ANNEXURE 1 - AGROMACHINERY - MODEL CURRICULUM							
Qualification Title: Certificate in Agro machinery							
NSQF Level: 4						**Total Hours - 2880**	
Subject Name and Code	**Topics/Module**	**Theory Hours**	**Practical Hours**	**Objective of module**	**Outcome of module**	**Methodology**	**Tools Required**
Basic Mathematics & Science (1001)	**Module M1** Basic Mathematics calculations & Algebra	40	0	OB 1.1 To understand principles of basic mathematics and calculation including Fraction, Ratio & Proportions, Basic Algebra	**Will be able to:** MO-1.1 Perform basic mathematical calculations in Fraction, Ratio & Proportions, Basic Algebra	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M2 Mensuration and Trigonometry	40	0	OB 2.1 To understand principles of Mensuration and Trigonometry	MO-2.1 Perform basic mathematical calculations and solve sample problems related to Mensuration and Trigonometry	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M3 Basic Science	40	0	OB 3.1 To understand principles of basic Science including System of units, Unit Conversion Mass/weight/volume/density, Work/power/energy, Velocity/Speed, elasticity	MO-3.1 Understand the concepts of basic science including : System of units, Unit Conversion MO-3.2 Define - Mass/weight/volume/density, Work/power/energy, Velocity/Speed, elasticity	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M4 Basic Science	40	0	OB 4.1 To understand principles of basic Science including Heat, Pressure & Temperature and thier applications. OB 4.2 To Understand the concepts of Basic electricity - AC/DC/Voltage, Current , Resistance, Ohms law	MO-4.1 Define - Heat, Pressure & Temperature and their applications MO-4.2 Explain - AC/DC/Voltage, Current , Resistance, Ohms law	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M1 Introduction to	8	0	OB 1.1 To understand different instruments used in engineering drawing	MO-1.1 List various instruments used in engineering drawing MO-1.2 State uses of various drawing instruments MO-1.3 Use various instruments to draw sample exercises	- Lecture - Demonstration	

Engineering Drawing **(1002)**	Introduction to Engineering Drawing Practice	10	0	OB 1.2 To understand freehand sketching, lettering and dimensioning	MO-1.4 Understand the application of freehand sketching, lettering and dimensioning, Layouting and title block MO-1.5 List various dimensioning methods MO-1.6 Solve problems based on different dimensioning methods	- Lecture - Demonstration	- Scales, Compass, Drawing board, Clips, Mini drafter, Pencils, Drawing sheets, Stencils, Instrument box - Laptop & Projector
	Module M2 Geometrical Drawing	20	0	OB 2.1 To understand Geometric constructions and drawings of various objects and shapes	MO-2.1 Draw lines, angles, triangles, squares, polygons, threads, fasteners based on sample exercises	- Lecture - Demonstration	
	Module M3 Orthographic Projection	20	0	OB 3.1 To draw orthographic projections of various objects	MO-3.1 State the concept of quadrants in engineering drawing MO-3.2 Differentiate first angle and third angle projection MO-3.3 Prepare orthographic projection of given sample objects	- Lecture - Demonstration	
	Module M4 Shop floor drawing	22	0	OB 4.1 To understand and draw shop floor drawings	MO-4.1 State the importance of shop floor drawing in industry MO-4.2 Prepare isometric drawings of given sample objects MO-4.3 Prepare assembly drawing of given sample products	- Lecture	
	MODULE 1	30	0	Identification of farm power machinery- Classify farm power machinery. Seedling, Planting and Transplanting Machines	MO-1.1 Identify farm power machinery and illustrate their usage MO-1.2 Identify seedling, Planting & Transplanting Machines and illustrate their usage		

