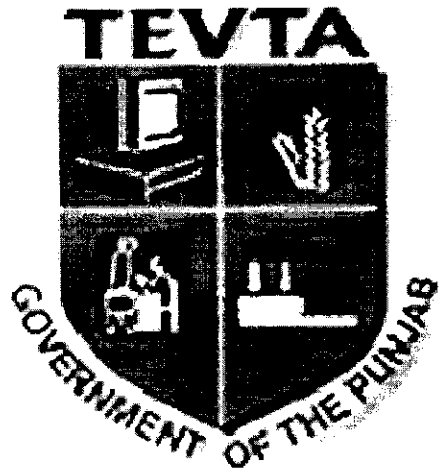


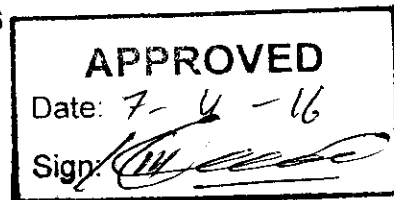
GOVERNMENT OF THE PUNJAB
TECHNICAL EDUCATION & VOCATIONAL
TRAINING AUTHORITY



CURRICULUM FOR
RICE MILLING & PROCESSING PLANT OPERATOR

(6 – Months Course)

Revised April 2016



CURRICULUM SECTION
ACADEMICS DEPARTMENT

96-H, GULBERG-II, LAHORE
Ph # 042-99263055-9, 99263064
gm.acad@tevta.gop.pk, manager.cur@tevta.gop.pk

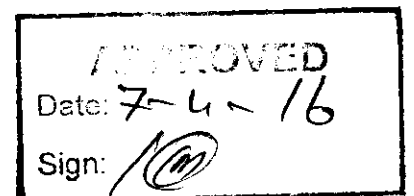
TRAINING OBJECTIVES

The objective of the course is to produce Semi-Skilled operators for Rice milling machinery by imparting them basic theoretical knowledge and practical training on the typical rice milling machines so that they may join the rice industry as trainee operator and develop themselves into trained rice millers to benefit the industry and themselves.

The curriculum covers the basic skills of workshop practice's handling the tools, electrical technology including AC Motors, identification of paddy varieties and testing of paddy, practices of sun drying and mechanical drying of paddy, safe storage of paddy, husking of paddy, polishing of brown rice, grading of rice and finally developing good quality white milled rice and minimizing the milling loses. The trainees also learn basic Functional English and I.T. fundamentals.

CURRICULUM SALIENTS

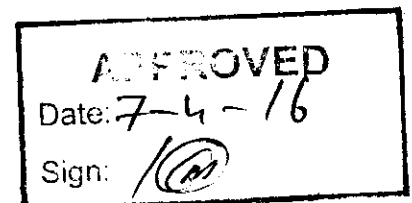
Entry Level	:	Middle
Duration of Course	:	6-Months
Total Training Hours	:	800 Contact Hours
Training Methodology	:	Practical 80%
	:	Theory 20%
Medium of instructions	:	Urdu / English



SKILL COMPETENCY DETAILS

On successful completion of this course, the trainee should be able to:-

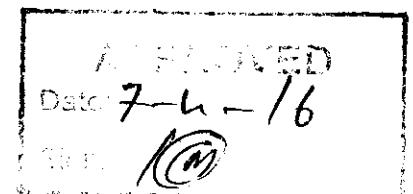
1. Apply all safety precautions for personnel and equipment.
2. Practice basic skills of tools needed for operations of a rice mill
3. Distinguish various varieties of paddy with special reference to basmati varieties and become competent to analyze samples.
4. Deploy best practices of drying paddy while retaining its quality and moisture level at milling stage including mechanical drying.
5. Install, dismantle, repair, replace usable parts and adjust machines to best operational capabilities, thus ensuring;
 - a. Maximum / complete cleaning of paddy at the pre-cleaner stage.
 - b. Minimum breakage and maximum rice husking at husking stage.
 - c. Nil to minimum blowing out of rice tips, broken, rice by husk blower.
 - d. Maximum separator output and least recycling of husk rice and broken.
 - e. Minimum breakage during the different polishing stages.
 - f. Nil or minimum broken rice in powder produced.
 - g. A continuous milling process to have lesser wastages and maximum output v/s energy consumption.
 - h. The level of polish and quality of output required.
 - i. The general operations of the electrical systems and accessories.
6. Locate and diagnose faults effects and related results of the same in the final product



