B.Voc (Farm Equipments Operation and Maintenance)

Scheme of Examinations

July 2021 – Onwards

Qualification Pack Code : AGR/Q1103
Job role : Agriculture Machinery Operator
NSQF Level : 4
Applicable NOS Code : AGR/N1107, AGR/N1108, AGR/N1109, AGR/N1110, AGR/N1111 and AGR/N9903

	Course Code	Category	Title of Course	No. of Credits	Duration of ESE Hours	Marks		
						CFA	ESE	TOTAL
SEMESTER – I :Agriculture Machinery Operator	21FEMV0101	GEC	Principles of Agriculture	3	3	40	60	100
	21ENGU01F1	GEC	Foundational English-I	3	3	40	60	100
	21FEMV0102	GEC	Workshop calculation and Science–I	3	3	40	60	100
	21FEMV0103	GEC	Engineering Drawing–I	3	--	60	40	100
	21FEMV0104	SDC	Selection and Operation of Agriculture Machineries	14	--	60	40	100
	21FEMV0105	SDC	Operation and Maintenance of Power Tiller	4	--	60	40	100
			Total	**30**				**600**

Qualification Pack Code : AGR/Q1106
Job role : Agriculture Machinery Mechanic
NSQF Level : 5
Applicable NOS Code : AGR/N1123, AGR/N1124, AGR/N1125 and AGR/N9903

	Course Code	Category	Title of Course	No. of Credits	Duration of ESE Hours	Marks		
						CFA	ESE	TOTAL
SEMESTER – II : Agriculture Machinery Mechanic	21ENGU02G2	GEC	General English–II	3	3	40	60	100
	21FEMV0206	GEC	Workshop calculation and Science–II	3	3	40	60	100
	21FEMV0207	GEC	Engineering Drawing–II	2	--	30	20	50
	21FEMV0208	GEC	Basic Workshop	2	--	30	20	50
	21[illegible]	[illegible]	Work	[illegible]		[illegible]	[illegible]	50
	21FEMV0209	SDC	Servicing and Maintenance of Agriculture Machineries	14	--	60	40	100
	21FEMV0210	SDC	Implant Training - I	4		60	40	100
			Total	**30**				**550**

Qualification Pack Code : AGR/Q1101
Job role : Tractor Operator
Applicable NOS Code : AGR/N1101, AGR/N1102 and AGR/N9903

	Course Code	Category	Title of Course	No. of Credits	Duration of ESE Hours	Marks		
						CFA	ESE	TOTAL
SEMESTER – III : Tractor Operator	21EVSU0001	GEC	Environmental Studies	4	3	**40**	**60**	**100**
	21SHSU0001	GEC	Shanti Sena	1	---	**50**	**--**	**50**
	21CSKU0301	GEC	Soft Skills	2	---	**50**	**--**	**50**
	21FEMV0311	GEC	Engineering Survey	3	---	**60**	**40**	**100**
	21FEMV0312	GEC	Operation and Maintenance of Micro Irrigation System	2	--	**30**	**20**	**50**
	21FEMV0313	SDC	Tractor Operation and Safety Measures	14	--	**60**	**40**	**100**
	21FEMV0314	SDC	Inplant training – II	4	--	**60**	**40**	**100**
			Total	**30**				**550**

Qualification Pack Code : AGR/Q1108
Job role : Tractor Mechanic
NSQF Level : 6
Applicable NOS Code : AGR/N1126, AGR/N1127, AGR/N1128, AGR/N1129, AGR/N1130 and AGR/N9903

	Course Code	Category	Title of Course	No. of Credits	Duration of ESE Hours	Marks		
						CFA	ESE	TOTAL
SEMESTER – IV : Tractor Mechanic	21CSAU04A1	GEC	Computer Fundamentals and office Automation	4	3	**40**	**60**	**100**
	21SPOU0001	GEC	Sports and Games	2	---	**50**	**--**	**50**
	21YOGV0001	GEC	Yoga Education	2	---	**50**	**--**	**50**
	21FEMV0415	GEC	Employability Skills	4	3	**40**	**60**	**100**
	21FEMV0416	SDC	Repair and Overhauling of Engine and Tractor System	14	---	**60**	**40**	**100**
	21FEMV0417	SDC	Inplant training – III	4	---	**60**	**40**	**100**
			Total	**30**				**500**

Qualification Pack Code : AGR/Q1101, AGR/Q1102, AGR/Q1103, AGR/Q1106, AGR/Q1108
Job role : Agriculture Machinery Technician
Applicable NOS Code : AGR/N1103, AGR/N1104, AGR/N1105, AGR/N1106 and AGR/N9907

	Course Code	Category	Title of Course	No. of Credits	Duration of ESE Hours	Marks		
						CFA	ESE	TOTAL
SEMESTER – V : Agriculture Machinery Technician	21FEMV0518	GEC	Operation and Maintenance of Post Harvesting Equipments	4	---	**60**	**40**	**100**
	21FEMV0519	GEC	Operation and Maintenance of Pumps for Irrigation	4	---	**60**	**40**	**100**
	21FEMV0520	GEC	Operation and Maintenance of Renewable Energy Appliances	4	---	**60**	**40**	**100**
	21FEMV0521	SDC	Operation and Safety Measures of Combine Harvester	14	---	**60**	**40**	**100**
	21FEMV0522	SDC	Inplant training – IV	4	---	**60**	**40**	**100**
			Total	**30**				**500**

Qualification Pack Code : AGR/Q112
Job role : Agriculture Machinery Entrepreneur
NSQF Level : 7
Applicable NOS Code : AGR/N9910, AGR/N1140, AGR/N1140, AGR/N1141, AGR/N1139 and AGR/N9903

	Course Code	Category	Title of Course	No. of Credits	Duration of ESE Hours	Marks		
						CFA	ESE	TOTAL
SEMESTER – VI : Agriculture Machinery Entrepreneur	21FEMV0623	GEC	Entrepreneurship Development	4	3	**40**	**60**	**100**
	21FEMV0624	GEC	Book Keeping	4	3	**40**	**60**	**100**
	21FEMV0625	GEC	Agri Business and Project Management	4	3	**40**	**60**	**100**
	21FEMV0626	SDC	Function and Management of Agro Service Centre	14	-	**60**	**40**	**100**
	21FEMV0627	SDC	Project Work	4	-	**60**	**40**	**100**
			Total	**30**				**500**

FIRST SEMESTER

21FEMV0101 - PRINCIPLES OF AGRICULTURE (3 credits)

OBJECTIVE:

- To teach different types of soils and climate suitable for raising different agricultural crops.
- To teach different agricultural practices and the recommendations of inputs for raising the crops.

UNIT–1: Introduction to Agriculture **:** Agriculture – art, science and business – branches of agriculture scope of agriculture in India and Tamil Nadu –History of agricultural development – development of scientific agriculture in world. National and International Institutions / Centers on agriculture research – Agronomy - definition and relationship with other disciplines.

UNIT–2: Soil Properties and Management: Physical Properties of Soils; Physical properties of soils-texture-mechanical components and structure. Soil pH – Problem soils their reclamation and management.

UNIT–3: Crop Adaptation and Distribution**:** Agronomic classification of crops–Their economic importance–major crops of India and Tamil Nadu–adaptation and distribution. Factors affecting crop distribution and production. Soils and agriculture seasons of India and Tamil Nadu.

UNIT–4: Farming Systems **:** Systems of farming – wet, irrigated, dry and rainfed farming. Factors governing choice of crops and varieties. Intensive cropping – crop rotation – advantages. Integrated Farming System (IFS) – organic farming – Natural farming – Eco-friendly agriculture and conservation agriculture –LESIA.

UNIT–5: Basics of Agricultural Operations**:** Tillage, Sowing, Irrigation, Weeding, Plant protection, Fertilizer application, Harvesting, Threshing, Drying and storage – its importance.

LECTURE SCHEDULE:

No. of week (3 hrs. per week)	Topics covered
1st to 3rd Week	• Introduction of agriculture; Branches of agriculture Scope of agriculture. • History of development of agriculture; Agriculture research institutions available in India and Abroad. • Definition and other relationship of Agronomy; Physical properties of soil; soil texture-mechanical components and structure
4th to 6th Week	• Apparent specific gravity, pore space, colour of soil, air of soil, temperature of soil • Significance of physical properties in related to plant growth, chemical properties of soil, Chemical composition, buffering capacity of soil and soil colloids & Soil pH • Problem of soil their reclamation and management, origin of crop & crop species, crop distribution and production
7th to 10th Week	• Major crops of TamilNadu and India (adaptation and distribution) and also know about Soils and agriculture seasons of India and Tamil Nadu • **8th week : Mid-Semester Examinations** • Systems of farming, wet, irrigated, dry and rainfed farming. • Cropping pattern and concepts and principles of sustainable agriculture TamilNadu and India
11th to 13th Week	• Organic farming, natural farming.

	• Eco-friendly agriculture, conservation agriculture, principles and practices of agriculture operations. • Operations of Tillage and tilth, types of tillage, modern concepts of tillage – tools, implements, machineries for different agricultural operations
14th to 16th Week	• Seeds and sowing- factors affecting germination; Seed rate & seed treatment, Methods of sowing, methods of nursery and transplanting and also know about plant population and geometry • Methods of weeding, machineries using time and methods of application. • Harvesting, threshing, drying and storage of harvested things

REFERENCES:

1. Balasubramaniyan, P and SP. Palaniappan. 2002. Principles and Practices of Agronomy, Agrobios (India), Jodhpur.
2. Dahama.A.K. 1996. Organic farming for sustainable Agriculture. Agro Botanical Publishers (India), Bikaner.
3. Gopal Chandra De. 1997. Fundamentals of Agronomy. Oxford and IBH Publishing Co.Pvt.Ltd., New Delhi.
4. ICAR. 1996. Handbook of agriculture. Indian Council of Agriculture Research, New Delhi.
5. Reddy. S.R. 1999. Principles of Agronomy. Kalyani publishers, New Delhi.
6. Sankaran, S. and V.T. Subbiah Mudaliar, 1997. Principles of Agronomy. The Bangalore Printing and publishing Company Ltd., Bangalore.
7. Singh. S.S. 1998. Principles and Practices of Agronomy. Kalyani publishers, New Delhi.
8. Somasundaram, E and A. Arokiaraj. 2002. Text book on Principles of Agronomy. Crystal Printers, Tiruchirappalli, Tamil Nadu.

LEARNING OUTCOME

- Students learn about different types of soils and climate suitable for raising different agricultural crops.
- Students learn about different agricultural practices and the recommendations of inputs for raising the crops.

21ENGU01G2: GENERAL ENGLISH I

(Language II Course – 3 Credits/ 3 Hours/wk.)

OBJECTIVES:

- To improve the English language skills of students with very limited abilities to use the language; and
- To focus on the language skills of the learners in a graded manner.

UNIT–I: Grammar

- What is Grammar?
- The Capital Letter
- Nouns & Pronouns

UNIT–II: Listening

- Teacher Narrations

UNIT–III Speaking Skills

- Self-Introduction
- Descriptions of persons, objects, places

UNIT–IV Reading & Vocabulary

- Graded reading comprehension passages

UNIT–V Writing Skills

- Sentence Construction
- Descriptive Paragraph writing

Textbook:

General English I Textbook/Course Material - Prepared by the School.

Reference Book:

Seaton, Anne & Y.H. Mew. *Basic English Grammar Book 1.* Irvine: Saddleback, 2007. Print.

21FEMV0102 - WORKSHOP CALCULATION AND SCIENCE – I (3 credits)

OBJECTIVE:

- To teach basic engineering mechanics for understanding agricultural machinery working principles.

UNIT–1: Machine **:** Machine – definition, farm machines – mechanical advantage, efficiency of the machine and velocity ratio – definition and calculation

UNIT–2: Motion: rotary motion; velocity – uniform velocity and variable velocity; acceleration –laws of motion – calculations

UNIT–3: Force**:** Force **–** definition of force, types of force Mass, Equilibrium, Pressure, Pressure in hydraulic systems, Hooke's law, Practical applications.

UNIT–4: Work**:** Work energy, power– Definition and calculation of Work, Power and Work done by a torque, Conservation of energy, Energy equation, Kinetic energy.

UNIT–5: Engine Power: Engine power – terminology used – bore, stroke, stroke bore ratio, swept volume, compression ratio; power – indicated power, brake power, belt power, drawbar power, power takeoff power – definition; measurement of engine power by using dynamometer – determination of specific fuel consumption, mechanical efficiency and thermal efficiency.

