BANGLADESH TECHNICAL EDUCATION BOARD

Agargaon, Dhaka-1207.

4-YEAR DIPLOMA IN TEXTILE ENGINEERING CURRICULUM
COURSE STRUCTURE & SYLLABUS

(PROBIDHAN-2022)

WET PROCESSING
TECHNOLOGY CODE: 13

3rd SEMESTER

(Effective from 2021-2022 Academic Sessions)

DIPLOMA IN TEXTILE ENGINEERING

COURSE STRUCTURE
PROBIDHAN-2022

WET PROCESSING (13)

Wet Processing (13) **3rd Semester**

Sl.	Subject		Period			Marks Distribution						
						Theory Assessment			Practical Assessment			Grand Total
	Code	Name	T	P	C	Continuous	Final	Total	Continuous	Final	Total	
1	21131	Natural Textile Fibres	2	0	2	40	60	100	-	-	-	100
2	21132	Yarn Manufacturing-I	3	3	4	60	90	150	25	25	50	200
3	21231	Fabric Manufacturing-I	3	3	4	60	90	150	25	25	50	200
4	25831	Business Communication	2	0	2	40	60	100	-	-	-	100
5	25916	Statistics	2	0	2	40	60	100	-	-	-	100
6	26711	Basic Electricity	3	3	4	60	90	150	25	25	50	200
7	28511	Computer Office Application	0	6	2	-	-	-	50	50	100	100
8	27011	Basic Workshop Practice	0	3	1	-	-	-	25	25	50	50
Total			**15**	**18**	**21**	**300**	**450**	**750**	**150**	**150**	**300**	**1050**

DIPLOMA IN TEXTILE ENGINEERING
SYLLABUS

PROBIDHAN-2022
WET PROCESSING (13)
THIRD SEMESTER

Subject Code	Subject Name	Period Per Week		Credit
21131	NATURAL TEXTILE FIBRE	T	P	C
		2	0	2

Rationale	Textiles are the second basic needs of human being. Clothing and textiles represent social customs and culture. In addition, textiles also impart comfort ability and aristocracy. As the characteristics of fibre properties directly related to the performance and care of textile product, therefore knowledge of textile natural fibre is essential for Diploma in Textile Engineering students. Furthermore, use of natural textile fibre has been increasing due to its eco friendliness, breathability and comfortability. Textile natural fibre are the basic elements of textile processing. Knowledge of natural textile fibre is required to obtain preliminary knowledge about their properties. It will also enhance clear idea about their usages in different fields of textiles.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to:** • Describe different natural fibre of Textiles • Identify various types of natural fibre • Classify various types of natural fibre • Synthesize the physical and chemical properties of natural fibre • Apply knowledge in the field of Textiles.

Detailed Syllabus (Theory)

SL No.	Topics with Contents	Period (1 class)	Final Marks
1	**Introduction to Textile Fibres** 1.1 Define fibre 1.2 Define Textile fibre 1.3 Describe the construction model of textile fibre 1.4 Distinguish between fibre and textile fibre 1.5 Classify textile fibre 1.6 State the properties of textile fibre.	2	4
2	**Cotton Fibre** 2.1 Describe the harvesting process of cotton fibre 2.2 Define grading 2.3 Explain different grading of cotton fibres 2.4 Mention the points to be considered before grading 2.5 Define ginning 2.6 Classify ginning 2.7 Describe different types of ginning process with sketch 2.7 Explain the morphological diagram of cotton fibre 2.8 Explain the chemical structure and chemical composition of cotton fibre 2.9 Describe the physical and chemical properties of cotton fibre 2.10 Mention the defects of cotton fibre.	6	10
3	**Jute Fibre** 3.1 Define bast fibres 3.2 Classify jute fibre based on growing area in Bangladesh. 3.3 Explain the morphological diagram of jute fibre 3.4 Explain the chemical structure and chemical composition of jute fibre 3.5 Describe the retting process of jute fibre 3.6 Discuss the grading of jute fibre 3.7 Explain the effect of lignin in jute fibre 3.8 Mention the defects and causes of jute fibre 3.9 Describe the physical & chemical properties of jute fibre 3.10 Mention the end uses of jute fibre.	6	10
4	**Flax Fibre** 4.1 Describe the historical background of flax fibre 4.2 Discuss the harvesting and retting of flax fibre 4.3 List the points to be considered before grading 4.4 Mention the defects and causes of flax fibre. 4.5 Classify flax fibre 4.6. State the chemical composition of flax fibre 4.7. Describe the physical & chemical properties of flax fibre 4.8 Mention the end uses of flax fibre.	3	5