KNOWLEDGE PROFICIENCY DETAILS

On successful completion of this course, the trainee should be able to:-

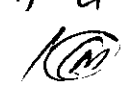
1. Observe all safety precautions for personnel and equipment.
2. Understand basic skills of tools needed for operations of a rice mill
3. Explain various varieties of paddy with special reference to basmati varieties and become competent to analyze samples.
4. Understand best practices of drying paddy while retaining its quality and moisture level at milling stage including mechanical drying.
5. Understand the Installation, dismantling, repairing, replacement of usable parts and adjusting of machines to best operational capabilities, thus ensuring:-
 - a. Maximum / complete cleaning of paddy at the pre-cleaner stage.
 - b. Minimum breakage and maximum rice husking at husking stage.
 - c. Nil to minimum blowing out of rice tips, broken, rice by husk blower.
 - d. Maximum separator output and least recycling of husk rice and broken.
 - e. Minimum breakage during the different polishing stages.
 - f. Nil or minimum broken rice in powder produced.
 - g. A continuous milling process to have lesser wastages and maximum output v/s energy consumption.
 - h. The level of polish and quality of output required.
 - i. The general operations of the electrical systems and accessories.
6. Explain the process of locating and diagnosing faults effects, and related results of the same in the final product.



SCHEME OF STUDIES

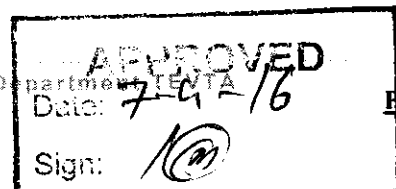
**Rice Milling & Processing Plant Operator
(6-Months)**

Sr. No	Main Topics	Theory Hours	Practical Hours	Total Hours
1.	Workshop Practice (Mechanical)	16	64	80
2.	Basic Electrical Theory and AC Motors & Contactors	08	32	40
3.	Paddy Varieties, their identification, Procedure of testing of Paddy & Learning Lab Analysis	16	64	80
4.	Paddy , Rice Varieties, Identification and Lab Testing	32	104	136
5.	Paddy Parboiling and developing Sela Rice	64	-	40
6.	Practical on the Job Training in a Rice Mill as Trainee	-	50	50
	(a) Lab Analysis & Testing of Paddy	-	180	180
	(b) Rice Milling / Operation	-	50	50
	(c) Rice Parboiling			
7.	I.T Fundamentals	8	32	40
8.	Functional English	16	64	80
Total		160	640	800

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Detail of Course Contents
Rice Milling & Processing Plant Operator
(6-Months)

Sr. No.	Detail of Topics	Theory Hours	Practical Hours
1.	Workshop Practice (Mechanical)		
1.1.	Introduction (Workshop, Work Place, Tools)	1	-
	1.1.1. Order of workplace		
	1.1.2. Introduction to general tools used in the metal workshop, their care and proper use		
	1.1.3. Safety precautions		
1.2.	Measuring (General Introduction)	1	4
	1.2.1. Purpose of measuring and checking tools		
	1.2.2. Accuracy of measuring		
	1.2.3. Linear measuring (steel rules, calipers, vernier calipers)		
	1.2.4. Measuring Faults		
	1.2.5. Care and Maintenance of Measuring tools		
1.3.	Marking	1	4
	1.3.1. Necessity of marking		
	1.3.2. Common marking tools (scriber, steel rule, & centre punch)		
1.4.	Filing	1	4
	1.4.1. Process of filing		
	1.4.2. Types of files with regards to cut and shape		
1.5.	Sawing	1	4
	1.5.1. Cutting principle (rake angle)		
	1.5.2. The saw blade (pitch of teeth, setting of teeth and tightening the blade in the frame)	1	4
1.6.	Drilling		
	1.6.1. Drilling of thought holes (effect of movements of the drill, cutting process)		
	1.6.2. Main parts (their name and function)		
	1.6.3. Clamping and removing of twist drills		
	1.6.4. Drilling faults	1	4
1.7.	Reaming		
	1.7.1. Purpose and process of reaming		
	1.7.2. Types of reamers (Hand reamers, machine reamers and adjustable reamers)		
1.8.	Counter Sinking and Counter boring	1	4
	1.8.1. Counter sinking tools, purpose and		