LECTURE SCHEDULE:

No. of week (3 hrs. per week)	**Topics covered**
1st to 3rd Week	• Definition of machines and types of machines, lever and wheel and its applications • Calculate the mechanical advantage and efficiency of the machine • calculate the velocity ratio
4th to 6th Week	• the translator motion and its types of rectilinear motion and curvilinear motion • Definition and calculation of rotary motion; • Definition and calculation of uniform velocity and variable velocity • Definition and calculation of acceleration and variable acceleration
7th to 10th Week	• Definition and types of forces • Measurements of force by using spring balance • **8th week : Mid-Semester Examinations** • Calculate Direct forces, Attractive forces, Explosive forces and Describing forces, • Graphical representation of a force, Addition of forces, Parallelogram of forces, Triangle of forces and Resolution of forces. • Definition Mass, Equilibrium, Pressure, Pressure in hydraulic systems, Hooke's law and its Practical applications
11th to 13th Week	• Definition and calculation of Work energy and power

	• Different forms of energy - Potential energy, Chemical energy and Conservation of energy, • Law of conservation of energy and centre of gravity • Energy of a falling body, Kinetic energy of rotation
14th to 16th Week	• The terminologies connected with engine power - bore, stroke, stroke bore ratio, swept volume, compression ratio • Calculate the indicated power, brake power, belt power, drawbar power and power takeoff power • Function of drawbar dynamo meter and its types • Calculate the specific fuel consumption, mechanical efficiency and thermal efficiency

REFERENCES

1. O.P. Singhal, 1998. Agricultural Engineering, Aman Publishing House, Merut(UP)
2. Sreevastave, A.C., 1990. Elements of Farm Machinery, Oxford and IBH Publication Co., New Delhi.
3. Senthilkumar, T., R. Kavitha and V.M.Duraisamy 2015. A Text Book of Farm Machinery**,** Thannambikkai Publications, Coimbatore. ISBN: 978-9381102305
4. Jagadishwar Sahay, 2010. Elements of Agricultural Engineering**.** Standard Publishers Distributors, New Delhi. ISBN: 978 – 818040440
5. Workshop Calculation and Science 2015 published by National Instructional Media Institute, Directorate General of Employment & Training, Chennai.

LEARNING OUTCOME

- Students will learn basic engineering mechanics for understanding agricultural machinery working principles.

21FEMV0103 – ENGINEERING DRAWING–I (3 credits)

OBJECTIVE:

- To teach the construction of geometrical figures and projection of 1D, 2D, 3D elements and sectioning of solids and development of surfaces

UNIT–1: Scales - Recommended scales, reduced & enlarged Drawing Sheet sizes: A0, A1, A2, A3, A4, A5, Layout of drawing sheet, sizes of title block and its contents. Using drawing instruments to draw straight lines, rectangles, squares, circles, polygons.

UNIT–2: Lettering and Dimensioning - Types of Lettering, Guide Lines for lettering, Recommended sizes of letters and numbers, Single stroke letters, Dimensioning - rules and systems of dimensioning – dimensioning a given drawing.

UNIT–3: Identify the alphabet of lines- Read and Interpret the meaning of various line types with examples- Object Lines, Hidden Lines, Center Lines, Phantom Lines, Dimension Lines, Extension Lines, Leaders, Break Lines -Long-break Line, Round, Solid, Hollow Cross Section, Section Lines – Common Manufacturing Materials, Cutting Plane Lines

UNIT–4: Geometric Construction - Bisecting a line - perpendiculars - parallel lines - division of a line; Angles - bisection, trisection, Tangent lines touching circles internally and externally Polygons - Regular polygons - circumscribed and inscribed in circles, conic sections.

UNIT–5: Orthographic Projection - Definition - Planes of Projection–Four quadrants – Reference Line, First angle projection–Third angle projection. Isometric Projection–Definition–Isometric axes, lines and planes, Isometric Scale - Isometric view. Drawing of isometric views of plane figures, Drawing of isometric views of prisms and pyramids, Drawing of isometric view of cylinders and cones.

PRACTICAL SCHEDULE

No. of week (3 hrs. per week)	Topics covered
1st to 3rd Week	• Basic concept of Engineering Drawing
4th to 6th Week	• Learning of lettering and dimension
7th to 10th Week	• Read and interpret the lines • **8th week : Mid-Semester Examinations**
11th to 13th Week	• Construct of different geometric figures
14th to 16th Week	• Construction of first angle, third angle and isometric projection of lines, planes and solids.

TEXT BOOKS:

1. K.V. Natarajan, 2006 A text book of engineering graphics, Dhanalakshmi Publishers, Chennai.
2. M.B. Shah and B.C. Rana, 2005, Engineering drawing, Pearson education.

REFERENCES:

1. N.D. Bhatt, 2003, Engineering Drawing, Chaotar publishing house 46th edition.
2. K.R. Gopalakrishnan.1998 Engineering Drawing (Vol. I & II) Subhas Publications
3. Luzadder and Duff, 2001, Fundamentals of Engineering Drawing Prentice Hall of India Pvt Ltd XI edition
4. K. Venugopal, 2002. Engineering graphics, New Age International (P) Limited.
5. Engineering Drawing Workbook (2014) by National Instructional Media Institute, Directorate General of Employment & Training, Chennai.

LEARNING OUTCOME

- Student conversant with the construction of geometrical figures and projection of 1D, 2D, 3D elements and sectioning of solids and development of surfaces

21FEMV0104 – SELECTION AND OPERATION OF AGRICULTURE MACHINERIES
(14 credits)

OBJECTIVE:

- To teach selection and operation of agricultural machineries used in farming operations according to crop and soil conditions.
- To operate agriculture machineries under different field conditions.
- To teach different agriculture operations for crop production
- To identify and select suitable farm implement to carry out agriculture operation
- To teach the method of hitching farm implement and adjustments required during operations.

Identify different components, suitability according to the crop and soil conditions and learn the adjustments of depth and width control of the following farm machineries.

UNIT–1: Tillage machineries – Mould board plough, Disc plough, Chisel plough, Reversible disc plough; Disc harrow, Cultivator and Rotavator.

UNIT–2: Sowing Machineries - Seed-cum-fertilizer drill, Direct paddy seeder and Transplanter - Weeding Machineries – Dry land weeder, Cono weeder, and self propelled power weeder.

UNIT–3: Plant Protection Machineries – Hand operated sprayer, Power operated sprayer and Hand Operated duster.

UNIT–4: Harvesting Machineries – Self propelled paddy Reaper; Self propelled fodder harvester.

UNIT–5: Operational safety and health management – introduction; operational hazards and diseases – Physical hazards, chemical hazards, biological hazards, mechanical hazards and psycho-social hazards

PRACTICAL SCHEDULE

No. of week (14 hrs. per week)	Topics covered
1st – 4th week	• Identify the different components, function, suitability and area coverage of tillage implements viz., Mould board plough, Disc plough, Chisel plough, Reversible disc plough, Disc harrow, Cultivator and Rotavator. • The method of hitching and adjustments required for good ploughing • Operate different tillage machineries in field conditions
5th – 8th week	• The objectives of sowing • The different methods sowing • Identify the components, function suitability and area coverage of seed cum fertilizer drill, direct paddy seeder and transplanter. • Calibration of seed drill in lab and field conditions. • Identify the appropriate tool for hitching, adjustments required for optimum, sowing operate seed drill in field conditions. • **8th week : Mid-Semester Examinations**
9th – 10th week	• The importance and methods of weed control.

	• Identify the components, suction, suitability and area coverage of dry land weeders, cono weeder and power weeder. • Operate weeders in field conditions • Identify the right tool for carrying out adjustments in weeders.
11th to 12th week	• The functions of sprayers and dusters. • The classification of sprayers • Identify the components, function, suitability application rate of low volume sprayers and dusters • Operate different hand operated and power operated sprayers in field conditions.
13th – 14th week	• The importance of timely harvesting • Different harvesting methods • Identify the components, function, suitability, power requirement, area coverage of self propelled paddy reaper and fodder harvester. • Operate the harvester in field conditions and identify the adjustments required for effective functioning.
15th – 16th week	• Different occupational hazards, diseases caused and its prevention methods while operating different agriculture machinery in field conditions.

REFERENCE BOOKS

1. Er. Sanjay Kumar, Er. Vishal Kumar and Dr. Ram Kumar Sahu, 2012, Fundamentals of Agricultural Engineering, Published by Kalyani Publishers, Chennai, ISBN: 978-93-272-2168-8

2. Ojha, T.P and A.M.Michael 2005. Principles of Agricultural Engineering Vol I. Jain Brothers, New Delhi. ISBN: 978-8186321638

LEARNING OUTCOME:

- Students able to select farm machinery according to the soil and crop condition
- Students able to lean the adjustments needed in the farm machineries according to the soil condition inorder to achieve good tilth.
- Students able to operate agriculture machineries under different field conditions.
- Students able to select suitable farm implement according to crop and soil condition

21FEMV0105 – OPERATION AND MAINTENANCE OF POWER TILLER (4 Credits)

OBJECTIVES:

- To teach different components of power tiller and its functions.
- To teach operation and maintenance of power tiller.

UNIT–1: Familiarizing the tools for maintaining the power tiller–Identifying the different system of power tiller and its functions.

UNIT–2: Dismantling and assembling of the power tiller engine-Overhauling of steering clutch and brake of the power tiller.

UNIT–3: Adjustment of clutch assembly – Adjustment of transmission system.

UNIT–4: Dismantling, checking, repairing and assembling of rotavator- Replacement of tynes of the tiller

UNIT–5: Periodical maintenance of the power tiller-Preventive maintenance of the power tiller- common troubles and remedies- Field operations of the power tiller with suitable attachments

PRACTICAL SCHEDULE

No. of week (4 hrs. per week)	Topics covered
1st to 3rd week Demonstrate major assemblies of power tiller.	• Ascertain and select tools and materials for the job and make this available for use in a timely manner. • Plan work in compliance with standard safety norms. • Perform daily checks before starting the engine. • Start the engine and allow it to warm up • Check for proper functionality of different systems. • Stop the engine.
4th to 6th Week Overhauling of Diesel Engine of Power Tiller	• Ascertain and select tools and materials for the job and make this available for use in a timely manner. • Plan work in compliance with standard safety norms. • Drain coolant and lubricants from the engine and Remove Accessories of engine. • Service cylinder head assembly • Service oil sump and oil pump • Service piston and connecting rod assembly • Service flywheel, crank shaft, camshaft and its bearings and gear • Service cylinder block • Check and adjust valve clearances as per procedure and recommended specification • Refit all the accessories • Refill all the required coolant and lubricants as per standard specification • Start the engine and observe reading of dashboard gauges and record Engine Performance

7th to 10th Week Overhaul clutch, gearbox transmission and brake of power tiller.	• Ascertain and select tools and materials for the job and make this available for use in a timely manner. • **8th Week : Mid-Semester Examinations** • Plan work in compliance with standard safety norms. • Remove major assemblies of power tiller • Dismantle transmission, clutch and brake • Servicing and replace / repair components of transmission, clutch and brake • Assemble transmission, clutch and brake components • Carry out field operation of power tiller without implements.
11th 13th Week	
Identify and check functionality of major components and assemblies of rotavator	• Select, care and use of PPE while dismantling and assembling of rotavator. • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of rotavator. • Carryout their dismantling and assembling of machineries by reviewing: ❖ technical data ❖ removal and replacement procedures • Carry out workshop adjustments of rotavator. • Adjust the tynes components correctly where necessary to ensure that they operate to meet the specified operating requirements.
14th to 16th Week	
Periodical maintenance and troubleshooting of power tillers.	• Identify the common fault and take corrective action for power tiller as per technical manual. • Conduct appropriate and target oriented discussions with higher authority, where an replacement is uneconomic or unsatisfactory to perform. • Use testing methods that comply with the manufacturer's requirements • Adjust the unit's components correctly where necessary to ensure that they operate to meet the specified operating requirements. • Ensure replaced components and assemblies conform to the specified operating specification. • Carry out field operations of power tiller with implements.

