of life stories: life story of prophet Mohammad, Mahatma Gandhi, Swami Vivekanand, Marie Curie and Steve Jobs

Course Outcomes

After completion of course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	Students able to know Human Value Education: Understanding the need, basic guidelines, content and process for value education, self-exploration- its content and process: natural acceptance experiential validation- as the mechanism for self-exploration, continuous happiness and prosperity
CO2	Able to know about the A look at basic human aspiration, right understanding, relationship and physical facilities-the basic requirement for fulfillment of aspirations of every human being with their correct priority, understanding happiness and prosperity correctly
CO3	Students able to know the Domestic supply, market access, export subsidies agreements on sanitary and phyto-sanitary (SPS) measures, Trade related intellectual property rights (TRIPS). Development (ED): Concept of entrepreneur and entrepreneurship Assessing overall business environment in Indian economy Entrepreneurial

	and managerial characteristics
CO4	Able to know about Introduction to ethical concept: Definition of agricultural ethics and values, ethical rules of agricultural workers. Farm structure ethics, Animal ethics, ethics of food safety, Environmental impact of agricultural practices and ethical concern, Ethics of international trade, Food security, Social justice in farming, Research ethics
CO5	Students able to understand the basic Knowledge regarding Values and value jugdements. Moral rights and moral rules, Moral character and responsibilities, privacy, confidentiality. Ethics as Law. Professional responsibility: The basis and scope of professional responsibility, profession and norms of professional conducts, ethical standards versus profession, culpable mistakes, the autonomy of professions and codes of ethics. Employee status and professionalism. Valuing time–co-operation commitment. Global issues: A Glimpse of life stories: life story of prophet Mohammad, Mahatma Gandhi, Swami Vivekanand, Marie Curie and Steve Jobs

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	Students able to know Human Value Education: Understanding the need, basic guidelines, content and process for value education, self-exploration- its content and process: natural acceptance experiential validation- as the mechanism for self-exploration, continuous happiness and prosperity	3	3	3	-	-	-	-	-	-	-	3	2	3	2
CO2	Able to know about the A look at basic human aspiration, right understanding, relationship and physical facilities-the basic requirement for fulfillment of aspirations of every human being with their correct priority, understanding happiness and prosperity correctly	3	3	3	-	-	-	-	-	2	-	2	3	3	3

CO3	Students able to know the Domestic supply, market access, export subsidies agreements on sanitary and phyto-sanitary (SPS) measures, Trade related intellectual property rights (TRIPS). Development (ED): Concept of entrepreneur and entrepreneurship Assessing overall business environment in Indian economy Entrepreneurial and managerial characteristics	3	3	2	-	-	-	-	-	-	-	2	3	3	3
CO4	Able to know about Introduction to ethical concept: Definition of agricultural ethics and values, ethical rules of agricultural workers. Farm structure ethics, Animal ethics, ethics of food safety, Environmental impact of agricultural practices and ethical concern, Ethics of international trade, Food security, Social justice in farming, Research ethics	3	3	3	-	-	-	-	-	2	-	2	3	3	3
CO5	Students able to understand the basic Knowledge regarding Values and value jugdements. Moral rights and moral rules, Moral character and responsibilities, privacy, confidentiality. Ethics as Law. Professional responsibility: The basis and scope of professional responsibility, profession and norms of professional conducts, ethical standards versus profession, culpable mistakes, the autonomy of professions and codes of ethics. Employee status and professionalism. Valuing time–co-operation commitment. Global issues: A Glimpse of life stories: life story of prophet Mohammad, Mahatma Gandhi, Swami Vivekanand, Marie Curie and Steve Jobs	3	3	2	-	-	-	-	-	-	-	2	3	3	3

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

Name of Course/ Subject: Functional Skills in English

Course Code: LN 102

Course objectives:

1. To provide the knowledge about Basic Grammar: Articles, Prepositions, Tenses (kinds and uses), Subject-verb agreement, kinds of sentences.
2. To provide the knowledge about Basic Vocabulary: Synonyms, Antonyms, Word-formation, One-word substitution, Words often confused.
3. To educate the students about Basic composition: Paragraph writing and Essay writing. Basic phonetics: Syllable, Stress.
4. To provide Knowledge regarding the sounds of English. Short stories.
5. To provide the knowledge about Group The Meeting Pool" by Ruskin Bond and "The Portrait of a Lady"