5	**Hemp Fibre** 5.1 Describe the harvesting and retting process of hemp fibre 5.2 Classify hemp fibre 5.3 Mention the chemical composition of hemp fibre 5.4 Describe the physical & chemical properties of hemp fibre 5.5 Mention the end uses of hemp fibre.	**2**	**5**
6	**Sisal and Pineapple Fibre** 6.1 State characteristics of sisal fibre 6.2 Mention the chemical composition of sisal fibre 6.3 Describe the physical and chemical properties of sisal fibre 6.4 Mention the end uses of sisal fibre 6.5 State Characteristics of pineapple fibre 6.6 Discuss the chemical composition of pineapple fibre 6.7 Explain the physical and chemical properties of pineapple fibre 6.8 Mention the application of pineapple fibre.	**2**	**5**
7	**Banana Fibre** 7.1 State the chemical composition of banana fibre 7.2 List the physical properties of banana fibre 7.3 Mention the end uses of banana fibre.	**1**	**2**
8.	**Coir Fibre** 8.1 Define Coir 8.2 Discuss the extraction process of Coir Fibre 8.3 Mention the chemical composition of coir fibre 8.4 Describe the physical properties of coir fibre 8.5 Describe the Product of Coir fibre 8.6 Mention the end uses of coir fibre.	**1**	**2**
9	**Wool Fibre** 9.1 Describe the Collection process of wool fibre 9.2 State the chemical composition of wool fibre 9.3 Classify wool fibre 9.4 Mention the physical and chemical properties of wool fibre 9.5 Mention the grading of wool fibre 9.6 Mention the end uses of wool fibre.	**5**	**9**
10	**Silk Fibre** 10.1 Describe the historical background of silk fibre 10.2 Describe the production process of silk fibre 10.3 Classify silk fibre 10.4 Mention the chemical composition of silk fibre 10.5 List the physical & chemical properties of silk fibre 10.6 Differentiate between wool and silk fibre 10.7 Mention the end uses of silk fibre.	**4**	**8**
	Total	**32**	**60**

Necessary Resources (Tools, Equipment and Machinery):

1	**Multimedia Class Room**	

Recommended Books:

SL No.	Book Name	Writer Name	Publisher Name & Edition
1	Textile science	E.P.G Gohl	
2	Textile fibre of fabric	Bernard P. Corbman	
3	Textile fibres (BTEB)	Engr.Md. Mohibul Islam	
4	Natural Fibres	Dr. Abu Bakr Siddique & Dr. Hosne Ara Begum	Books Fair Publications
5	Handbook of textile Fibre	J Gordon Cook, Vol.1-Natural Fibre	
6	Fibre Science and Technology	A. Nakamura	

Participants List:

SL No.	Name	Designation	Signature
1	Mr. A.K.M Fazlul Hoque	Principal (Retired) Textile Engineering College, Noakhali	
2	Mr. Hasan Mahmud	Lecturer (Technical), Textile Engineering College, Noakhali	
3	Mr. Md. Abu Taleb Chowdhury	Fibre Technologist, Cotton Development Board	
4	Mst. Salma Akhter	Attached officer (BTEB)	
5	Md. Nurul Amin Shamim	Chief instructor, I-TEIT	
6	Mr. Md. Shahab Uddin	Student of DUET	

DIPLOMA IN TEXTILE ENGINEERING

SYLLABUS

PROBIDHAN-2022

WET PROCESSING (13)

Subject Code	Subject Name	Period Per Week		Credit
21132	YARN MANUFACTURING-I	T	P	C
		3	3	4

Rationale	This subject has been designed for the students of Diploma in Textile Engineering. After completion of this subject, the students will be able to acquire knowledge about different processes and products of cotton from Blow-room to Drawing process. The aim of this course is to make the student familiar with the process sequences, mixing/blending, opening & cleaning, functioning, waste control and operational techniques used in Blow-room, Carding & Draw Frame and their proper utilization in the field of Cotton Yarn Manufacturing. More emphasis will be given on practical aspect rather than theoretical aspect. Student will also be able to learn on Jute Softening, Carding which are part of Jute Yarn Manufacturing process.
Learning Outcome (Theoretical)	**After completion of the subject, students will be able to:** - Identify and classify various types of Yarn Manufacturing. - Describe the opening & cleaning, blending & mixing in the Blow-room. - Describe the working principle of Blow-room. - Express carding actions, card clothing, grinding, mounting, faults & remedies of carding. - Describe the working principle of Carding - Explain drawing, drafting, roller slip, drafting zone, roller setting, stop motion, wastages & faults. - Describe the working principle of Draw Frame. - Describe the Jute grading & softening. - Prepare emulsion for Jute fibre. - Define batch & batching. - Describe the working procedures of softener & spreader machine. - Calculate draft, speed & production of related sections.
Learning Outcome (Practical)	**After undergoing the subject, students will be able to:** - Point out different parts of bale opener, step cleaner & porcupine beater. - Observe the lab forming/chute feed system. - Observe the operation & actions of Carding Machine of Cotton fibre. - Perform the operation & drafting system of Draw Frame for Cotton fibre. - Prepare emulsion by emulsion plant for Jute fibre. - Demonstrate the Jute Softening Machine. - Perform the operation & actions of Breaker Card & Finisher card.