REFERENCES

1. Repair, Maintenance & Operation of Power Tiller, March 2011 Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.
2. Mechanic Tractor, February 2016 Sector : Automobile, Common for Mechanic Tractor / Mechanic Agriculture Machinery, Trade: Practical, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.
3. R K Ghosh & S Swain, 1993, Practical Agricultural Engineering, Naya Proksah publications, Kolkata, ISBN: 81-85421-15-3

LEARNING OUTCOME

- Students learn the components and its functions of power tiller.
- Students learn to operate the power tiller with suitable attachment in field conditions.
- Students learn to know the reasons for common trouble occur and how to rectify in the power tiller.

SECOND SEMESTER

21ENGU02G2: GENERAL ENGLISH II

(Language II Course – 3 Credits/3 Hours/wk.)

Objectives:

- To build on the English language skills of students initiated in the previous semester; and
- To focus on the language skills of the learners in a graded manner.

UNIT–I: Grammar

- Adjectives
- Determiners
- Verbs & Tenses
- Subject-Verb Agreement

UNIT–II Listening

- Teacher/Peer Readings
- Story Narrations

UNIT–III Speaking Skills

- Basic conversation
- Narration of events

UNIT–IV Reading & Vocabulary

- Graded reading comprehension passages

UNIT–V Writing Skills

- Narrative paragraphs
- Note Making

Textbook:

General English II Textbook/Course Material - Prepared by the School.

Reference Book:

Seaton, Anne & Y.H. Mew. Basic English Grammar Book 1. Irvine: Saddleback, 2007. Print.

21FEMV0206 – WORKSHOP CALCULATION AND SCIENCE–II (3 Credits)

OBJECTIVE:

- To teach the principles of lever, moments, friction, heat and temperature, basic electricity and capacitors

UNIT–1: Levers and moments**:** The principle of moments - the bell crank lever, a practical application of the bell crank lever in vehicle. Axle loadings, a steering mechanism as a machine

UNIT–2: Friction **:** Definition of friction, Coefficient of friction, Static friction, Sliding friction; Making use of friction – Clutch- Torque & power transmitted by a plate clutch and model calculation, Belt drive- Torque & power transmitted by a belt drive and model calculation, speed ratio of belt drive.

UNIT–3: Heat and temperature **:** Definition, units, differences, boiling point, melting point, temperature measuring instruments, specific heat, transmission of heat, expansion of solids, liquids, gaseous, quantity of heat with practical examples - thermal conductivity.

UNIT–4: Basic Electricity **:** Introduction, sources of electricity, uses of electricity, classification, types of electric current, advantages, simple electric circuits, ohms law, insulating materials, electrical conductors, electric power, horse power, work and energy, concept of earthing**.**

UNIT-5: Capacitors - Capacitance, Capacitors in circuits- Contact breaker ignition circuit – Electronic principles- Introduction, Semiconductors- Effect of dopants, Electrons and holes; Light Emitting Diode (LED)- Voltage and current in an LED, Basic operation of transistor, Current gain in transistor, Current flow in transistors; Transistor circuit used in automotive applications- Voltage amplifier, Darlington pair, Heat sink.

LECTURE SCHEDULE

No. of week (3 hrs. per week)	**Topics covered**
1st to 3rd Week	• Formulae for Perimeter and Area of Plane figure. • Rectangle, Square, Parallelogram, Triangle, Hexagon, any regular polygon, Trapezium, Circle, sector, Fillet, Ellipse, segment of a circle; Formulae for Volume and surface area of solids. • Rectangular solid, Prism, cylinder, pyramids and cones, Frustum of pyramid and cones, sphere, Hollow sphere, segment of sphere, circular ring, spherical sector. • Calculation of volume and weight of simple solid bodies such as cubes, square and hexagonal prism-shop problem.
4th to 6th Week	Heat and temperature; • Thermodynamic temperature scale (Kelvin); • Cooling system temperature; • Standard temperature and pressure (STP); • Thermal expansion with calculation; • Heat- Sensible heat, Latent heat, Specific latent heat, Specific heat capacity, Quantity of heat with calculation; Heat transfer • Conduction, Convection, Radiation
7th to 10th Week	• Heating, expansion and compression of gases

	• Absolute pressure, Absolute temperature • **8th Week : Mid-Semester Examinations** • Laws relating to the compression and expansion of gases • Heating a gas at constant volume, Heating a gas at constant pressure, Charles' law. • Expansion or compression at constant temperature - isothermal
11th to 13th Week	• Internal combustion engines- • Engine power-Brake power, Horsepower, Mean effective pressure, Calculation of indicated power, • Cylinder pressure vs. crank angle, Mechanical efficiency of an engine, Volumetric efficiency, • Torque vs. engine speed, Specific fuel consumption vs. engine speed, Brake power, torque and SFC (Specific Fuel Consumption) compared, Brake mean effective pressure • Thermal efficiency, Indicated thermal efficiency, Brake thermal efficiency petrol vs. Diesel.
14th to 16th Week	• Fuels and combustion • Calorific value, Combustion-Products of combustion, Relevant combustion equations. • Air–fuel ratio-Petrol engine combustion, Detonation, Preignition, Octane rating, Diesel fuel, Flash point, Pour point, Cloud point, Biofuels, Liquefied petroleum gas (LPG), • Hydrogen, Zero emissions vehicles (ZEVs)

TEXT BOOKS

1. Sanjay Kumar, 2007, A Text Book of Tractor at a Glance, International book distributing company, Lucknow
2. Senthilkumar, T., R. Kavitha and V.M.Duraisamy, 2015. A Text Book of Farm Machinery**,** Thannambikkai Publications, Coimbatore. ISBN: 978-9381102305
3. Jagadishwar Sahay, 2010. Elements of Agricultural Engineering**.** Standard Publishers Distributors, New Delhi. ISBN: 978 – 818040440
4. Workshop Calculation & Science, 2015, NIMI Publications, Chennai

LEARNING OUTCOME

- Students learn the basic principles of lever, moments, friction, heat and temperature, basic electricity and capacitors
- Students learn to calculate the moment, torque, thermal conductivity, heat loss and heat gain, simple electric circuit, electric power, work and energy

21FEMV0207 – ENGINEERING DRAWING–II (2 Credits)

OBJECTIVE:

- To read and interpret drawings, identify different drawing projections, free hand sketching of machine and tractor engine systems.
- To simulate the shape and size of the components proportionately to the original

UNIT–1: Drawing of I.C. engine – Diesel and their parts. Sketching of Diesel cycle, valves and valve timing diagram. Free hand sketch of piston assembly, Free hand sketching of piston gudgeon pins rings and connecting rod.

UNIT–2: Free hand sketching of crank shaft and cam shaft showing all parts. Free hand sketching of cylinder block and cylinder head, cylinder liners.

UNIT–3: Free hand sketching of different cooling system-showing all necessary parts such as water pump, thermostatic valve, Radiator etc. Free hand sketching of lubrication system, showing all necessary parts such as filters, oil pump, pressure release valve etc.

UNIT–4: Free hand sketching of power take off (PTO) system. Freehand sketching of steering system. Free hand sketching of charging system and solenoid switch circuit.

UNIT–5: Free hand sketching of seed drills and see planters and their components; Free hand sketching of weeders, bund former, ridger and their components.

PRACTICAL SCHEDULE

No. of week (2 hrs. per week)	Topics covered
1st to 3rd Week	Read and interpret detailed and assembly drawings
4th to 6th Week	Free hand sketching of different IC engine components
7th to 10th Week	Free hand sketching of different components in tractor systems **8th Week : Mid-Semester Examinations**
11th to 13th Week	Free hand sketching of different tillage implements
14th to 16th Week	Free hand sketching of sowing and weeding implements

REFERENCES:

1. Sanjay Kumar, 2007, A Text Book of Tractor at A Glance, International book distributing company, Lucknow
2. K.V. Natarajan, 2006 A text book of engineering graphics, Dhanalakshmi Publishers, Chennai.
3. M.B. Shah and B.C. Rana, 2005, Engineering drawing, Pearson education.
4. K.V. Natarajan, 2006 A text book of engineering graphics, Dhanalakshmi Publishers, Chennai.
5. N.D. Bhatt, 2003, Engineering Drawing, Chaotar publishing house 46th edition.
6. K.R. Gopalakrishnan.1998 Engineering Drawing (Vol. I & II) Subhas Publications
7. Luzadder and Duff, 2001, Fundamentals of Engineering Drawing Prentice Hall of India Pvt Ltd XI edition
8. K. Venugopal, 2002. Engineering graphics, New Age International (p) Limited.

LEARNING OUTCOME

- Students can read and interpret drawings, identify different drawing projections, free hand sketching of machine and tractor engine systems
- The student will be able to understand the shape and size of the components of the tractor, power tiller, tillage implements, rotavator, harrows, cultivator, seed drills, weeders, bund former and ridger

21FEMV0208 – BASIC WORKSHOP (2 Credits)

OBJECTIVE:

- To familiarize with the basics of tools and equipments used in fitting, carpentry, sheet metal, welding and smithy.
- To familiarize with the production of simple models in the above trades.

UNIT–1: Welding**:** Tools and equipments - Arc welding of butt joint, tap joint, tee fillet, etc, Demonstration of gas welding.

UNIT–2: Fitting**:** Tools and equipments - Practice in chipping, filing, drilling, grinding, making vee joints, square and dove tail joints. Tap and dies and hand reamers.

UNIT–3: Carpentry**:** Tools and equipments - Planning Practice - making halving joint and dove tail joint models, limits, fits, and tolerances with examples used in auto components

UNIT– 4: Plumbing**:** Tools and equipments - types of joints, treading fitting for different types of pipes-GI, PVC, HDPE. Study of different type of screws, nuts, studs, bolts and locking devices.

UNIT–5: Smithy: Tools and equipments-Demonstration of making simple parts like keys, bolts, etc. sheet metal operations-shearing, banding, drawing and squeezing.

PRACTICAL SCHEDULE

No. of week (2 hrs. per week)	Topics covered
1st to 3rd Week	Manufacture components with different types of welding process in the given job.
4th to 6th Week	Perform basic fitting operations used in the workshop practices and inspection of dimensions
7th to 10th Week	Perform carpentry operations used in the workshop practices and inspection of dimensions **8th Week : Mid-Semester Examinations**
11th to 13th Week	Perform plumbing operations used in the workshop practices and inspection of dimensions
14th to 16th Week	Produce sheet metal components using various sheet metal operations

REFERENCES:

- S.K. Hajra Choudhury, A.K. Hajra Choudhury and Nirjhar Roy, 2001, Elements of Workshop Technology-Vol.1; Manufacturing processes, Media Promoters and Publishers Pvt, Ltd. Mumbai.

LEARNING OUTCOME

- Students learn the tools and equipments used in fitting, carpentry, sheet metal, welding and smithy.
- Students able to produce of simple models in the above trades.

21GTPU0001 – GANDHI'S LIFE, THOUGHT AND WORK (2 Credits)

OBJECTIVES

- To enable students to understand and appreciate the principles and practices of Gandhi and their relevance in the contemporary times.
- To develop character and attitude to follow Gandhian values and responsibilities in their personal and social life.

Specific Objectives of Learning:

This will make the students:

- To understand the life of Gandhiji in-depth.
- To get introduced to the relevant Gandhian philosophies.
- To apply the Gandhian concepts in the relevant context.
- To envision the Gandhian socio-economic, political and cultural ideas.
- To get educated on Gandhian lines in a multi-dimensional way.

Unit–1 : Life of Gandhi in brief: Early life in India – London Phase – South African Adventure - Struggle for total freedom in India – Martyrdom

Unit–2: Concepts of Gandhi's Philosophy, Truth and Nonviolence, Ends and Means, Right and Duties, Simple Living and High Thinking

Unit–3: Gandhi's concepts and their applications: Sarvodaya, Satyagraha, Santhi Sena Constructive Work

Unit–4: Gandhian Vision of Society: Self and society - Communal harmony, removal of untouchability and Equality of sexes – Policies: Decentralization of power, Gram Swaraj (Panchayatui Raj) and good governance - Economics of Swadeshi, Trusteeship, Bread Labour and Self-employment.

Unit–5: Gandhian Dimension of Education: Basic Education, Adult Education, Pluralism - Multilingualism, Religions and interfaith relations- Health; Diet, Nature Cure, Education on Health, Sanitation and Hygiene.