Course Outcomes

After completion of course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	Able to know about Basic Grammar: Articles, Prepositions, Tenses (kinds and uses), Subject-verb agreement, kinds of sentences.
CO2	Students able to know about Basic Vocabulary: Synonyms, Antonyms, Word-formation, One-word substitution, Words often confused.
CO3	Students able to know about Basic composition: Paragraph writing and Essay writing. Basic phonetics: Syllable, Stress
CO4	Able to know about The sounds of English. Short stories
CO5	Students able to understand the basic Knowledge regarding The Meeting Pool" by Ruskin Bond and "The Portrait of a Lady"

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 know about Basic Grammar: Articles, Prepositions, Tenses (kinds and uses), Subject-verb agreement, kinds of sentences.	3	3	3	-	-	-	-	-	-	-	3	2	3	2
CO2	Students able to know about Basic Vocabulary: Synonyms, Antonyms, Word-formation, One-word substitution, Words often confused.	3	3	3	-	-	-	-	-	2	-	2	3	3	3

CO3	Students able to know about Basic composition: Paragraph writing and Essay writing. Basic phonetics: Syllable, Stress	3	3	2	-	-	-	-	-	-	-	2	3	3	3
CO4	Able to know about The sounds of English. Short stories	3	3	3	-	-	-	-	-	2	-	2	3	3	3
CO5	Students able to understand the basic Knowledge regarding The Meeting Pool" by Ruskin Bond and "The Portrait of a Lady"	3	3	2	-	-	-	-	-	-	-	2	3	3	3

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

B. Tech. I year II Sem (As per Fourth Dean Committee)

Name of Course/ Subject: Engineering Mathematics -II

Course Code: MT119

Course objectives:

1. To provide the knowledge about Matrices: Elementary transformations, rank of a matrix, reduction to normal form, Gauss- Jordon method to find inverse of a matrix, Eigen values and Eigen vectors, Cayley-Hamilton theorem, linear transformation, orthogonal transformations, diagonalisation of matrices, quadratic forms.
2. To provide the knowledge about Functions of a Complex variable: Limit, continuity and derivative of complex functions, analytic function, Cauchy-Reimann equations, conjugate functions, Harmonic functions.
3. To educate the students about Fourier series: Infinite series and its convergence, periodic functions, Fourier series, Euler's formulae, Dirichlet's conditions, functions having arbitrary period, even and odd functions, half range series, Harmonic analysis.
4. To aware the students about the Partial differential equations: Formation of partial differential equations, Lagrange's linear equation, Higher order linear partial differential equations with constant coefficients.
5. To provide Knowledge regarding solution of non-linear partial differential equations, Charpit's method, application of partial differential equations (one dimensional wave and heat flow equations, two dimensional steady state heat flow equation (Laplace equation).

Course Outcomes After completion of course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	Students able to provide the knowledge about Matrices: Elementary transformations, rank of a matrix, reduction to normal form, Gauss- Jordon method to find inverse of a matrix, Eigen values and Eigen vectors, Cayley-Hamilton theorem, linear transformation, orthogonal transformations, diagonalisation of matrices, quadratic forms
CO2	Able to know about provide the knowledge about Functions of a Complex variable: Limit, continuity and derivative of complex functions, analytic function, Cauchy-Reimann equations, conjugate functions, Harmonic functions.
CO3	Student able to understand about Fourier series: Infinite series and its convergence, periodic functions, Fourier series, Euler's formulae, Dirichlet's conditions, functions having arbitrary period, even and odd functions, half range series, Harmonic analysis.
CO4	Able to know about about the Partial differential equations: Formation of partial differential equations, Lagrange's linear equation, Higher order linear partial differential equations with constant coefficients
CO5	Students able to understand the basic Knowledge regarding solution of non-linear partial differential equations, Charpit's method, application of partial differential equations (one dimensional wave and heat flow equations, two dimensional steady state heat flow equation (Laplace equation).

	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	Students able to provide the knowledge about Matrices: Elementary transformations, rank of a matrix, reduction to normal form, Gauss-Jordon method to find inverse of a matrix, Eigen values and Eigen vectors, Cayley-Hamilton theorem, linear transformation, orthogonal transformations, diagonalisation of matrices, quadratic forms	3	3	3	-	-	-	-	-	-	-	3	2	-	2
CO2	Able to know about provide the knowledge about Functions of a Complex variable: Limit, continuity and derivative of complex functions, analytic function, Cauchy-Reimann equations, conjugate functions, Harmonic functions.	3	3	3	-	-	-	-	-	-	-	2	3	-	3
CO3	Student able to understand about Fourier series: Infinite series and its convergence, periodic functions, Fourier series, Euler's formulae, Dirichlet's conditions, functions having arbitrary period, even and odd functions, half range series, Harmonic analysis.	3	3	2	-	-	-	-	-	-	-	2	3	-	3