Detailed Syllabus (Theory)

SL	Topics with Contents	Class	Final

No.		(1 Period)	Marks
1	**Basic Concept of Spinning** 1.1 Define spinning. 1.2 State the short staple & long staple spinning. 1.3 Distinguish between short staple and long staple spinning. 1.4 List the name of different spinning systems for short & long staple spinning. 1.5 Mention the process flow chart of carded & combed yarn. 1.6 Define bale management system. 1.7 State the process flow chart for production of yarns from Wool & Silk. 1.8 Define mixing & blending. 1.9 Discuss different types of mixing and blending. 1.10 Differentiate between mixing & blending.	**3**	**7**
2	**Blowroom** 2.1 Define Blowroom. 2.2 Mention the objectives of Blowroom. 2.3 State the typical sequences of Blowroom machinery. 2.4 Describe the basic operations involved in Blowroom line. 2.5 Explain the conventional Blowroom line. 2.6 Discuss the modern Blowroom lines. 2.7 List the objectives of different opening & cleaning machinery. 2.8 Illustrate the working principles of step cleaner, porcupine beater, mono cylinder cleaner, saw toothed beater & ERM cleaner. 2.9 Define grid bar. 2.10 List the objectives of grid bar.	**4**	**6**
3	**Mixing & Blending Machinery in Blowroom** 3.1 Mention the objectives of mixing & blending machinery. 3.2 List the conventional mixing & blending machines 3.3 List the modern mixing & blending machines. 3.4 Describe the working principles of lap forming machine. 3.5 Discuss the lap length motion, knock off mechanism of lap forming machine. 3.6 Mention the uses of bypass system of Blowroom. 3.7 State the foreign fiber separator, contamination separator, metal extractor & fire protecting device used in Blowroom. 3.8 Mention the setting points and effects of changing of Blowroom machines.	**3**	**5**
4	**Equipment and parameters in Blowroom** 4.1 Illustrate the chute feed system. 4.2 Explain the piano feed motion. 4.3 Express the different Blowroom wastages. 4.4 Discuss waste disposal unit used in Blowroom.	**3**	**7**

	4.5 Discuss the causes and remedies of Blowroom faults. 4.6 Solve the problems related to machine efficiency, cleaning efficiency, lap length, lap hank, beater speed & production of Blow-room.		
5	**Basic Aspects of Carding** 5.1 Define Carding. 5.2 Mention the objectives of Carding. 5.3 Classify Carding machinery. 5.4 Mention the main parts of roller Carding Machine. 5.5 Explain the feeding system in Carding. 5.6 Describe the working principle of lap feed or chute feed revolving flat card. 5.7 Define card setting. 5.8 Point out the setting points of Carding Machine. 5.9 Explain "Carding is the heart of Spinning".	**3**	**5**
6	**Carding, Stripping & Doffing in Carding Section** 6.1 Define stripping & doffing. 6.2 Describe the actions involved in Carding machine. 6.3 State card clothing. 6.4 Interpret the types of card clothing. 6.5 Distinguish between flexible & metallic wire card clothing. 6.6 State the necessity of stripping. 6.7 Mention the types of stripping. 6.8 Explain the procedure of stripping. 6.9 Discuss the causes and remedies of Carding faults.	**4**	**7**
7	**Grinding, Mounting, Card Waste & Production Calculation in Carding** 7.1 Discuss the necessity of grinding and mounting. 7.2 Describe the methods of grinding. 7.3 Distinguish between horse roll and long roll grinding. 7.4 State the card wastages. 7.5 Mention the types of card wastages. 7.6 Explain the waste control techniques in Carding machine. 7.7 Discuss different change points and effect of changing in Carding. 7.8 Calculate sliver count, draft, speed and production of Carding Machine.	**4**	**5**
8	**Basic Concepts of Draw Frame** 8.1 Define Drawing, Doubling & Drafting. 8.2 State the functions of Draw Frame. 8.3 Mention the main parts of Draw Frame. 8.4 Discuss the features of conventional & modern Draw Frame. 8.5 Illustrate the different drafting systems. 8.6 Explain the draft distribution in Draw Frame. 8.7 Define roller slippage. 8.8 Explain the drafting wave.	**3**	**7**