Rice Milling & Processing Plant Operator (6- Months)


	procedure		
	1.8.2. Size / No. of Counter bore		
1.9.	Filing Exercise – I	1	4
	1.9.1. Filing of Channel		
1.10.	Marking Exercise	1	4
	1.10.1. Flat Filing		
	1.10.2. Marking		
	1.10.3. Centre Punching		
1.11.	Filing Exercise – II	1	7
	1.11.1. Flat Filing		
	1.11.2. Square Filing		
1.12.	Sawing Exercise	1	7
	1.12.1. Sawing and Square Filing within size		
1.13.	Sheet Metal Box – I		
	1.13.1. Filing	2	7
	1.13.2. Marking		
	1.13.3. Shearing		
1.14.	Drilling Exercise	2	7
	1.14.1. Marking		
	1.14.2. Center Punching		
	1.14.3. Drilling		
	1.14.4. De burring		
2.	Basic Electrical Theory and AC Motors & Contactors		
	2.1. Introduction to electrical Theory	½	-
	2.2. Basic Mathematics & Basic Electrical Units	½	1
	2.3. Introduction to Electrical Instruments & Equipment	½	1
	2.4. Electrical Symbols	½	1
	2.5. Ohm's Law	½	1
	2.6. Series circuit	½	1
	2.7. Parallel circuit	½	1
	2.8. Combined series and parallel circuit	½	2
	2.9. Work, power and electrical energy	½	2
	2.10. Earthing	½	4
	2.11. Volt meter	½	4
	2.12. Ampere meter	1	4
	2.13. Multi-meter	1	4
	2.14. Power Measurement (Direct & Indirect Method)	1	6
3.	Paddy , Rice Varieties, Identification and Lab Testing	1	8
	3.1. Paddy Varieties		

Rice Milling & Processing Plant Operator (6- Months)

	3.1.1 Basmati Varieties	1	-
	3.1.2 Non-Basmati Varieties	2	-
	3.1.3 Other Varieties	2	-
	3.2. Procedure For Testing Of Paddy For Purchase	1	8
	3.3. Paddy Testing And Lab Analysis	1	10
	3.3.1 Moisture	1	10
	3.3.2 Trash, Dirt/ Inert Matter And Brokens	1	10
	3.3.3 Damaged/Discolored And Pecks	1	10
	3.3.4 C.V/Red Rice/Other Basmati Varieties And Shrivelled Grains		10
	3.4. Identification Of Varieties Of Basmati & Non-Basmati Rice	8	8
4.	Rice Milling		
	4.1. Sun Drying of Paddy	1	4
	4.2. Mechanical Drying of Paddy.	1	4
	4.3. Cleaning, Drying & Storage of Paddy.	1	4
	4.4. Processing, Husking & Milling Of Paddy.	1	4
	4.4.1. Paddy/Rice Cleaner	1	
	4.4.2. Mechanical Conveying Equipment for Transfer and Movement of Paddy and Rice from One Machine to Another.		
	4.4.3. De-Stoner	1	8
	4.4.4. Husker/Huller	1	8
	4.4.5. Husk Separator	1	4
	4.4.6. Husk Separator	1	8
	4.4.7. Paddy Separator	1	4
	4.4.8. Width Grader Oversize	1	8
	4.4.9. Whitener	1	8
	4.4.10. Polisher	1	8
	4.4.11. Sifter	1	4
	4.4.12. Length Grader	1	8
	4.4.13. Width Grader Under - Sized	1	4
	4.4.14. Cyclones	1	2
	4.4.15. Packing Bins	1	2
	4.4.16. Packing Bins	1	6
	4.4.17. Electrical Control Panel	1	2
	4.4.18. Color Sorting Machine	1	2
	4.4.19. Packing Machines	1	2
	4.5. Pakistan Standard Specification For Rice – Ps 3342.	8	-
	4.6. Rice Fumigation.	1	-
	4.7. Definitions Of Terms Used For Rice And Paddy	4	-
5.	Rice Parboiling (Developing Sela Rice)		
	5.1. Introduction	5	-
	5.2. Technique of soaking in water	10	-