CO4	Able to know about about the Partial differential equations: Formation of partial differential equations, Lagrange's linear equation, Higher order linear partial differential equations with constant coefficients	3	3	3	-	-	-	-	-	-	-	2	3	-	3
CO5	Students able to understand the basic Knowledge regarding solution of non-linear partial differential equations, Charpit's method, application of partial differential equations (one dimensional wave and heat flow equations, two dimensional steady state heat flow equation (Laplace equation).	3	3	2	-	-	-	-	-	-	-	2	3	-	3

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

COURSE: Computer Programming and Data Structures
CODE: CS113

COURSE OBJECTIVES:

- To learn about the introduction to high level languages, Primary data types and user defined data types, Variables, typecasting, Operators,
- To learn basics of building and evaluating expressions, Standard library functions, Managing input and output.
- To learn fundamentals of decision making, Branching, Looping, Arrays, User defined functions, passing arguments and returning values, recursion, scope and visibility of a variable.
- To learn about the String functions, Structures and union, Pointers, Stacks, Push/Pop operations, Queues, Insertion and deletion operations, Linked lists.

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Able to know about the introduction to high level languages, Primary data types and user defined data types, Variables, typecasting, Operators
CO2	Ability to know about building and evaluating expressions, Standard library functions, Managing input and output.
CO3	Students able to know about the decision making, Branching, Looping, Arrays, User defined functions, passing arguments and returning values, recursion, scope and visibility of a variable.
CO4	Able to know String functions, Structures and union, Pointers, Stacks, Push/Pop operations, Queues, Insertion and deletion operations, Linked lists

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 know about the introduction to high level languages, Primary data types and user defined data types, Variables, typecasting, Operators	2	2	3	0	0	0	0	0	0	0	2	1	1	1
CO2	Ability to know about building and evaluating expressions, Standard library functions, Managing input and output.	2	3	3	2	0	0	0	0	0	0	2	2	2	1
CO3	Students able to know about the decision making, Branching, Looping, Arrays, User defined functions, passing arguments and returning values, recursion, scope and visibility of a variable	2	3	3	0	0	0	0	0	0	0	1	2	1	2
CO4	Able to know String functions, Structures and union, Pointers, Stacks, Push/Pop operations, Queues, Insertion and deletion operations, Linked lists	2	3	3	0	0	0	0	0	0	0	2	2	2	2

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

COURSE: Applied Electronics and Instrumentation
COURSE CODE: EC 102

COURSE OBJECTIVES:

- To understand the basic concepts of various semi-conductor materials and will be able to design Electronics devices.
- To learn the concept of signal amplification through BJT.
- To understand the basic concepts of operational amplifier and develop analysis capability in OPAMP Circuits.
- To understand the basic knowledge of number system and logic gates.
- To understand the basic concepts of DAC, ADC and LVDT and learn the working of electronic instruments.
-

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students shall be able to understand the basic concepts of various semi-conductor materials and will be able to design Electronics devices.
CO2	Students shall be able to learn the concept of signal amplification through BJT.
CO3	For a given system Students shall be able to understand the basic concepts of operational amplifier and develop analysis capability in OPAMP Circuits.
CO4	For a given number system Students shall be able to understand the basic knowledge of conversion and logic gates.
CO5	Students shall be able to learn basic concepts of DAC, ADC and LVDT and learn the working of electronic instruments.

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, 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 shall be able to understand the basic concepts of various semi-conductor materials and will be able to design Electronics devices.	**3**	**3**	**3**					**1**						**1**
CO2	Students shall be able to learn the concept of signal amplification through BJT.	**3**	**3**	**3**											
CO3	For a given system Students shall be able to understand the basic concepts of operational amplifier and develop analysis capability in OPAMP Circuits.	**3**	**3**	**3**	**2**										
CO4	For a given number system Students shall be able to understand the basic knowledge of conversion and logic gates.	**3**	**3**	**2**	**2**										**1**
CO5	Students shall be able to learn basic concepts of DAC, ADC and LVDT and learn the working of electronic instruments.	**3**	**3**	**2**	**1**					**1**					

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Know about different soil reactions
CO2	Demonstrate a fundamental understanding of essential plant nutrients
CO3	The advancement of knowledge and better understanding of different soils for for high productivity.
CO4	Apply their knowledge for use of different tools used for orchard management
CO5	Apply horticultural skills and knowledge to judge maturity of horticultural crops