PF-01 Operation and Maintenance of Agricultural Machineries (Trade Theory-I) (1081)	**Introduction to Agricultural Engineering & Farm Power, Describe seed terminology**	30	0	Identify various seeds- Determine quality of seeds - Describe handling of pro tray- Describe Seed Germination technique- Study equipment of seed transplanting- Study seed drills- Study use of tillage and development of seedling.	MO-1.3 Identify various seeds MO-1.4 Describe various seed handling and processing equipments	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
	MODULE 2 Introduction to soil	60	0	Importance of soil, identify different types of soil, methods of soil sampling and collection, study on soil physical characteristics, measure physical and chemical properties of soil, soil pH, different methods adopted for correcting soil pH.	MO-2.1 Identify types of soil MO-2.2 Explain soil characteristics MO-2.3 Illustrate different types of tests on soil .	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
	MODULE 3 Study different irrigation systems and Plumbing	40	0	Define agriculture irrigation- Outline different irrigation systems- Estimate water requirement for each irrigation system - Calculate the wastage of water for irrigation system- Study micro irrigation system- Explain the advantages of micro irrigation systems- Design a layout of micro irrigation system - Design a layout of fertigation system	MO-3.1 Define agriculture irrigation, MO-3.2 Describe various aspects of irrigation systems	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
		20	0	Knowledge about PVC Pipe- Knowledge about joining of PVC pipe- PVC plumbing accessories	MO-3.3. Explain PVC pipes and plumbing accessories.		
	MODULE 4 Study different types of food processing Techniques and Diary equipment	60	0	study syrup making technique- squash making technique- jam making technique-honey extracting techniques- List Milk processing equipment- Layout of modern diary system.	MO-4.1 Illustrate fresh fruit processing techniques. MO-4.2 Explain milk processing and dairy layout.	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
	MODULE 1 General			Safety in workshops- Introduction to General Workshop- Introduction to fitting - Introduction to smithy-	MO-1.1 Explain the purpose of Fitting ,MO-1.2 Identify fitting tools,MO-1.3 Select the fitting tools based on usage MO-1.4 Illustrate fitting jobs MO-1.5 Explain the purpose of	Theory class, smart class	Fitting tools, Carpentry tool, Smithy tools.

	workshop practice	0	180	Introduction Welding-Introduction to Electrical Engineering- Introduction to Basic Electronics.	smithy MO-1.6 Identify smithy tools and define the usage MO-1.7 Explain the purpose of Electrical tools and equipment MO-1.8 Identify basic electronic equipment and illustrate the working .	room, Library. Demonstration.	Welding tools, Multi Meter, Soldering iron etc.
	MODULE 2Agricultural Engineering & Farm Power	0	400	Identify Agriculture hand Tools-Categorize the tools based on usage-Classify Garden Tools-Practice Tillage Tools-Practice How to use Sprayer-Practice Machineries-Seedling, Planting and Transplanting Machines- Practice seed treatment-Practice the calculation of percentage of germination-Practice Portray Filling-Practice germination improvement techniques- Practice Paddy transplanter - Practice Soil Sampling- Practice Soil test kit-Practice Soil Treatment.	MO-2.1 Identify Agriculture hand Tools and categorize the tools, based on usages MO-2.2 Classify garden tools MO-2.3 Identification of farm power machinery MO-2.4 Ability to operate minor plant protection equipments MO-2.5 Extract seeds from important crops and describe seed germination technique.	Theory class, smart class room, Library. Demonstration.	Tillage tools, sprayers, portrays, different soil
PS-01 Operation and Maintenance of Agricultural Machineries (Trade Practical-I) (1089)	**MODULE 3 irrigation systems and Plumbing**	0	180	Plumbing-Identify different types and sizes of PVC Pipes -To Familiarize 'L', 'T', Coupler, Bend, Valve etc-Practice selection of tools for plumbing work- Practice to install a pipe line-Practice to fix a Pressure gauge. - Study Micro irrigation systems-Practice Water Testing-Familiarize micro irrigation accessories- Practice different irrigation pumps- Practice to install a micro irrigation system.	MO-3.1 Knowledge on PVC pipes & fittings and selection of tools for plumbing work MO-3.2 Illustrate the connection of water pump, priming MO-3.3 Demonstrate drip irrigation system MO-3.4 Design a layout of springler irrigation system MO-3.5 Construct a drip line system MO-3.6 Design a layout of fertigation system.MO-3.7 Use of water testing systems.	Theory class, smart class room, Library. Demonstration.	Spade, shovel, Water Testing Kit, PVC water pipes, Pipe fittings like tee, elbow etc., Micro Sprinkler, Drippers, PVC irrigation tubes, Tube fittings like tee, end cap, connectors etc., Screen filter, Soil moisture tester Venturi. etc.
				Practice trouble shooting and field operation of different diary equipment- Practice different food			Spanner set, Screw driver set, ring spanner set, box spanner set, puller,