Rice Milling & Processing Plant Operator (6- Months)

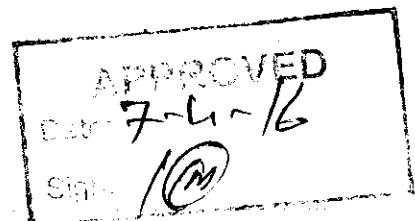
	5.3. Steam Treatment (Gelatinization)	14	
	5.4. Drying of Paddy	10	
	5.5. Husking and Bran Removing	10	
	5.6. Abrasive Polishing/ Whitening	10	
	5.7. Resultant amber color rice	5	
6.	Practical on the Job Training in a Rice Mill as Trainee	-	50
	6.1. Lab Analysis & Testing of Paddy	-	180
	6.2. Rice Milling / Operation	-	50
	6.3. Rice Parboiling		
Total		136	544

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Date: 7-4-16
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LIST OF PRACTICALS

Rice Milling & Processing Plant Operator

1. Draw the layout of the workshop
2. Observe the safety precautions in the workshop
3. Use Steel Rule, Calipers and Vernier Calipers
4. Identify the measuring faults
5. Apply the care and maintenance of measuring tools
6. Use the common marking tools (such as scribes, steel rules, centre punch)
7. Use different types of files
8. Practice on different types of SAW
9. Practice on various jobs using different types of drills
10. Practice on various jobs using Reamers
11. Practice on jobs for counter sinking and boring
12. Understand the basic electrical theory and basic electrical units
13. Understand Electrical instruments, equipment and symbols
14. Practice for Ohm's Law, Series and Parallel Circuit
15. Practice for Combined Series and Parallel Circuit
16. Understand Work, Power and Electrical Energy
17. Practice for Earthing an Electrical Equipment
18. Practice for using Volt meter, Ampere meter and Multi meter
19. Practice on Power measurements methods
20. Identify the Paddy Varieties
21. Learn the procedure for testing of Paddy for purchase
22. Practice on Paddy Testing and Lab Analysis
23. Identification of Basmatti and Non Basmatti Hi Varieties
24. Practice on Sun drying and Mechanical drying of Paddy
25. Practice on Paddy Rice Cleaner
26. Practice on De-Stoner of Paddy
27. Practice on Huskier, Husk separator, Paddy separator and width Grader
Oversize
28. Practice on Cyclones and Packing Bins
29. Practice on Electrical Control Panels
30. Practice on Color Sorting Machines
31. Practice on Packing Machines
32. Practice on the Job Training in a Rice Mill as Trainee




SCHEME OF STUDIES
Functional English

S.No	Main Topics	Theory Hours	Practical Hours	Total Hours
1.	Use of past indefinite tense	2	6	8
2.	Use of 'was' 'were' ' questions and negatives	3	6	8
3.	Explaining a situations/ analysis	2	6	8
4.	Communication in writing	2	6	8
5.	Comprehension	1	6	7
6.	Application/ C.V.	1	6	7
7.	Dialogues	1	9	10
8.	Understand vocabulary	1	3	4
9.	Writing complaints/ answers to complaints	1	9	10
10.	Interviews	2	7	10
Total		16	64	80