COURSE: AGRICULTURE FOR ENGINEERS

COURSE CODE: AE104

COURSE OBJECTIVES:

1. To understand importance soil taxonomy for crop production
2. To get knowledge about functions of different nutrients in crop production
3. To get awarenes about different weather parameters for crop growth
4. To get knowledge about soil and climatic requirements of different horticultural crops
5. To get knowledge regarding different plant growing structures

COURSE OUTCOMES (CO):

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

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	Know about different soil reactions	3	3	3	2	-	-	2	3	1	3	3	2	3	3
CO2	Demonstrate a fundamental understanding of essential plant nutrients	3	3	3	2	-	-	2	3	1	2	2	3	2	3
CO3	The advancement of knowledge and better understanding of different soils for for high productivity.	3	3	2	2	-	-	2	3	2	3	2	3	2	3
CO4	Apply their knowledge for use of different tools used for orchard management	3	3	3	1	-	-	1	3	2	3	2	3	2	3
CO5	Apply horticultural skills and knowledge to judge maturity of horticultural crops	3	3	2	3	-	-	2	3	2	3	2	3	2	3

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

Name of Course/subject: Workshop Technology

Course Code: ME105

Course Objective:

1. Introduction to welding, types of welding, Oxyacetylene gas welding, types of flames
2. To impart basic Principle of arc welding, equipment and tools.
3. To introduce Practical job on taper turning, drilling and threading; Operations on shaper and planer
4. To know about Twist drills, drill angles and sizes
5. To know about Main operations on milling machine

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	know the basic knowledge of Work holding devices, shaper tools and main operations
CO2	have the knowledge about Constructional details of pillar types and radial drilling machines
CO3	Know the practical of Twist drills, drill angles and sizes
CO4	have the ability to Demonstration of important operations on a milling machine, making a plot, gear tooth forming and indexing
CO5	have the knowledge of basic Principle of arc welding, equipment and tools

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	know the basic knowledge of Work holding devices, shaper tools and main operations	3	3	2	1	-	-	3	1		3				3
CO2	have the knowledge about Constructional details of pillar types and radial drilling machines	3	3	2	1	-	-	1	-		3				3
CO3	Know the practical of Twist drills, drill angles and sizes	3	3	2	1	-	-	2	-		3				3
CO4	have the ability to Demonstration of important operations on a milling machine, making a plot, gear tooth forming and indexing	3	3	3	1	-	-	2	-		3				3
CO5	have the knowledge of basic Principle of arc welding, equipment and tools	3	3		1	-	-		-		3				3
	3: Strong contribution, 2: average contribution, 1: Low contribution														

Name of Course/subject: Thermodynamics Heat Engines

Course Code: ME106

Course Objective:

1. To get knowledge about thermodynamics properties, closed and open system, flow and non-flow processes

2. To impart basic knowledge of entropy, physical concept of entropy, change of entropy of gases in thermodynamics processes

3. To introduce basic knowledge of Internal energy and entropy of steam

4. To know about Biodiversity and its conservation

5. To Calculations of cylinder dimensions, Introduction to compound steam engines

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Know the basic knowledge difference between gas and vapour, change of phase during constant pressure process.
CO2	have the knowledge of Reversible processes, Carnot cycle, Carnot theorem
CO3	Know the Use of steam tables and Mollier chart, heating and expansion of vapour in non-flow processes
CO4	have the knowledge about Internal energy and entropy of steam
CO5	have the basic knowledge of Kelvin-Planck and Claussius statements

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	Know the basic knowledge difference between gas and vapour, change of phase during constant pressure process.	3	3	2	1	-	-	3	1		3				3
CO2	have the knowledge of Reversible processes, Carnot cycle, Carnot theorem	3	3	2	1	-	-	1	-		3				3
CO3	Know the Use of steam tables and Mollier chart, heating and expansion of vapour in non-flow processes	3	3	2	1	-	-	2	-		3				3
CO4	have the knowledge about Internal energy and entropy of steam	3	3	3	1	-	-	2	-		3				3
CO5	have the basic knowledge of Kelvin-Planck and Claussius statements	3	3		1	-	-		-		3				3
		3: Strong contribution, 2: average contribution, 1: Low contribution													

Course Name: Farm Operation and Maintenance of Tractors and Farm Machinery-I

Course Code: AE 105

Course Objective:

1. To expose the student with the Introduction to various systems of a tractor viz. fuel, lubrication, cooling, electrical, transmission, hydraulic & final drive system. Familiarisation with tractor controls & learning procedure of tractor starting and stopping.
2. To educate the students about Driving in forward and reverse gears. Driving safety rules. Hitching, adjustments, settings and field operation of farm machinery. Familiarisation with different makes & models of 4- wheeled tractors.
3. To impart the knowledge about Starting & stopping practice of the tractor. Familiarization with instrumentation panel & controls; Road signs, traffic rules, road safety, driving & parking of tractor; Tractor driving practice forward & reverse driving practice.
4. To impart the knowledge of Tractor driving practice with two wheeled tractor trailer forward & reverse; Study and practising the hitching and dehitching of implements
5. To provide knowledge about Study operation and field adjustments of m.b. plough & disk plough; Field operation of trailing & mounted disk harrow; Field operation and adjustments of seed drill/planter/sprayer.

Course Outcome:

At the completion of the course the student will:

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Have knowledge about the Introduction to various systems of a tractor viz. fuel, lubrication, cooling, electrical, transmission, hydraulic & final drive system. Familiarization with tractor controls & learning procedure of tractor starting and stopping.
CO2	Be able to Driving in forward and reverse gears. Driving safety rules. Hitching, adjustments, settings and field operation of farm machinery. Familiarization with different makes & models of 4- wheeled tractors.
CO3	Have the basic knowledge about Starting & stopping practice of the tractor. Familiarisation with instrumentation panel & controls; Road signs, traffic rules, road safety, driving & parking of tractor; Tractor driving practice forward & reverse driving practice
CO4	Be able to Tractor driving practice with two wheeled tractor trailer forward & reverse; Study and practising the hitching and dehitching of implements.

CO5	Be able to Study operation and field adjustments of m.b. plough & disk plough; Field operation of trailing & mounted disk harrow; Field operation and adjustments of seed drill/planter/sprayer.

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, 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	Have knowledge about the Introduction to various systems of a tractor viz. fuel, lubrication, cooling, electrical, transmission, hydraulic & final drive system. Familiarization with tractor controls & learning procedure of tractor starting and stopping.	2	1	3	2	-	-	3					1		3
CO2	Be able to Driving in forward and reverse gears. Driving safety rules. Hitching, adjustments, settings and field operation of farm machinery. Familiarization with different makes & models of 4- wheeled tractors.	3	3	2	3	-	-	3					3		2
CO3	Have the basic knowledge about Starting & stopping practice of the tractor. Familiarisation with instrumentation panel & controls; Road signs, traffic rules, road safety, driving & parking of tractor; Tractor driving practice forward & reverse driving practice	3	3	2	3	-	-	3					3		3

CO4	Be able to Tractor driving practice with two wheeled tractor trailer forward & reverse; Study and practising the hitching and dehitching of implements.	3	3	3	3	-	-	3					2		3
CO5	Be able to Study operation and field adjustments of m.b. plough & disk plough; Field operation of trailing & mounted disk harrow; Field operation and adjustments of seed drill/planter/sprayer.	3	3	2	2	-	-	3					2		2
3: Strong contribution, 2: average contribution, 1: Low contribution															

Name of Course/subject: Environmental Science

Course Code: ES114

Course Objective:

1. To get knowledge about Definition, Scope and Importance of Ecosystem
2. To impart basic knowledge of Producers consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains
3. To introduce basic knowledge of Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
4. To know about Biodiversity and its conservation
5. To Study about Environmental pollution–Causes, effects and control measures of air, water, soil, marine, thermal and noise pollution

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	know the basic knowledge Concept of ecosystem, Structure and function of an ecosystem
CO2	have the knowledge of Food chains, food webs and ecological pyramids
CO3	Know the Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
CO4	have the knowledge about Biogeographical classification of India, Value of biodiversity
CO5	have the basic knowledge for Natural Resources: forest, mineral, soil and water–their uses and abuses

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	know the basic knowledge Concept of ecosystem, Structure and function of an ecosystem	3	3	3	-	-	-	-	-	2	3	3	2	-	2
CO2	have the knowledge of Food chains, food webs and ecological pyramids	3	3	3	-	-	-	-	-	2	3	2	3	-	3
CO3	Know the Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	3	3	2	-	-	-	-	-	-	3	2	3	-	3
CO4	have the knowledge about Biogeographical classification of India, Value of biodiversity	3	3	3	-	-	-	-	-	2	3	2	3	-	3
CO5	have the basic knowledge for Natural Resources: forest, mineral, soil and water–their uses and abuses	3	3	2	-	-	-	-	-	2	3	2	3	-	3

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