References:

- M.K. Gandhi: (1983), An Autography of the Story of My Experiments with Truth, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (1951), Satyagraha in South Africa: Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (1983), Constructive Programme" Its Meaning and Place. Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (1948) Key to Health, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (1949), Diet and Diet Reforms, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: Basic Education, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (2004), Village Industries, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (1962), Hindi Swaraj, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (2004), Trusteeship Dreams, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: (2001), India of my Dreams, Navajivan Publishing House, Ahmadabad.
- M.K. Gandhi: Self Restraint Vs. Self Indulgence, Navajivan Publishing House, Ahmadabad.
- Arunachalam: Gandhi: (1985), The Peace Maker, Gandhi Samarak Nidhi, Madurai.
- R.R. Prabhu & UR Rao. The Mind of Mahatma Gandhi, Navajivan Publishing House.

21FEMV0209 - SERVICING AND MAINTENANCE OF AGRICULTURE MACHINERIES
(14 Credits)

OBJECTIVE:

- To teach field adjustments for achieving proper ploughing, sowing, weeding, plant protection and harvesting
- To teach replacement of worn out parts, repair and maintenance of machineries.
- To teach how to estimate the cost of operation of agriculture machineries.

Identify, use, maintain and store tools required for repair and servicing of different components; adjustments in width and depth control; method of hitching with tractor / power tiller of the following machineries.

UNIT–1: Tillage machineries – Mould board plough, Disc plough, Chisel plough, Reversible disc plough; Disc harrow, Cultivator and Rotavator.

UNIT–2: Seed-cum-fertilizer drill, Direct paddy seeder and Transplanter - Weeding Machineries – Dry land weeder, Cono weeder, and self propelled power weeder.

UNIT–3: Plant Protection Machineries – Hand operated sprayer, Power operated sprayer and Hand Operated duster.

UNIT–4: Harvesting machineries; self propelled paddy reaper and self propelled fodder harvester.

UNIT–5: Safety while working in machinery – types of hazards occur while working in machinery, types of injury occur while handling different machinery tools and its preventive measures.

PRACTICAL SCHEDULE

No. of week (14 hrs. per week)	Topics covered
1st to 4th Week	• Select, care and use of PPE while dismantling and assembling of Mould board plough, Disc plough, Chisel plough, Reversible disc plough, Disc harrow, Cultivator and Rotavator • Method of hitching with tractor and power tiller • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of machineries. • Identify the common fault and take corrective action for machineries system as per technical manual • Determine the cost of operation of tillage machineries in field conditions
5th to 8th Week	• Select, care and use of PPE while dismantling and assembling of Seed drill, Seed cum fertilizer drill, Seed planter and Transplanter. • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of machineries. • Identify the common fault and take corrective action for machineries system as per technical manual • **8th Week : Mid-Semester Examinations**

9th to 10th Week	• Select, care and use of PPE while dismantling and assembling of Weeding machineries viz., Weeding Machineries – Dry land weeder, Cono weeder, and Self propelled power weeder. • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of equipment. • Identify the common fault and take corrective action for machineries system as per technical manual
11th to 13th Week	• Select, care and use of PPE while dismantling and assembling of Plant Protection Machineries – Hand operated sprayer, Power operated sprayer and Hand Operated duster • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of machineries. • Identify the common fault and take corrective action for machineries system as per technical manual
14th to 15th Week	• Select, care and use of PPE while dismantling and assembling of Harvesting machineries; Self propelled paddy reaper and Self propelled fodder harvester • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of machineries. • Identify the common fault and take corrective action for machineries system as per technical manual
16th week	• Safety while working in machinery – types of hazards; occurrence of injury and preventive measures while working in machinery.

REFERENCE BOOKS

1. Er. Sanjay Kumar, Er. Vishal Kumar and Dr. Ram Kumar Sahu, 2012, Fundamentals of Agricultural Engineering, Published by Kalyani Publishers, Chennai, ISBN: 978-93-272-2168-8

2. Ojha, T.P and A.M.Michael 2005. Principles of Agricultural Engineering Vol I. Jain Brothers, New Delhi. ISBN: 978-8186321638

LEARNING OUTCOME:

- Student will acquire skill for adjusting the controls available in the plough, harrows, seed drill, weeder, sprayers and harvesters to reach the maximum output
- Students will learn to replacement of worn out parts repair and maintenance of agriculture machineries

21FEMV0210 – IN-PLANT TRAINING–I (4 credits)

OBJECTIVE: To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Agricultural Machinery Manufacturing Industry / Training Institutes to acquire relevant skills. The in-plant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's in-charge. In addition, he/she has to submit weekly report to the department. During the in-plant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	**60 marks**

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	**40 marks**

LEARNING OUTCOME

- Students learn the work culture from the concerned industry
- Students learn to handle special tools used in assembling and dismantling of machinery components.

THIRD SEMESTER

21EVSU0001- ENVIRONMENTAL STUDIES (4 Credits)

OBJECTIVES:

- To teach the importance in conservation of environment and natural resources.
- To teach causes, effects and control measures of environmental pollution.
- To teach the concepts of disaster management and preparedness to overcome

UNIT–1 : Natural Resources : Introduction to Environment and natural resources (Definition, scope and important) – Forest Resources: Use and over-exploitation of forest resources and its impact on forest and tribal people – Water Resources: Use and over-exploitation of water and impact – Land Resources: Land degradation and soil – erosion, desertification – Food Resources: Effects of modern agriculture, fertilizer-pesticide problems – Energy Resources: Growing energy needs renewable and non-renewable energy source-use of alternative energy sources.

UNIT–2: Ecosystem and Biodiversity: Concept of an ecosystem – Structure and function of an ecosystem – Energy flow in the ecosystem - Food chains, food webs and ecological pyramids – Types of ecosystem – Biodiversity: genetic, species and ecosystem diversity, India as a mega – diversity nation – Treats to biodiversity : habit loss, poaching of wild life, man-wildlife conflicts; Endangered and endemic species of India – Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT–3: Environmental Pollution: Causes, effects and control measure of: Air pollution, Water pollution, Soil pollution, Noise pollution and Nuclear hazards, Solid waste management, Global environmental problems.

UNIT–4: Social Issues and the Environment : Sustainable development, Rural Urban problems related to environment, Water management and rain water harvesting – Environment ethics: Issues and possible solutions, Environmental Protection Policy, Acts and Legislation, Population and the Environment – Environmental and Population concern: Environment and human health, Environment education at various levels – HIV/AIDS, Women and child welfare, gender issues, gender equity, institutions for gender studies / research.

UNIT–5: Disaster Management: Disaster: Meaning and concepts, types, causes and management – Effects of disaster on community, economy, environment – Disaster management cycle : early response, rehabilitation, reconstruction and preparedness – Vulnerability Analysis and role of community in Disaster Mitigation – The Disaster Management Act 2005 – Disaster Management Authority : National, State and District level – Ill effects of fireworks.

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topics covered
1st to 3rd Week	• Natural Resources : Introduction to Environment and natural resources (Definition, scope and important) • Forest Resources: Use and over-exploitation of forest resources and its impact on forest and tribal people • Water Resources: Use and over-exploitation of water and impact • Land Resources: Land degradation and soil – erosion, desertification • Food Resources: Effects of modern agriculture, fertilizer-pesticide problems • Energy Resources: Growing energy needs renewable and non-renewable energy source-use of alternative energy sources.

4th to 6th Week	• Ecosystem and Biodiversity: Concept of an ecosystem – Structure and function of an ecosystem – Energy flow in the ecosystem – Food chains, food webs and ecological pyramids – Types of ecosystem • Biodiversity: genetic, species and ecosystem diversity, India as a mega – diversity nation • Treats to biodiversity : habit loss, poaching of wild life, man-wildlife conflicts; Endangered and endemic species of India • Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity.
7th to 10th Week	• Causes, effects and control measure of Air pollution, Water pollution, Soil pollution, Noise pollution and Nuclear hazards, Solid waste management, Global environmental problems. • **8th Week : Mid-Semester Examinations**
11th to 13th Week	• Social Issues and the Environment : Sustainable development, Rural Urban problems related to environment, Water management and rain water harvesting • Environment ethics: Issues and possible solutions, Environmental Protection Policy, Acts and Legislation, Population and the Environment • Environmental and Population concern: Environment and human health, Environment education at various levels – HIV/AIDS, Women and child welfare, gender issues, gender equity, institutions for gender studies / research.
14th to 16th Week	• Disaster Management: Disaster - Meaning and concepts, types, causes and management – Effects of disaster on community, economy, environment • Disaster Management Cycle: early response, rehabilitation, reconstruction and preparedness – Vulnerability Analysis and role of community in Disaster Mitigation – The Disaster Management Act 2005 • Disaster Management Authority: National, State and District level–Ill effects of fireworks.

REFERENCES

1. Asthana, D.K., Meera Asthana, 2006, A text book of Environmental Studies, S.Chand & Company Ltd., New Delhi.
2. Benny Joseph, Tata Macgraw, 2005, Environmental Studies, Hill Publishing Company, New Delhi
3. Erach Bharueha, 2005, A text book of Environmental Studies, UGC, University Press, New Delhi.
4. Palanithurai, G, 2009, Panchayats in Disaster: Preparedness and Management, Concepts Publishing company.
5. Thangamani and Shyamala, 2003, A text book of Environmental Studies, Pranav Syndicate, Publication Division, Sivakasi.

LEARNING OUTCOME

- Students able to learn in-situ and ex-situ conservation of bio-diversity
- Students able to learn the control measures of environmental pollution

21SHSU0001 – SHANTI SENA (FC) (1 Credit)

(Foundation Course: Mandatory for all UG Students)
(1 Credit)

Evaluation: Internal Test and Viva Voce (both components carry equal weightage) by the course teacher

Objectives:

- To introduce the concept and practice of Shanti Sena (Peace Brigade) to the students.
- To give exposure and training to students in the skills needed for Nonviolent Conflict Resolution through Shanti Sena.

Unit–1: Shanti Sena: Meaning and conceptual framework – historical development - Organisation and functions of Shanti Sena: Shanti Kendras, All India Shanti Sena Mandal - Peaceful resolution of conflicts, Peace Making, Alternative to Defense and Violence.

Unit–2: Skills and Training for Shanti Sena: Skills of First Aid and Skills for disaster management, Peace Making Skills(Conflict Resolution and Counseling) and Transforming oneself into a Shanti Sainik.

Unit–3: Shanti Sena in India and Abroad: Contributions of Mahatma Gandhi, Khan Abdul Ghaffar Khan, Vinoba Bhave, Jayaprakash Narayan, Narayan Desai. Dr.G.Ramachandran and S.N.Subba Rao.

Unit–4: Organisations promoting Shanti Sena Studies, Training, Research and Action: Shanti Sena Vidyalaya (Vedchhi), Unit of Shanti Sena in Gandhigram Rural Institute, Centre for Experiencing Socio-cultural Interaction (CESCI), Madurai, G.Ramachandran Institute of Nonviolence, Thiruvanantapuram, Vinoba Bhave - Venkateshwar Rao Institute of Shanti Sena, Manjeswaram.

Unit–5: Experiments in Nonviolent Conflict Management and Peace: Peace Brigade International, U.N. Peace Keeping Force, War Resisters' International (WRI), Non-killing Global Academy (Honolulu), Quakers Movement (Friends) and Sarvodaya Shramadana Sangamaya Shanti Sena Units, Sri Lanka.

Learning Outcome:
Students will be able to:

- Comprehend the concept of Nonviolence, Shanti Sena and Methods of Peaceful Resolution of conflicts in their personal and social life.
- Shape and evolve themselves as peace makers and promoters of harmony and good will.

REFERENCES:

- Arunachalam K., (1985), Gandhi - The Peace Maker, Gandhi Smarak Nidhi, Madurai.
- Dennis August Almeida (2007), The Training of Youth In Nonviolence as a way to Peace, Gandhi Media Centre, Delhi and Thiruvananthapuram.
- Narayan Desai, (1972), Towards Non-Violent Revolution, Sarva Seva Sangh Prakashan, Varanasi.
- ……, (1963), A Hand Book for Shanti Sainiks, Sarva Seva Sangh Prakashan, Varanasi.
- ……, (1962), Shanti Sena in India, Sarva Seva Sangh Prakashan, Varanasi.
- Radhakrishnan.N. Dr., (1989), Gandhi and Youth: The Shanti Sena of GRI, Gandhigram Rural Institute, Gandhigram.
- ……, (1997), Gandhian Nonviolence: A Trainer's Manual, Gandhi Smiriti and Darshan Samiti, New Delhi.
- Ravichandran .T., (1999) *Communalism in Tamil Nadu (1979- 1991) and the Way Out,* Gandhi Media Centre, Madurai.
- Ramjee Singh, (2003), Shanti Sena: A Guide, Sarva Seva Sangh Prakashan, Varanasi.
- Suresh Ram, Vinoba and His Mission, Sarva Seva Sangh Prakashan, Varanasi.
- Thomas Weber (1996), Gandhi's Peace Army: The Shanti Sena and Unarmed Peace keeping.
- Vinoba Bhave (1961), Shanti Sena, Akhil Bharat Sarva Seva Sangh Prakashan, Varanasi.
- William Baskaran, M., (1998), Shanti Sena: A Gandhian Vision, Gandhi Media Centre, Madurai.