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DETAIL OF COURSE CONTENTS
Functional English

S. No	Detail of Topics	Theory Hours	Practical Hours
1	Use of past indefinite tense 1.1 Describing past events	2	6
2	Use of 'was' 'were' ' questions and negatives	2	6
3	Explaining a situations/ analysis 3.1 Making a plan 3.2 Visiting factory area 3.3 Giving justifications	2	6
4	Communication in writing 4.1 Asking for list of stationery items 4.2 Submitting report of performance of team of technicians 4.3 Submitting joining report	2	6
5	Comprehension: practice sets	2	6
6	Job application/C.V.	1	6
7	Dialogues	1	9
8	Understand vocabulary	1	3
9	Writing complaints/ answers to complaints	1	9
10	Interviews	2	7
Total		16	64

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LIST OF PRACTICALS
Functional English

S. No.	Practical
1.	Group discussion
2.	Interviews
3.	Role play

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SCHEME OF STUDIES
I.T Fundamentals

S. No	Main Topics	Theory Hours	Practical Hours	Total Hours
1.	Introduction to Computers	2	6	8
2.	Typing - Microsoft Word	4	14	18
3.	Internet & Electronic Mail	2	12	14
Total		8	32	40

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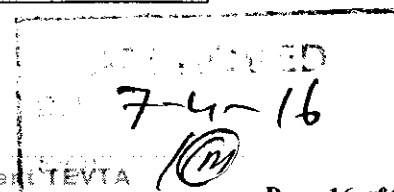
DETAIL OF COURSE CONTENTS
I.T Fundamentals

S. No	Detail of Topics	Theory Hours	Practical Hours
1	Introduction to Computers 1.1 What is a computer- Definition, functions and general features? 1.2 What is Hardware – 1.2.1 Computer parts and units 1.2.1.1 Input Unit - Keyboard, Mouse etc. 1.2.1.2 Central Processing Unit 1.2.1.3 Output Unit 1.3 What is Software – 1.3.1 Electronic Parts of a Pc it is 1.3.1.1 Software and Its types 1.3.1.2 System Software, Application Software 1.4 Working with windows Operating System 1.4.1 How does windows desktops work? 1.5 What are the Icons, Shortcuts and other graphic, 1.5.1 How to see computer contents on different drives etc	2	6
2	Typing and Word processing (MS Word) 2.1 Proper way of typing correct and speedy - getting familiar with the keys 2.2 Where to type in computer? How to save a file? How to get it back? Where to find your saved work? 2.3 How to get it printed?	4	14
3	Emailing and Internet Surfing 3.1 How to go to Internet, what is required for an internet connection etc. 3.2 How to use email? How to search on web? Etc 3.3 How to make new email account, login and logout an email account etc.?	2	12
Total		8	32

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LIST OF PRACTICALS
I.T Fundamentals

S. No.	List of Practical
1.	Turn On/Off and setting of power supply
2.	Accessing The Desktop
3.	Using of Icons and Shortcuts
4.	Setting / customizing the desktop
5.	Viewing the contents of computer – Directory
6.	Setting the view of a folder
7.	Copying, Deleting and Moving Files in a folder
8.	Working with different Applications
9.	Opening MS Word for typing
10.	First lesson of Typing A S D F
11.	Second Lesson of typing J K L ;
12.	Third Lesson U I O P
13.	Fourth Lesson R E W Q
14.	Fifth Lesson N M , .
15.	Sixth Lesson V C X Z
16.	Seventh Lesson All letter using R index Finger
17.	Eighth Lesson All letter using L index Finger
18.	Formatting in MS Word Bold, Italic etc.
19.	Page Setting/ Page Layout
20.	Using Internet
21.	Opening Email, making new account
22.	Sending Receiving Emails
23.	Downloading and uploading attachments etc.