	MODULE 4 Diary equipment	0	200	processing techniques- Practice syrup making technique -Practice squash making technique- Practice jam making technique- Practice honey extracting techniques - Practice milking machine-Practice milk analyzer- Practice cream separation- Practice cleaning machines.	MO-4.1 Identify and illustrate milking machines MO-4.2 Illustrate the use of milk analyzer MO-4.3 Illustrate working of cream separation machine	Theory class, smart class room, Library. Demonstration.	kettle, heater, induction cooker, freezer, milk collecting machine, milk analyzer, cream separator, farm cleaning machineries, different types of
Second Year							
Employability	**Module M1** English & Communication	5	10	OB 1.1 To understand communication and self management skills OB 1.2 To understand English Literacy - functional English, reading & writing	MO-1.1 Demonstrate knowledge of various methods of communication - verbal, non-verbal- visual; Greetings & self introduction, Asking & responding to question, formal & informal communication MO-1.2 Demonstration of writing sentences and paragraphs on topics related to the subject, discussions on current happenings	- Lecture - Demonstration - Use of smart class rooms - Mock discussions, Interviews	- Laptop & Projector
	Module M2 Communication & Behavioral Skills	5	10	OB 2.1 To understand Behavioral skills - Personal strength analysis, social responsibility, role modeling	MO-2.1 Identify specific do's and don'ts for avoiding common body language mistakes MO-2.2 Execute time management and planning skills, Skills to crack interviews MO-2.3 Demonstration of impressive appearance and groomed personality, ability to self- explore MO-2.4 Display professionalism at the institute and workplace	- Lecture - Demonstration - Use of smart class rooms - Mock discussions, Interviews	- Laptop & Projector

Skills & Entrepreneurship **(2001)**	**Module M3** Information Technology	20	40	OB 3.1 To understand Information and communication technology skills OB 3.2 To be familiar with internet and its applications	MO-3.1 Understand the basics of computers, Operating system, MS-Word, MS-Excel software's MO-3.2 Create simple documents like - resume, letter writing, job application etc., MO-3.3 Printing document, Familiar with usage of shortcuts, Creating and Editing of Text, Formatting the Text. MO-3.4 Use Web browsers and search engines, Creating & using e-mail id for communication	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
	Module M4 Entrepreneurship	25	5	OB 4.1 To understand Entrepreneurial skills	MO-4.1 Describe the significance of entrepreneurial values and attitude. MO-4.2 Demonstrate the knowledge of attitudinal changes required to become an entrepreneur MO-4.3 Explain the ways to set up an enterprise and different aspects involved viz., legal, compliances, Marketing aspect, Budgeting, etc	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
		30	0	different types of engines-construction of IC engine and SI engine-Knowledge on fuel system - Ignition Systems - Study circuit diagram of ignition system- Power transmission System- Pulleys, Chain & Sprocket, and gear system-Knowledge on working principal of clutch	1. Principle construction of IC engine and SI 2.Describe working principle of 2 and 4 stroke engine 3.Identify important engine parts4.Knowledge on fuel system of engine 1. Different types of ignition 1. Knowledge on Engine power transmission system 2. Study Pulley, Chain and Sprocket, and gear system		

PF-02 Operation and Maintenance of Agricultural Machineries (Trade Theory-II) (2081)	**MODULE 1 Study Engine Technology, Study different types agro machines, Study Different Types of Farm Equipment**	30	0	Definitions on farm mechanization - List farm power machines -Operation and maintenance of Power Tiller- Identify important parts of power tiller-Operation and maintenance of Tractor- Identify important parts of power tiller-Study tractor testing procedure-Study maintenance schedules of tractor-	MO-1.1 Identify important parts of power tiller MO-1.2 Identify important parts of Tractor2. Identify important implements of tractor MO-1.3. Study tractor testing procedure	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
		30	0	Study operation of reapers- Operation of Threshers and Grain Cleaners- Operation of harvester-Spices, Groundnut etc-Operation of combined harvester.	MO-1.4 List major parts of a Reaper MO-1.5 Identify different types and parts of threshers MO-1.6 Explain the working principle of thresher MO-1.7 Identify different types of harvester-Spices, Groundnut etc MO-1.8 List important parts of a Combine harvester		
	MODULE 2 Study of different farm protection equipment	30	0	Operation and maintenance of plant protection equipment-Basic knowledge on handling chemicals used for plant protection-List different types of sprayers.	MO-2.1 Basic knowledge on handling chemicals used for plant protection MO-2.2 Classify different types of sprayer	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
	MODULE 3 Study of biogas and solar energy	20	0	Biogas production-Knowledge on different types of bio gas plants- Principle of bio gas production	MO-3.1 Knowledge on different types of bio gas plants MO-3.2 Principle of bio gas production MO-3.3 Describe the parts and principle of biogas stove	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
		20	0	Solar Energy- Identify types of solar energy collectors-Solar energy used	MO-3.4 Identify types of solar energy collecting equipments used for agricultural purpose MO-3.5 Understand the inverter		