21CSKU0301: SOFT SKILLS (For Sciences)

(Compulsory Soft Skills Course – 2 credits – 2 hours/wk.)

Objectives:

- To help the students improve their communication skills; and
- To enhance their holistic development and improve their employability skills.

Unit I

- Introducing Soft Skills
- Effective Communication for Success

Unit 2

- Influencing Skills
- Lateral Thinking Skills

Unit 3

- Time Management
- Presentation Skills

Unit 4

- Effective Team Work Skills
- Inter-personal Skills

Unit 5

- Interviewing Skills
- Negotiation Skills

Textbook:

Antonysamy and Chandra. *Soft Skills and Personality Development: A Handbook of Employability Skills.* Chennai: Vijay Nicole, 2012.

Learning Outcome

- Students able to improve their communication skills
- Students able to improve their employability skills

Assessment: There is no ESE. Assessment is totally internal and is performance-based.

21FEMV0311 – ENGINEERING SURVEY (3 Credits)

OBJECTIVE:

- To measure the regular and irregular areas of a agricultural field by using chain survey.
- To prepare contour map and level difference of a given field by using levelling.

UNIT–1: Surveying--definition and purpose; classification of surveying; units of measurement of length and area; scales; measurement of horizontal distance--chains, types of chains, tapes; Ranging rod, arrows, plump bob-its functions and usage.

UNIT–2: Chaining–method of chaining on level ground and on sloping ground; direct method and indirect method of stepping; errors and corrections in chaining; laying out right angles and offsets.

UNIT–3: Cross staff survey; Obstacles in chaining; triangulation method of chain survey; ordinate method –average ordinate, mid ordinate, trapezoidal, and Simpson method to determine areas of regular and irregular fields.

UNIT–4: Leveling, definition, terminology, leveling equipments, dumpy level, leveling of dumpy level, leveling staff, methods of calculation of reduced level, the collimation system and the rise and fall system.

UNIT–5: Types of leveling simple leveling, and differential leveling, contouring, uses of contours, and method of contouring, grid system, and plotting of contours.

PRACTICAL SCHEDULE

No. of week (3 hrs. per week)	Topics covered
1st to 3rd Week	• Survey – definition; classification; • units of measurement – length and area; • chains purpose, different types of chains, and chain survey accessories.
4th to 6th Week	• Method of chaining on-level ground and on sloping ground; • Direct and indirect method of stepping; • Calculation of errors and correction in chaining; • Laying out right angles and offsets.
7th to 10th Week	• Work in a team to measurement of regular area by using cross staff survey – purpose and accessories required to conduct survey; • Obstacles in chaining – methods used to overcome the obstacles; • Measurement of irregular area by using ordinate methods – average ordinate, mid-ordinate, trapezoidal and Simpson rule. • **8th Week : Mid-Semester Examinations**
11th to 13th Week	• Leveling - definition, terminology used in leveling; • leveling equipments – dumpy level, leveling staff, its usage and handling methods; • computing the level difference by using rise and fall method and height of collimation methods.
14th to 16th Week	• Types of leveling – simple and compound leveling; • Leveling used to draw contours; Method of contouring – grid system, and • plotting of contours

REFERENCES:

1. Zamir Alvi, 2004. A Textbook of Surveying, Vikas Publishing House Pvt, Ltd, New Delhi.
2. Singhal, O.P. 1998. Agricultural Engineering, Aman Publishing house, Meerut.
3. Dr.Bimal Chandra Mil. 1995. Introduction to soil and water conservation engineering, Kalyani Publishers, Calcutta.
4. Saini, G.S. 1996. A textbook of soil and water conservation, Amman Publishing house, Meerut.
5. Murthy, V.V.N Zoos.2009 Land and water Management, Kalyani Publishing, New Delhi

LEARNING OUTCOME

- Students to know about measuring the regular and irregular areas of a agricultural field by using chain survey.
- Students able to prepare contour map and level difference of a given field by using levelling.

21FEMV0312–OPERATION & MAINTENANCE OF MICRO IRRIGATION SYSTEMS
(2 Credits)

OBJECTIVE:

- To teach skills of designing, installation and maintenance of micro irrigation systems.

UNIT–1: Importance of micro irrigation systems; relations between agronomy and micro irrigation, types of crops, types of soils, types of roots, identification of crop pattern, water requirement of different crops, and type of fertilizers.

UNIT–2: Design and layout plan of micro irrigation systems, survey of field, measurement of field, availability of water resources, shape and slope of field, designing fundamentals, spacing according to crops, and listing of crops to be produced.

UNIT–3: Components of micro irrigation system description and function of water pumps, control valves, filters, head-unit, laterals, emitters, back flow preventers, pressure regulator, flush valve, pipe/drip tape, connectors, micro sprinklers.

UNIT–4: Installation of micro irrigation system, installation of head unit, filters, valves, main and sub main line, trenching, adjusting length of drip line and testing of micro irrigation system.

UNIT–5: Maintenance of micro irrigation system cleaning of filters, pressure gauge readings, air valve and safety, valve cleaning, draining of drip lines, flushing of main line and sub main , changing emitters, removing and reinstallation of micro irrigation system and standard procedures of assembling and dismantling of micro irrigation system.

PRACTICAL SCHEDULE

No. of week (2 hrs. per week)	Topics covered
1st to 3rd Week	Importance of micro irrigation system conditions favourable to adopt micro irrigation systems – suitability of crops, soil; water availability; suitable fertilizers for fertigation.
4th to 6th Week	Methods used to determine field area, land slope; Agronomic specifications of field crops; Measurement of water required for designing Micro Irrigation System.
7th to 10th Week	Identification and functions of the major components of drip irrigation and sprinkler irrigation systems; Types of and usage of drip irrigation and sprinkler irrigation systems. **8th Week : Mid-Semester Examinations**
11th to 13th Week	Installation of Micro Irrigation System based on crop / field layout as per the procedure prescribed by the manufacturing companies; After installation, checking the functions of different components involved in Micro Irrigation System
14th to 16th Week	Periodical maintenance and identify remedies for the troubles occur in operation of Micro Irrigation System as per the guidelines mentioned by the manufacturers.

REFERENCES:

1. Sharma, S.K. 1984. Principles and practices of irrigation Engg., S.Chand and Company Ltd., New Delhi.
2. Michael, A.M. and T.P.Ojha. 1987. Principles of Agricultural Engineering. Vol.2. Jain Brothers, New Delhi.
3. Michael, A.M. 1983. Irrigation Theory & Practice, Vikas Publishing house, New Delhi.
4. Sivanappan, R.K. and Karaigowder. 1997. Irrigation and Drainage, Popular Book Depot, Chennai.
5. Basak, N.N. 1999. Irrigation Engineering. TATA McGraw Hill, New Delhi.

LEARNING OUTCOME

Students learn skills of designing, installation and maintenance of micro irrigation systems.

21FEMV0313 – TRACTOR OPERATION AND SAFETY MEASURES (14 Credits)

OBJECTIVE:

- To teach the tractor operation in field conditions
- To teach safety precaution measures observed before starting, operating and stopping the tractor.

UNIT–1: Tractor accessories - Familiarizing and functions of different components involved in engine, clutch, transmission, wheels, font axle, steering system, electrical system, hydraulic lift and power take off.

UNIT–2: Method of starting and to stopping a tractor – precautions observed while starting, operating and stopping a tractor – Periodical maintenance of tractors daily, weekly, monthly- as recommended by tractor manufacturer.

UNIT–3: General precautions observed in tractor systems – cooling, lubrication, air filter, fuel, transmission, hydraulic, electrical system, tyre pressure, dash board observations and noise observations.

UNIT–4: Ploughing of land – Methods of ploughing – Gathering and casting – Continuous ploughing method round and round ploughing – one way ploughing, ploughing with cage wheel and rotavator attachment.

UNIT–5: Safety in tractor operation; physical environment and protective wears – Thermal environment, Vibration, Noise, Dust, Exhaust Emission, Chemicals and Lighting.

PRACTICAL SCHEDULE

No. of week (14 hrs. per week)	Topics covered
1st to 3rd Week	• Select, care and use of PPE while dismantling and assembling of Familiarizing and functions of different components involved in engine, clutch, transmission, wheels, font axle, steering system, electrical system, hydraulic lift and power take off. • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of machineries. • Identify the common fault and take corrective action for machineries system as per technical manual
4th to 7th Week	• Select, care and use of PPE while dismantling and assembling of Method of starting and to stopping a tractor – precautions observed while starting, operating and stopping a tractor – Periodical maintenance of tractors daily, weekly, monthly- as recommended by tractor manufacturer • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of machineries.

	• Identify the common fault and take corrective action for machineries system as per technical manual
8th Week	• **Mid-Semester Examinations**
9th to 11th Week	• Select, care and use of PPE while dismantling and assembling of General precautions observed in tractor systems – cooling, lubrication, air filter, fuel, transmission, hydraulic, electrical system, tyre pressure, dash board observations and noise observations. • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of equipment. • Identify the common fault and take corrective action for machineries system as per technical manual
12th to 15th Week	• Select, care and use of PPE while dismantling and assembling of Ploughing of land – Methods of ploughing – Gathering and casting – Continuous ploughing method round and round ploughing – one way ploughing, ploughing with cage wheel and rotavator attachment. • Select tools and materials for the job and make this available for use in a timely manner. • Use the tools and equipment in the way specified by manufacturers to dismantle and assembles of machineries. • Identify the common fault and take corrective action for machineries system as per technical manual
16th week	• Safety in tractor operation; physical environment and protective wears – Thermal environment, Vibration, Noise, Dust, Exhaust Emission, Chemicals and Lighting.

TEXT BOOKS

1. Sanjay Kumar, 2007, A Text Book of Tractor at a Glance, International book distributing company, Lucknow
2. Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu, 2012, Fundamentals of Agricultural Engineering, Published by Kalyani Publishers, Chennai, ISBN: 978-93-272-2168-8
3. Dr. Jagdishwar Sahay, 2013, A Text Book of Elements of Agricultural Engineering, Standard Publishers Distributors, 1705-B, Naisarak, PB No:1066, Delhi-110 006, ISBN: 978-81-8014-204-8

LEARNING OUTCOME

- Students able to learn to operate the tractor with implement in field conditions
- Students able to learn the safety measures while operating the tractor in field conditions

21FEMV0314 - INPLANT TRAINING–II (4 Credits)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Tractor Manufacturing Industry / Training Institutes to acquire relevant skills. The in-plant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's in-charge. In addition, he/she has to submit weekly report to the department. During the in-plant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	**60 marks**

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	**40 marks**

LEARNING OUTCOME

- Students able to learn the work culture from the concerned industry
- Students learn to handle special tools used in assembling and dismantling of machinery components.

FOURTH SEMESTER

21CSAU04A1 – COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION (4 Credits)

OBJECTIVES

- To introduce the concepts of computer basics and terminologies.
- To identify hardware, software and Operating system needed for personal computer.
- To provide an in-depth training in use of Office Automation packages.

UNIT–1: Computer Concepts: Introduction to Computer; Characteristics of a Computer; History of Computers; Generations of Computer; Classification of Computers; Computer terminologies; Basic Components of Computer; Types of operating System; Types of Programming Languages

UNIT–2: Hardware Devices: Input Devices Definition, Types of Input devices; Output Devices – Definition, Types of Output devices; Storage Devices—Definition, Types of storage devices; Source Data Entry Devices—Definition, Digital Camera – Scanners- Voice Recognition System — Fax Machine- Microphone.

UNIT–3: MS-Word: Introduction – Features; Creating, editing, saving and printing text documents; Font and paragraph formatting; Simple text formatting, Finding and Replacing Text; Header and Footer; Inserting tables, smart art, page breaks; Using lists and styles; Working with images; Using Spelling and Grammar check; Mail Merge.