LIST OF LABS
(6-Months)

Rice Milling & Processing Plant Operator

- Mechanical (General Lab)
- Electrical (General Lab)
- Rice Milling Lab
- Rice Polishing Lab

I.T Fundamentals

- Computer Lab


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LIST OF TOOLS, EQUIPMENT & MACHINERY
FOR CLASS OF 25

Name of Trade	Rice Milling & Processing Plant Operator
Duration of Course	(6-Months)

Main Machinery for Milling & Paddy Cleaning

S. No.	Name of Item /Equipment	Quantity
1.	Paddy/ Rice Cleaner	1 No.
2.	Intake Hopper	1 No.
3.	Elevators	1 No.
4.	De-Stoner	1 No.
5.	Husker	1 No.
6.	Husk Separator	1 No.
7.	Paddy Separator	1 No.
8.	Magnets	1 No.
9.	Width Grader, Oversize	1 No.
10.	Whiteners	1 No.
11.	Polishers	1 No.
12.	Sifters	1 No.
13.	Length Graders	1 No.
14.	Width Graders Undersize	1 No.
15.	Cyclones	1 No.
16.	Packing Bins	1 No.
17.	Electric Control Panel	1 No.
18.	Color sorting Machine	1 No.
19.	Packing machines	1 No.

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Rice Milling & Processing Plant Operator (6- Months)

Laboratory Equipment

S. No.	Name of Item /Equipment	Quantity
1.	Table Paddy Cleaner	3 Nos.
2.	Table Paddy Huller/Husker	3 Nos.
3.	Table Whitener	3 Nos.
4.	Table Polisher	3 Nos.
5.	Grader	3 Nos.
6.	Heater (Double Hot Plate)	3 Nos.
7.	Hot Air Oven	2 Nos.
8.	Sieves	10 Nos. of various size each
9.	Moisture Meter	3 Nos.
10.	Whiteness Meter	1 Nos.
11.	Grain Meter for length measurement	3 Nos.
12.	Sample Divider	3 Nos.
13.	Slates	25 Nos.
14.	Beakers	6 Nos.
15.	Calculator	3 Nos.
16.	Mirror strips	25 Nos.
17.	Top Loaded Scales	3 Nos.
18.	Probes (small ,medium & large)	5 each size
19.	Plates	12 Nos.
20.	Sieve to remove water	3 Nos.
21.	Thermometers	3 Nos.
22.	Saucepan with Lid	3 Nos.
23.	Sampling Jars / Cylinders	3 Nos.
24.	Desicator	3 Nos.
25.	Spoons	6 Nos.
26.	Grinder etc.	3 Nos.
27.	Phosphine Gas Meter	1 Nos.

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Rice Milling & Processing Plant Operator (6- Months)

Tools for Operation of Plant

S. No.	Name of Item /Equipment	Quantity
1.	Tool Box	5 Nos.
2.	Screw Wrench 10" & 12"	5 Nos. each
3.	Screw Driver 12"	5 Nos.
4.	Screw Driver Philip head 9"	5 Nos.
5.	Pipe Wrench	5 Nos.
6.	Spanner Set mm to 24'	5 Nos.
7.	Hammer 1Lb, 2 Lbs	5 Nos. each
8.	Cold Chisest	5 Nos.
9.	Measuring Tape 2 M	5 Nos.
10.	Center Punch	5 Nos.
11.	Hole Punch 8 mm, 10 mm	5 Nos. each
12.	Grip Pliers	5 Nos.
13.	Helmet	5 Nos.
14.	Goggles	5 Nos.
15.	Gloves	5 Nos.
16.	File Flat 10"	5 Nos.
17.	File Round 3"& 8"	5 Nos. each
18.	Hack Saw Frame with Blade	5 Nos.
19.	Nose Pliers	5 Nos.
20.	Flout Pliers	5 Nos.