				for agricultural purpose.	technology		
	MODULE 4 Introduction to greenhouse technologies	40	0	Different types of greenhouse models, study the implementation of micro irrigation systems, filters, venturi etc., rain shelter-Shade house- Poly house.	MO-4.1 Able to handle rain shelter MO-4.2 Knowledge on production of seed links MO-4.3 Knowledge on production on off season vegetables MO-4.4 Able to handle shade house	Theory class, smart class room, Library. Flowchart preparation.	LAPTOP, projector, WHITE BORAD
PS-02 Operation and Maintenance of Agricultural Machineries (Trade Practical-II) (2089)	**MODULE 1 Engine technologies, tillers, diggers, brush cutter, seed drill**	0	520	Engine Technology-Practice Petrol Engine and diesel engines dismantling and assembly -Practice power transmission systems- Practice ignition systems- Practice different types agro machine- Practice tractor repairing and maintenance-Practice power tillers- Practice Brush Cutter, Garden Tiller, Digger, Seed drill-Different Types of Farm Equipment-Practice trouble shooting and field operation of different farm equipment.	MO-1.1 Illustrate principle, construction of IC engine and SI engines MO-1.2 Describe the working principle of 2 and 4 stroke engines MO-1.3 Identify important engine parts MO-1.4 Knowledge on fuel system of engine MO-1.5 Identify different types of ignition systems MO-1.6-Knowledge on Engine power transmission system -Study Pulley, Chain and Sprocket, and gear system MO-1.7 Use of brush cutter, Garden Tiller, Digger, Seed drill. etc. MO-1.8 Illustrate tillage- dry and wet field -use different types of attachment	Theory class, smart class room, Library. Demonstration.	Petrol and Diesel Engines (Four stroke and two stroke) with gear box and clutch assembly Spanner set, Screw driver set, ring spanner set, box spanner set, puller Tractors, Tillers Spanner set, Screw driver set, ring spanner set, box spanner set, puller
	MODULE 2 Farm Protection Equipments	0	180	Study of different farm protection equipment-operation and troubleshooting of different sprayers and dusters-Practice Sprayer- Practice battery operated sprayer-. Practice Power Sprayer-Practice duster	MO-2.1 Illustrate the use of battery operated and power sprayer MO-2.2 Illustrate the use of duster	Theory class, smart class room, Library. Demonstration.	Spanner set, Screw driver set, ring spanner set, box spanner set, puller, Different types of sprayers and duster
	MODULE 3 Biogas and Solar energy	0	140	Study of biogas and solar energy - Practice trouble shooting and filed operation of solar panels-practice trouble shooting and field operation of biogas plants.	MO-3.1 Illustrate the handling of Slurry MO-3.2 Practice to convert biogas as a fuel used in IC engine MO-3.2 Able to handle PV cells MO-3.3 Able to handle different types of batteries	Theory class, smart class room, Library. Demonstration.	Solar panels, Different types of biogas plants and stoves, PV panels, Solar stove, solar heater, Methane fuel engine
	MODULE 4 Green			Introduction to greenhouse technologies-Practice production of	MO-4.1 Able to handle rain shelter MO-4.2 Able to handle shade house MO-4.3 Able make seed links MO-4.4-Able handle poly	Theory class, smart class	Different types of green house models,

	MODULE 4 Green house technologies	0	120	vegetables in green house-Practice to make seedlings-Practice artificial pollination.	house MO-4.5 Able to handle vegetable production MO-4.6 Able to handle production on off season vegetable MO-4.7 Able to handle artificial polynation	room, Library. Demonstration.	micro irrigation systems, filters, venturi etc
Project Work (2008)	1.Students Project Work	0	160	OB 1.1 To be familiar with industrial environment and production process	MO-Able to solve problems of social significa	- Demonstration - Industrial Visit	