UNIT–4: MS-Excel: Introduction–Features; Creating, editing, saving and printing worksheets; Modifying worksheets with colour & auto formats; Range - Formatting Worksheet; Working with functions & formulas; Graphically representing data : Charts & Graphs; Built-in Functions.

UNIT–5: MS-Power Point: Introduction–Features; Creating Presentation - Viewing - Saving and Closing Presentation; Applying auto layouts; Changing Layout - Changing Designs - Slide Transition; Adding animation effects; Adding custom animation; Using slide transitions; Graphically representing data : Charts, Tables, Pictures, Clipart, video & audio.

REFERENCES:

- Fundamentals of Information Technology. S.K.Bansal, A.P.H. Publishing company. New Delhi. 2002.
- 2007 Microsoft Office System step by step, Joyce Cox, Joan Preppernau, Steve Lambert and Curtis Frye, 2007.

Lab Exercises:

MS-Word: Preparation of Bio Data, Agenda, Minutes. Circular Letters. Letters to Various Sectors. Mail Merge. Designing a News Paper.

MS-Excel: Preparation of Payrolls, Invoice. Charts for Business Analysis. Use of Financial Functions.

MS-PowerPoint: Preparation of The Advertisement, Animation, Transition Effect Audio & Video Presentation.

LEARNING OUTCOME

- Recall the fundamental concept of computer with present level of knowledge of the students.
- Recognize the purpose of operating systems, programming languages and basic peripheral devices.
- Create document in MS-Word.
- Perform the statistical calculations and draw chart using MS-Excel.
- Design presentation using MS-PowerPoint

21SPOU0001- Sports and Games (0 + 2 Credits)

Course Objective:

To gain knowledge about the Sports and Games

Course Outcomes:

Students should be able to

- Explain the basic concepts of physical education
- Demonstrate skills in major games.
- Assess the fitness level
- Analyze basic skills involved in track and field events
- Outline the modern trends and development in Physical Education.

UNIT–1: Concept, meaning and Definition of Physical Education – Aims and Objectives of Physical Education - Scope of Physical Education.

UNIT–2: Concept of Fitness, aerobic and anaerobic exercises - practice of high and low intensity of aerobic and anaerobic exercises - procedure for Yo Yo fitness test.

UNIT–3: Basic skills of Indigenous games (Kabaddi and Kho-Kho) - Basic skills of any Two of the major games (Basketball, Football, Hockey and Volleyball) – any two events in Track and Field Events.

UNIT–4: Concept and meaning of Intramural and Extramural tournaments – Types of Tournaments - Methods to draw the fixture for knockout and league tournaments – Recreational activities (Minor games).

UNIT–5: Personal Hygiene – Safety education with special reference to playfield – Modern trends in Physical Education - Nutrition and Sports diet - Common athletic injuries and first-aid. Preparation of Physical Education record / album in the area of specialization of one of the major game and two track and field events is a must for each student.

Text Books:

1. Anderson “School Health Practice”.
2. Ashwani Bhardwaj, A Complete Guide to Family Safety and First-aid, Goodwill Publisher.
3. Bucher Charles A., (1983), Foundationas of Physical Education, St. Louis the C.V. Mosby Company.
4. Conling David,(1980), Atheletics, London, Robert Hale.
5. Elizabeth Anders, (July,2008), Field Hockey (Steps to Success)
6. Goswami Shashikant,(1996), Nutrition for sports, SAINSNIS, Patiala.
7. Hoeger W.K. Werner and Sharon A. (1990), Hoeger, Fitness and Welness : Mortor Publishing Company, Englewood.
8. Jan Galen Bishop, (2013), Fitness through Aerobics(9ED), Pearson Publishers, ISBN10:0321884523, ISBN 13:9780321884527
9. Kamalesh M.L., (1988), Physical Education: Facts and Foundation, New Delhi, P.B. Publication.
10. Ken O. Bosen Track & Field Fundamental Techniques NIS Publications, Patiala.
11. Kenneth H.Cooper, (1978), Aerobics, M Evans & Co Publishers.
12. Kenneth H.Cooper, (1982), Aerobics programme for total Wellbeing, NY, Bantam Books Publishers, ISBN 0-553-34677-6, ISB?N:978-0-307-77725-6.
13. National Club Games Rule Book Kho-Kho - Indian Olympic Association.
14. Park and Park “Preventive and social medicine”

15. Rule Book, (2014), 9 Provinces battling for the Indigenous Games champs trophy
16. Sanju Sira, (2016), First Aid Manual for Nurses.
17. The Step-by-Step Training Manual of Soccer Skills & Techniques: Hundreds of Training Tips and Techniques, with Easy-to-Follow Instructions in Over 750 Photographs and Diagrams, (Mar 2011), Anness Publishing Ltd (Creator).
18. Thiru. Narayanan C and & Harihara Sharma (1989), "Methods in Physical Education " Karaikudi CJ and S.H.
19. Thirunarayanan, C. and Hariharan, S., (1990), Analytical History of Physical Education, Karaikudi, C.T. & S.H., Publications.

References Books:

1. Joseph. P.M. "Organization of Physical Education".
2. Kamlesh, M.L., Management concepts physical education and sport Metropolitan Book Co., Pvt., Ltd., Nethaji Subhash Marg, New Delhi.
3. Singh M.K. Teaching Methods in Physical Education.

Web Resources:

1. https://www.iaaf.org/home
2. http://www.indiankabaddi.org/
3. http://khokhofederation.in/
4. https://www.olympic.org/the-ioc

21YOGV0001 - YOGA EDUCATION (0+2 credits)

Course Objective: To gain knowledge about the Yogic Practices

Course Outcomes:

Students should be able to

- Evaluate the importance of preparatory exercise.
- Demonstrate the suryanamaskar and various asanas.
- Utilize the meditation techniques.
- Compare mudras and bandhas
- Assess the difference between the asanas and physical exercises.

UNIT–1: History of Yoga - Definition of the term Yoga - Comprehensive Nature and Scope of Yoga-Aims and Objectives of Yoga - Various schools of Yoga - Yoga as an ideal system of physical culture.

UNIT–2: Schools of Yoga: Patanjaliyoga – Astangayoga – Tantrayoga – Mantrayoga – Hathayoga – Layayoga - Rajayoga – Jnanayoga – Bhaktiyoga – Karmayoga - Difference between practice of Asanas and Physical Exercise.

UNIT–3: Asanas Practice: Meditative Asanas: Sukhasana – Ardha Padmasana – Padmasana – Samasana - Vajrasana – Standing Asanas: Tadasana – Padahasthasana – Ardha cakrasana- Trikonasana- Parivrtta Trikonasana – Vrikshasana – Virabhadrasana- Utkatasana; Sitting Asanas: Baddha konasana – Janusirasana – Paschimottanasana – Ustrasana – Vakrasana - Gomukhasana – Akarna Dhanurasana – Utthita Padmasana - Upavistakonasana - Suryanamaskar.

UNIT–4: Asanas Practice: Prone Asanas: Makarasana – Bhujangasana – Shalabhasana – Dhanurasana – Naukasana – Niralambhasana – Supine Asanas: Pavanamuktasana – Sethubandhasana – Navasana – Sarvangasana – Halasana – Matsyasana – Savasana.

UNIT–5: Pranayama Practice: Sectional Breathing - Nadisuddhi – Bhramari – Bhastrika - Kapalabhati – Introduction to Bandhas – Mudras – Dharana (Trataka) – Dhyana.

REFERENCE BOOKS:

1. Asanas, Swami Kuvalayananda, Kaivalayadhama, Lonavla, 1993.
2. Light on Yoga, B.K.S Iyengar Harpine Collins Publication, New Delhi, 2000.
3. Sound Health Through Yoga, K.Chandrasekaran, Prem Kalyan Publications, Sedapatti, 1999.
4. Yoga For All, Maharishi Patanjali, Sahni Publications, 2003.
5. Yoga For Health, Institute of Naturopathy & Yogic Sciences, Bangalore, 2003.
6. Yoga for Health, K.Chandara Shekar, Khel Sahitya Kendra, Theni, 2003.
7. Yoga For the Morden Man, M.P.Pandit, Sterling Publishers Private Limited, New Delhi, 1987.
8. Yoga For You, Indira Devi, Jaico Publishing House, Chennai, 2002.

Web Resources

1. https://kdham.com/
2. http://www.biharyoga.net/

21FEMV0415 – EMPLOYABILITY SKILLS – (4 Credits)

OBJECTIVE:

- To teach verbal communication, non-verbal communication, listening, self awareness and behaviourial skill.
- To teach productivity about how well student combine resources to produce goods and series.
- To teach personality development and its related topics

UNIT–1: English literacy – Practice on greetings and introduction; Practice on office hospitality; Practice on telephone skills; Practice on role playing and group discussion; practice on job description; practice on job application and resume writing

UNIT–2: Productivity – Definition-productivity of land, materials, machine and men; necessity of productivity; benefits of productivity- categories of productivity benefits; productivity affecting factors- skills, working aids, automation, environment and motivation; personal finance management- Banking process, categories of consumer accounts, safe cash handling procedures, KYC registration, personal risk and insurance.

UNIT–3: Personality- Definition- Determinants - Personality Traits - Theories of Personality - Importance of personality Development. Self Awareness - Meaning - Benefits of self awareness - Developing self awareness. SWOT - Meaning - Importance - Application - Components. Goal Setting Meaning - Importance - Effective goal setting - Principle of goal setting - Goal setting at the right level.

UNIT–4: Team Building - Meaning - Types of teams - Importance of team building - Creating Effective Team. Leadership - Definition - Leadership Style - Theories of leadershipQualities of an Effective leader. Negotiation Skills - Meaning - Principles of Negotiation - Types of Negotiation - The Negotiation process - Common mistakes in Negotiation process. Conflict management - Definition - Types Conflict - Levels of Conflict - Levels of Conflict - Conflict Resolution - Conflict management.

UNIT–5: Social Graces - Meaning - Social Grace at work - Acquiring Social Graces . Table Manners - Meaning - Table Etiquettes in Multicultural Environment - Do's and Don'ts of Table Etiquettes. Dress Code - Meaning - Dress Code for Selected Occasions - Dress code for an Interview. Group Discussion - Meaning - Personality traits required for Group Discussing - Process of Group Discussion - Group Discussion topics. Interview - Definition - Types of Skills - Employer Expectations - Planning for the Interview - Interview - Interview questions - Critical Interview Questions.

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topic covered
1st to 3rd Week	• English Literacy **:** Practice on Office Hospitality; Telephone skills; Role Playing and Group Discussion; Practice on Role Playing and Group Discussion; Practice on Job Description and Practice on Job Application and Resume Writing

4th to 7th Week	• Productivity – Definition-productivity of land, materials, machine and men; necessity of productivity; benefits of productivity- categories of productivity benefits; productivity affecting factors- skills, working aids, automation, environment and motivation; personal finance management- Banking process, categories of consumer accounts, safe cash handling procedures, KYC registration, personal risk and insurance. • **8th Week : Mid-Semester Examinations**
9th to 11th Week	• Environment education- Global warming- effect of global warming; effects of greenhouse and change in climate; methods to control of greenhouse effect; causes of the depletion of ozone layer; prevention measures for ozone layer depletion; process for drinking water treatment, sewage treatment, industrial water treatment and disinfectants of water treatment.
12th to 14th Week	• Labour welfare legislation- Benefits guaranteed under various Acts – Factories Act 1948; Apprentices Act; Employees state insurance (ESI) Act; Payment of Wage Act 1936; Minimum Wages Act & Rules, Employees provident fund Act (EPF) and Works men Compensation Act.
15th to 16th Week	• Quality tools- Quality consciousness, quality concept; ISO standards; quality tools; analyse the problems using quality tools; quality parameters and quality management.

REFERENCES:

1. Employability skills – Sep. 2016, Common for all trades, I Semester, Published by published by National Instructional Media Institute, Chennai
2. Employability skills – June 2016, Common for All Trades, II Semester, Published by published by National Instructional Media Institute, Chennai.
3. Dr. S. Narayana Rajan, Dr. B. Rajasekaran, G. Venkadasalapathi, V.Vijuresh Nayaham and Herald M. Dhas, Personality Development, Publication Division , Manonmaniam Sundaranar University, Tirunelveli, 2010.

LEARNING OUTCOME

- Students learn employability skills in the field of English literacy, productivity, environment education, labour welfare legislation and quality tools.