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COMPUTER LAB

S. No.	Tools / Equipment	Quantity
1.	Desktop computer (Specifications as per notification issued by MIS Section, TEVTA)	26 (1 for each student & 1 for the teacher)
2.	Printer (Laser)	01
3.	Scanner	01
4.	Internet Connection (At least 1 MB speed)	01
5.	UPS 10 KVA	01
6.	Air Conditioner 1 ½ Ton	02
7.	Multimedia Projector	01

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LIST OF CONSUMABLE MATERIALS

FOR CLASS OF 25

(6-Months)

Rice Milling & Processing Plant Operator

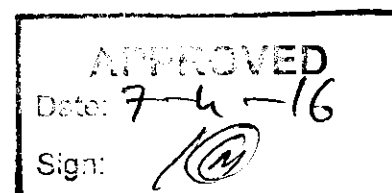
S.No	Material	Quantity
1	Paddy (Rice)	As per Requirement
2	Grease and Lubricants	As per Requirement
3	Bearings	As per Requirement
4	Electrical Switches & Wires	As per Requirement
5	Coal	As per Requirement
6	Wood	As per Requirement

Functional English

S. No.	Item	Quantity
1.	Stationary	As per requirement
2.	Board Markers	As per requirement

I.T Fundamentals

S. No.	Item	Quantity
1.	Printing Paper	As per requirement
2.	Printer Toner	As per requirement



MINIMUM QUALIFICATION OF INSTRUCTOR

Rice Milling & Processing Plant Operator

- B.Sc. Mechanical Engg. With 2-Years relevant Industry /Teaching Experience

OR

- D.A.E in Mechanical Technology with 5 years relevant experience in the relevant field.

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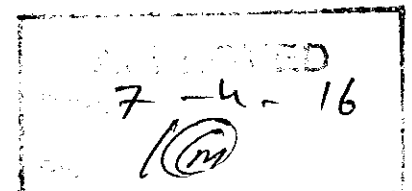
- Certificate of Rice Milling Plant Operator (G-II Level) with 10 years experience in the relevant field.

Functional English

- M.A (English)

I.T Fundamentals

- DAE CIT/ BCS from HEC recognized university



REFERENCE BOOKS

Rice Milling & Processing Plant Operator

1. Hand Book on Rice Varieties in Pakistan by Ch. Mushtaq Ahmed, Director Rice Research Institute, Kala Shah Kaku
2. Rice Testing Methods and Equipment, (Agriculture Services Bulletin), Food & Agriculture Organization of U.N.1973
3. Manual for Identification of Rice varieties by Haroon Kasam (Late), Former Vice Chairman, R.E.A.P
4. Pakistan Standard –Specification for Rice (PS:3342-1993)

Functional English

1. High School English Grammar By Wren & Martin
2. Oxford English Grammar

I.T Fundamentals

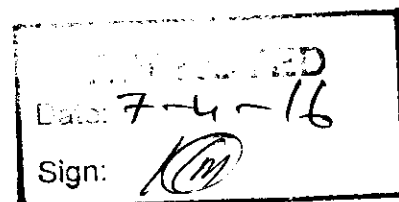
1. Introduction to Computer by Peter Norton
2. 2007 Microsoft® Office System Step by Step by Joyce Cox, Steve Lambert and Curtis Frye
3. Internet and E-mail with Windows 7 by Studio Visual Steps

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EMPLOYABILITY OF PASS OUTS

The pass outs of this course may find job / employment opportunities in the following areas / sectors: -

- Rice Industry Mills & Factories in various cities



List of Trade Related Jargon

- Paddy
- Repair
- Basmati
- Kernal Basmati
- File
- Bore
- Ream
- SAW
- Drill
- Soaking
- Steam Treatment
- Color Sorting Machine
- Rice Parboiling
- Whitening
- Husker
- Polisher
- Fumigation

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Curriculum Revision Committee

1. **Engr. Munir Hussain,**
Chief Instructor,
GCT Sahiwal

2. **Mr. Saleem Haider,**
Agriculture Officer,
PGICA Chak-5, Faiz, Multan

Convener

Member