21FEMV0416 – REPAIR AND OVERHAULING OF ENGINE AND TRACTOR SYSTEM (14 Credits)

OBJECTIVES:

- To teach the procedure involved in servicing and overhauling of tractor engine / tractor transmission / hydraulic / electrical and control board system / tractor tyre and front axle.
- To teach common troubles, reasons and its remedies found in different tractor systems.
- To teach care and maintenance of tractor and its components.

Identify, use, maintain and store tools required for overhauling, adjustments, troubles, care and maintenance of the engine and tractor system

UNIT–1: Tractor diesel engine; fuel system and Ignition system

UNIT–2: Cooling system; Lubrication system and Governor System.

UNIT–3: Transmission system, tractor tyre and front axle.

UNIT–4: Steering and steering brake system; Hydraulic and hitching system; Electrical system.

UNIT–5: Accident and safety: Need for Personal Protection Equipment – selection, use, care and maintenance of respiratory and non-respiratory protective devices of the operator.

PRACTICAL SCHEDULE

No. of week (14 hrs. per week)	**Topic covered**
1st – 4th week	• Assembling and dismantling of engine head, cylinder block, piston, connecting rod, crankshaft, camshaft and valve system. • Service the components of engine • Check and servicing fuel line replacement and servicing of fuel filters service fuel tank, tank fuel filter, fuel feed pump, fuel injection pump and nozzle • Method of releasing of air lock.
5th to 7th Week	• Check the radiator hose for crock and leaks. • Servicing of coolant pump • Servicing of radiator and radiator cap • Test thermostat valve for proper functioning as per manufacturer specification and replace if necessary • Check the lubrication line for leakage • Check the oil pressure gauge • Check the lubrication pump and servicing the pump • Dismantling and assembling of governing system • Adjustment of timing gears
8th Week	**Mid-Semester Examinations**
9th to 10th Week	• Assembling, dismantling and replacement of clutch plate, clutch housing and needle bearing • Assembling and dismantling of gear train, gear selectors and release of double gear, servicing of synchromesh and adjustments • Assembling and dismantling of differential, differential lock system, differential cage • Servicing of final drive assembly.
11th to 12th Week	• Dismantle the tyres and tubes from wheels

	• Check the measurement of different types of tyre and tube sizes • Check the wheel alignment • Check the tyre defects at on edges and centre. • Practice on assembling and dismantling of front axle of a tractor.
13th to 15th Week	• Dismantling and assembling of single hand and double hand mechanical steering system • Dismantling and assembling of power steering system • Dismantling and assembling of hydraulic pump, hydraulic lever, ram cylinder, over load release valve and oil sump • Check the hydraulic line • Dismantling and assembling of internal expanding shoe brakes, hydraulic oil brake, disc brake • Replacement of brake shoes • Checking of fuse, cut outer, DC dynamo, AC alternator, self motor • Check the main line and lighting systems. • Checking, replacement and repair of electrical accessories • Servicing of batteries
16th week	• Need for personal protection equipments • Prevention of damages to the operator from roll over and turnover of tractor • Selection, use, care and maintenance of respiratory and non-respirator protective devices of the operator.

REFERENCES:

1. Mechanic Tractor, February 2016 Sector : Automobile, Common for Mechanic Tractor / Mechanic Agriculture Machinery, Trade: Practical, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.
2. Repair & Maintenance of Radiator, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.
3. Repair & Overhauling of Tractor, October 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.
4. Basic Tractor Servicing, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.
5. A.K.Jain, 2006, Automobile Engineering, Vol.2; Published by Standard Publishers Distributors, 1705-B, Nai Sarak, Delhi – 110 006, ISBN: 81-86308-01-6
6. Er. Sanjay Kumar, 2007, A Text Book of Tractor at a glance (A unique book of farm power), Published by International Book Distributing Co., Lucknow 226 001 UP, ISBN: 81-8185-185-6

LEARNING OUTCOME

- Students learn servicing and overhauling of engine and tractor systems
- Student able to identify the faults and its remedies in engine and tractor systems

21FEMV0417 - INPLANT TRAINING–III (4 Credits)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Tractor Manufacturing Industry / Training Institutes to acquire relevant skills. The in-plant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's in-charge. In addition, he/she has to submit weekly report to the department. During the in-plant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	**60 marks**

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	**40 marks**

LEARNING OUTCOME

- Students able to learn the work culture from the concerned industry
- Students learn to handle special tools used in assembling and dismantling of machinery components.

FIFTH SEMESTER

21FEMV0518 – OPERATION AND MAINTENANCE OF POST HARVESTING EQUIPMENTS
(4 Credits)

OBJECTIVES:

- To teach the operation and maintenance of selected post harvesting equipments
- To teach the adjustments needed for effective functioning of the equipments

UNIT–1: Function, suitability of crop, power requirement, labour requirement, components and capacity of Paddy thresher, Multicrop thresher

UNIT–2: Function, suitability of crop, power requirement, labour requirement, components and capacity of Groundnut thresher, Pulse thresher, Mini dhal mill

UNIT–3: Function, suitability of crop, power requirement, labour requirement, components and capacity of Arecanut dehusker, Castor sheller, maize sheller, Sunflower seed sheller

UNIT–4: Function, suitability of crop, power requirement, labour requirement, components and capacity of Seed cleaner cum grader, Groundnut grader, Potato grader and paddy winnower.

UNIT–5: Function, suitability of crop, power requirement, labour requirement, components and capacity of Rectangular metal bin drier, Solar Tunnel Drier, Solar cabinet drier, Agricultural waste fired furnace drier

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topic covered
1st to 5th Week	• Identify and check functionality of major components and assemblies and servicing of the following equipments i. Paddy thresher ii. Multicrop thresher iii. Groundnut thresher iv. Pulse thresher v. Mini dhal mill
6th to 10th Week	• Identify and check functionality of major components and assemblies and servicing of the following sheller, cleaner and grader equipments i. Arecanut dehusker ii. Castor sheller iii. Maize sheller iv. Sunflower seed sheller v. Seed cleaner cum grader vi. Groundnut grader vi. Paddy winnower **8th Week : Mid-Semester Examinations**
11th to 16th Week	• Identify and check functionality of major components and assemblies and servicing of the following drying equipments i. Rectangular metal bin drier ii. Solar Tunnel Drier iii. Solar cabinet drier iv. Agricultural waste fired furnace drier

REFERENCES

1. Repair, Maintenance & Operation of Post harvesting Equipments, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Directory of Rural Technologies, Vol.1, Farm & Post-harvest Equipment, 1986, Published by Council for Advancement of Rural Technology, New Delhi

3. Principles of Agricultural Processing, 1994, P.H.Pandey, Published by Kalyani Publishers, New Delhi

4. Bankable Post Harvest Equipment developed in India, 1986, R P Kachru, P K Srivastava, B S Bisht & T P Ojha, Published by CIAE, ICAR-Bhopal

LEARNING OUTCOME

- Student will able to learn the operation and maintenance of selected post harvesting machineries.
- To learn the adjustments needed for effective functioning of the machineries

21FEMV0519–OPERATION AND MAINTENANCE OF PUMPS FOR IRRIGATION (4 Credits)

OBJECTIVES

- To teach Operation and Maintenance of pumps used for irrigation.
- To teach the troubles occur in different pumps and its remedies.

UNIT–1: Pump – definition; Types of pumps – Centrifugal pump, Vertical turbine pump, Submersible pump, Propeller pump, Jet pump and Reciprocating pump; Comparative study of different pumps.

UNIT–2: Centrifugal pump – working principle, components and accessories; Installation operation and maintenance; trouble shooting in Centrifugal pump.

UNIT–3: Air compressor for lifting water from bore-wells – Important components; Working arrangement; Troubleshooting in air compressor.

UNIT–4: Submersible pump – Components; Installation, Operation and Maintenance; Troubleshooting in Submersible pump.

UNIT–5: Accessories for electric motor pump set; important terms and pump calculation; cost calculation of pumping.

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topic covered
1st to 3rd Week	Types of pumps – their utility and suitability; comparative study of different pumps
4th to 11th Week	Identify and check functionality of major components; repair and servicing of a) Centrifugal pump b) Air compressor c) Submersible pump **8th Week : Mid-Semester Examinations**
12th to 16th Week	Selection, Installation and maintenance of pumps; pump calculation and cost calculation of pumping; servicing and maintenance of accessories used for electric motor pump set.

REFERENCES

1. Fundamentals of Agricultural Engineering, 2016, by Er. Sanjay Kumar, Er. Vishal Kumar, Ram Kumar Sahu, Kalyani Publications, New Delhi – 110 002.

2. Elementa of Agricultural Engineering, 2013, By Dr. Jagdishwar Sahay, Standard Publishers Distributers, Delhi – 110 006.

LEARNING OUTCOME

- Student will able to learn the operation and maintenance of different pumps used for irrigation.
- Student will able to learn to rectify the troubles occur in different pumps

21FEMV0520 – OPERATION AND MAINTENANCE OF RENEWABLE ENERGY APPLIANCES
(4 Credits)

OBJECTIVES:

- To teach the various sources of renewable energy and their applications
- To attend minor repair & maintenance of solar gadgets and biogas plant

UNIT–1: Renewable energy – definition; comparison between conventional and renewable energy; solar energy, wind energy and biomass energy – merits and demerits.

UNIT–2: Solar applications – Solar cooker, solar water heater, solar dryer, solar distillation, solar lantern and solar water pumps – components and working principles; Repair & Maintenance of solar gadgets.

UNIT–3: Bio gas plants – Fixed dome type and Floating gas holder type – Construction details, operational parameters of a biogas plant; Repair and Maintenance of bio gas plants.

UNIT–4: Wind mill applications – pumping water, grinding grain and generation of electricity – classification of wind mill - horizontal axis rotor and vertical axis rotor.

UNIT–5: Gasifier – Classification of gasifier – up-draft, down-draft, cross – draft and fluidized bed gasifer; Components and functions; cooling and cleaning of producer gas; Recommended fuel size for different types of gasifiers.

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topic covered
1st to 3rd Week	• Renewable energy – definition; • Comparison between conventional and renewable energy; • Solar energy, wind energy and biomass energy • Merits and demerits.
4th to 7th Week	• Solar applications – Solar cooker, solar water heater, solar dryer, solar distillation, solar lantern and solar water pumps – • Components and working principles; • Repair & Maintenance of solar gadgets.
8th Week	**Mid-Semester Examinations**
9th to 11th Week	• Bio gas plants – Fixed dome type and Floating gas holder type • Construction details, operational parameters of a biogas plant; • Repair and Maintenance of bio gas plants.
12th to 14th Week	• Wind mill applications – pumping water, grinding grain and generation of electricity – • Classification of wind mill – • Horizontal axis rotor and vertical axis rotor
15th to 16th Week	• Gasifier – Classification of gasifier – • Up-draft, down-draft, cross – draft and fluidized bed gasifer; • Components and functions; • Cooling and cleaning of producer gas; • Recommended fuel size for different types of gasifiers.

REFERENCES:

1. Repair, Maintenance and operation of energy sources equipments, 2011, NIMI Publications, Chennai.
2. Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu, 2012, Fundamentals of Agricultural Engineering, Published by Kalyani Publishers, Chennai, ISBN: 978-93-272-2168-8

LEARNING OUTCOME:

- Students learn the various sources of renewable energy and their application and limitations
- Students learn to handle the renewable energy gadgets

21FEMV0521 – OPERATION AND SAFETY MEASURES OF COMBINE HARVESTER (14 Credits)

OBJECTIVES:

- To teach the different components of combine harvester.
- To practice on driving combine harvester
- To learn repairs and maintenance of combine harvester

UNIT–1: Combine harvester – introduction – prime operational functions in combine; different parts, components and controls of combine harvester

UNIT–2: Practice on field operative of combine harvester under different field conditions and learn safe machine operating procedure.

UNIT–3: Perform daily maintenance of combine harvester

UNIT–4: Calculation of grain losses and other parameters – collectable and non-collectable losses due to combine–Estimate the cost of operation of combine, power requirement and field capacity

UNIT–5: First-aid **–** Definition; purpose; key aims of first aid – preserve life, prevent further harm and promote recovery; golden hours in first aid; First-aid box; Important guidelines for first aiders. Safety precautions while starting, operating and stopping of combine harvester.

PRACTICAL SCHEDULE

No. of week (14 hrs. per week)	**Topic covered**
1st – 4th week	• Identify and check functionality of major components of combine harvester • Selection of tools for assembling and dismantling of different components of the unit • Check the different controls of the unit as per the standards
5th to 7th Week	• Read the instructions / safety precautions before starting the unit, operating the unit and stopping the unit. • Driving practice in leveled ground to familiarize the operations of different control unit • Driving practice in field conditions and learn the adjustments based on field and crop conditions
8th Week	**Mid-Semester Examinations**
9th to 11th Week	• Observations on various dash board meters – indications – remedies • Noise observations – cause and remedies • Daily – weekly – monthly maintenance of combine harverster as per the manufacturer service manual.
12th to 15th Week	• Learn the procedure to determine post harvest losses

	• Calculation of grain losses at cutter bar, conveying, threshing and transporting sections of combine harvester • Estimate the cost of operation of combine, power requirement and field capacity
16th week	• Importance of first aid and golden hours in first aid • Learn the important guidelines for first aiders • Check the items in first aid box, safety precautions while starting, operating and stopping of combine harvester.

REFERENCES

- Repair, Maintenance & Field Operation of Combine Harvester, March 2011, Published by NIMI Chennai.
- Jagadishwar Sahay, 2010. Elements of Agricultural Engineering**.** Standard Publishers Distributors, New Delhi. ISBN: 978 – 818040440

LEARNING OUTCOME

- Students learn to identify tools for maintenance of combine harvester.
- Students learn to adjust cutter bar, feeder, thresher, straw walker blower and augers depend on field conditions.
- Students learn to drive combine harvester.
- Students learn to calculate post harvest losses and cost of operation

21FEMV0522 - INPLANT TRAINING–IV (4 Credits)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Harvester Manufacturing Industry / Training Institutes to acquire relevant skills. The in-plant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's in-charge. In addition, he/she has to submit weekly report to the department. During the in-plant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	**60 marks**

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	**40 marks**

LEARNING OUTCOME

- Students able to learn the work culture from the concerned industry
- Students learn to handle special tools used in assembling and dismantling of machinery components.

SIXTH SEMESTER

21FEMV0623 – ENTREPRENEURSHIP DEVELOPMENT (4 Credits)

OBJECTIVE

- To develop and strengthen entrepreneurial quality and motivation among students.
- To impart basic entrepreneurial skills and understandings to run a business efficiently and effectively.

UNIT–1: Entrepreneurial Competence : Entrepreneurship concept – Entrepreneurship as a Career – Entrepreneurial Personality–Characteristics of Successful, Entrepreneur–Knowledge and Skills of Entrepreneur – Scope of the course in creating entrepreneurial opportunities and employment opportunities in public and private sectors – Scopes in competitive examinations.

UNIT–2: Entrepreneurial Environment: Business Environment – Role of Family and Society – Entrepreneurship Development Training and Other Support Organizational Services - Central and State Government Industrial Policies and Regulations - International Business.

UNIT–3: Business Plan Preparation: Sources of Product for Business - Prefeasibility Study - Criteria for Selection of Product - Ownership - Capital - Budgeting Project Profile Preparation - Matching Entrepreneur with the Project - Feasibility Report Preparation and Evaluation Criteria.

UNIT–4: Launching of Small Business: Finance and Human Resource Mobilization Operations Planning - Market and Channel Selection - Growth Strategies - Product Launching – Incubation, Venture capital, IT startups.

UNIT–5: Management of Small Business: Monitoring and Evaluation of Business - Preventing Sickness and Rehabilitation of Business Units – Effective Management of small Business.

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topics covered
1st to 3rd Week	
	• Introduction to Entrepreneurship • Definition – concept • Industrial small entrepreneurship • Meaning – Important – Significance and Scope • Characteristics of entrepreneur • Factors influence rural entrepreneurial development
4th to 6th Week	
	• Industries for Small Entrepreneurs : General study of cottage • Small Scale Industries – Enterprise Management – Need and Important • Women Entrepreneurship development through SHG – Entrepreneurial Competencies

7th to 10th Week	• Registration & Financing • Identification of opportunities – choice of product • Preparation of feasibility – Report – Registration and License • Financial assistance Nationalized banks – State financial corporation – DIC – KVIB – KVIC – NSIC, SIDBI and NABARD – Incentives and Government support. • **8th Week : Mid-Semester Examinations**
11th to 13th Week	
	• Entrepreneurial Development: Approaches to Entrepreneurship Development • EDP – Issues – Entrepreneurial Training
14th to 16th Week	
	• Methods and Institutions offers Entrepreneurial Training • Market Survey – Model Project Report • Regularity Laws : Central Excise – Income Tax – Sales tax – Licensing Authority – Export and Import Regulatory Acts

TEXTBOOKS

1. Hisrich, Entrepreneurship, Tata McGraw Hill, New Delhi, 2001.
2. S.S.Khanka, Entrepreneurial Development, S.Chand and Company Limited, New Delhi, 2001.

REFERENCES

1. Mathew Manimala, Entrepreneurship Theory at the Crossroads, Paradigms & Praxis, Biztrantra, 2nd Edition ,2005
2. Prasanna Chandra, Projects – Planning, Analysis, Selection, Implementation and Reviews, Tata McGraw-Hill, 1996.
3. P.Saravanavel, Entrepreneurial Development, Ess Pee kay Publishing House, Chennai -1997.
4. Donald F Kuratko, T.V Rao. Entrepreneurship: A South Asian perspective. Cengage Learning. 2012

LEARNING OUTCOME

- Students will gain knowledge and skills needed to run a business.

21FEMV0624 – BOOK KEEPING (4 Credits)

OBJECTIVES:

- To teach basic concepts of Accounting for Business
- To teach the accounting practices and its techniques with special reference to Sole-Proprietorship, Trading and Non-Trading Concerns.

UNIT–1: Fundamentals of Accountancy, Meaning, Scope and Utility of Accounts, Methods of keeping Books of Accounts, Users of Accounts, Fundamental Accounting Equation, Types of Accounts, Rules of Debit and Credit, Types of Transactions, Types of Assets and Liabilities

UNIT–2: An introduction - Book keeping Vs. Accounting - Relationship among Book-keeping, Accounting and Accountancy - Accounting Principles - Accounting Standards in India - Source documents - Double entry system - Transaction – Account - Approaches of recording transactions - Accounting rules - Journal entries

UNIT–3: Utilities of ledger - Format of ledger account - Distinction between journal and ledger - Procedure for posting - Balancing of ledger accounts - Need for preparing trial balance - Definition of trial balance - Features of trial balance - Objectives of preparing trial balance - Limitations of trial balance - cash book and its types

UNIT–4: Tally – fundamentals, Features, Startup, Screen Components, Mouse/ Keyboard functions, Screen Areas, Company Data, Creation / Altering Company in Tally.

UNIT–5: Hands-on-training and Practical Exercise

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topic covered
1st to 5th week	• History and basics of accountancy; Methods of keeping accounts, difference between book keeping and accountancy • Various users of accounts and different types of accounts • Rules for debit and credit. • Various types of transactions, types of assets and liabilities • Lecture on capital and revenue, basics income and expenses.
6th to 11th Week	• Deferred revenue expenses and accrued incomes • Revenue provisions and contingency • Mid-semester Examination. • Principles and concepts of accounting • Identification of various concepts applied in different transaction • Presentation of various entries in Annual Financial Statements. • **8th Week : Mid-Semester Examinations**
12th to 16th Week	• Accounting in Non trading concerns • Difference between trading and Non- trading concerns- regarding accounts. • Receipts, payments, income and expenditure of non-trading organizations. • Preparing of trial balance from different ledgers. • Preparing of trading account, profit and loss account. • Preparation of balance sheet.

REFERENCES:

1. Accounting for Managers – J. Made Gowda – Himalaya Publishing House, 2015
2. Financial Management, I.M.Pandey,
3. Financial Management, Texts and cases, 2014.
4. Financial Accounting by Dr. Malleswari, 7th Edition, 2016. Himalaya Publishing House.

21FEMV0625 – AGRI BUSINESS AND PROJECT MANAGEMENT (4 Credits)

OBJECTIVE:

- To teach special features of agri business and its importance in Indian economy

UNIT–1: Agribusiness : Agribusiness – Definition – Structure of Agribusiness (input, farm and product sectors), Agribusiness Management - Special features of Agribusiness - Importance of Agribusiness in Indian Economy.

UNIT–2: Introduction to Principles of Management : Management functions — planning, organizing — departmentation, forms of agri business organization - staffing, directing, supervision and motivation, controlling — types, performance, evaluation and control techniques.

UNIT–3: Production and Personal Management : Functional areas of agri business—production and operations management—functions, planning, physical facilities and managing quality. Inventory management—raw material procurement, inventory types, costs, personnel management.

UNIT–4: Marketing Management : Marketing management — marketing environment, marketing mix pricing and marketing polices.

UNIT–5: Input Marketing, Distribution: Input marketing firms-types and distribution channels. Processing firms-types, size and managerial problems. Management Information System (MIS) — concept and applications. Business standards business - Intellectual property rights and patenting – Government policies for agri business.

LECTURE SCHEDULE

No. of week (4 hrs. per week)	Topic covered
1st to 5th week	• Raw material procurement in Agro-industries — visit to firm. • Business plan preparation — identification and business opportunities. • Market potential assessment for agro-inputs and agro products. • Agricultural inputs - marketing promotional activities.
6th to 11th Week	• Food products - marketing promotional activities. • Product pricing methods. • Visit to District industries Centre. • Presentation and discussion on consumer survey reports. • Management of agricultural inputs marketing firm- visit to firms. • **8th Week : Mid-Semester Examinations**
12th to 16th Week	• Management of small agro-processing firm — visit to firms. • Discussion with lead bank on agribusiness finance. • Documents preparation to obtain Agriculture loan from banks • Discussion with successful farmers about economics of crop cultivation

REFERENCES

1. Prasad, L.M, 2005, 'Principles and Practices of Management', Sultan Chand and Sons Educational Publishers, New Delhi.

2. Richard, B Chase, Nicholas J., Acquilano and F.Robert Jacobs, 2007, `Production and Operations Management - Manufacturing and service, Tata McGraw Hill Publishing Company Limited, New Delhi.

3. Aswathappa, K, Human Resource Management: Text and Cases, Tata McGraw-Hill Pub. Co. Ltd. New Delhi, 5th Edition, 2008.

4. Philip Kotler, Marketing Management, Pearson Education, India, 2003.

5. Chandra Prasanna. 2000. Financial Management - Theory and Practice. Tata Mc Graw Hill Publishing Company Ltd., New Delhi.

6. R.K.Sapru, Project Management, Excel Books, New Delhi, 1997.

7. Broadway, A.C. (2003). Text Book of Agri Business Management, Atlas Books and Periodicals, New Delhi.

8. Kapur, S.K. (1994). Principles and Practice of Management, S.K. Publishers, New Delhi.

9. Prasad, L.M. (1993). Principles and Practice of Management, Sultan Chand & Sons, New Delhi.

LEARNING OUTCOME

- The students able to start a suitable agri business enterprises

21FEMV0626 – FUNCTION AND MANAGEMENT OF AGRO SERVICE CENTRE (14 Credits)

OBJECTIVE:

- Students will be trained in Agro Service Centre and make them to understand the functions and management of the centre

Students will undergo one month training in any established tractor / any agricultural machinery/ Irrigation machinery dealer and prepare a case study report which will cover the following items.

UNIT–1: Select and order right machinery and equipments by prior consultation

UNIT–2: Identify and select vendors for purchase of farm machineries & equipments

UNIT–3: Monitor the operations on a daily basis and evaluate success or failure of business

UNIT–4: Stock spare parts for different machinery parts and prime movers

UNIT–5: Supervise minor repair and maintenance of farm machineries and implements

LEARNING OUTCOME

- Students learn to develop a sustainable model of Agro Service Centre

EVALUATION METHOD:

Dealer / Service Centre

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	**60 marks**

Course Teacher

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	**40 marks**

21FEMV0627 – PROJECT WORK (4 Credits)

The project work will be in one of the following themes:

i. A new innovation or critical study related to the technology or development dimensions envisaged by the course

ii. Preparation of an innovative enterprise for one's future career

iii. Carrying out a regional development/employment development project planning exercise within the spirit of the course

iv. Finding out a innovative project with analysis suitable for the specific area.

Project work will be carried out by a group of students, minimum 2 and maximum 5 out of 100 marks, the evaluation of 60 marks will be awarded by project guide based on students performance during project period and 40 marks will be awarded jointly by project guide and course coordinator based on final viva and students project presentation.