9	**Drafting Zone, Roller Setting, Stop Motion & Autoleveler of Draw Frame** 9.1 Discuss drafting zone. 9.2 Mention the various types of drafting system. 9.3 State the functions of top & bottom rollers in the drafting zone. 9.4 Explain the types of roller weighting (pressure) in Draw Frame. 9.5 Calculate the draft in Draw Frame. 9.6 Mention roller settings & considering factors for roller setting. 9.7 Describe the effect of roller setting on drawn sliver. 9.8 Define stop motion. 9.9 Mention the purposes of stop motions.	**3**	**7**
10	**Wastages, Faults & Production Calculation of Draw Frame** 10.1 Discuss the autoleveler and roller clearer. 10.2 State the functions of autoleveler & roller clearer. 10.3 Explain the wastages produced in Draw Frame. 10.4 Point out the factors affecting on waste control in Draw Frame. 10.5 Explain the causes & remedies of Draw Frame faults. 10.6 Mention the change points of Draw Frame and effects on changing. 10.7 Calculate the sliver hank, draft & production of Draw Frame.	**3**	**5**
11	**Basic aspects of Long Staple Spinning** 11. 1 Classify Jute fibres based on growing areas in Bangladesh. 11.2 Mention the process flow charts of Hessian & Sacking yarn. 11.3 Express the process flow charts of Hemp yarn & Sisal yarn. 11.4 State the standard moisture content and Moisture regain of Jute fibres. in various seasons. 11.5 Mention the types of yarn produced from Jute fibre. 11.6 Define grading, assortment, root cutting & hackling of Jute fibre. 11.7 Discuss the importance of Jute fibre grading. 11.8 Define Pucca & Kutcha grading of Jute fibre. 11.9 Mention the gradings of Jute fibre for local & export market. 11.10 State the factors considered for grading of Jute fibre.	**3**	**5**
12	**Assortment, Batch & Batching of Jute Fibre** 12.1 Discuss the importance of assortment of Jute fibre. 12.2 State the factors considered for assortment of Jute fibre. 12.3 Discuss the importance of root cutting of Jute fibre. 12.4 Describe the procedure of root cutting & hackling of Jute. 12.5 Predict the production cost of Jute cuttings. 12.6 Distinguish between batch and batching. 12.7 Mention the factors for batch selection. 12.8 List the types of batches for different Jute yarns. 12.9 Discuss the faults & remedies of batching. 12.10 Define & calculate godown price, issue price & batch price.	**3**	**7**

13	**Emulsion** 13.1 Define Jute batching emulsion. 13.2 Explain the function of emulsion ingredients. 13.3 State the objectives of Jute batching emulsion. 13.3 Estimate the ingredients percentage of emulsion for various quality of Jute yarn. 13.4 State the properties of Jute batching oil (Mineral oil & Vegetable oil) and emulsifying agent. 13.5 Mention the necessity of soft water in Jute emulsion. 13.6 Discuss the importance of applying emulsion on Jute fibre. 13.7 Describe the working principle of emulsion plants. 13.8 Mention the faults and the remedies of Jute emulsion.	**3**	**6**
14	**Jute Softening** 14.1 Define softening, dollop weight, clock length & piling of Jute fibre. 14.2 Mention the objectives of Jute fibre softening. 14.3 Describe the working procedures of Softener and Spreader Machines. 14.4 State reach, pitch and nip of spreader machine. 14.5 Mention the change points of Spreader Machine & their effects on changing. 14.6 Distinguish between Spreader & Softener Machine. 14.7 Discuss the functions of slower & faster chain in Spreader Machine. 14.8 Mention piling maturity time & temperature for different grades of Jute. 14.9 Discuss the defects & remedies of piling. 14.10 Calculate the clock length, dollop weight, draft, draft constant, sliver weight & production of Softening Machines.	**3**	**5**
15	**Jute Carding** 15.1 Define & classify the Jute Carding. 15.2 Explain the feeding system of Jute Carding. 15.3 Define half circle & full circle Carding Machine. 15.4 Describe the various card feeding systems. 15.5 Discuss the carding and stripping actions. 15.6 Illustrate the working procedures of Breaker Card & Finisher Card. 15.7 Mention the change points in Jute Carding machine and effects on changing. 15.8. Distinguish between Breaker Card & Finisher Card machines. 15.9 Discuss the faults & remedies of Breaker Card and Finisher Card. 15.10 Calculate clock length, dollop weight, speed and production of Breaker Card & Finisher Card.	**3**	**6**
	Total	**48**	**90**

Detailed Syllabus (Practical)

SL No.	Topics with Contents	Class (3 Period)	Continuous Marks

1	**Observe the Bale Plucker** 1.1 Point out the brand, origin & different parts of bale plucker. 1.2 Observe the operation techniques of bale plucker. 1.3 Maintain the record of performed experiment.	**1**	**2**
2	**Observe the Step Cleaner** 2.1 Point out the brand, origin & different parts of step cleaner. 2.2 Observe the operation techniques of step cleaner. 2.3 Calculate the speed of step cleaner. 2.4 Maintain the record of performed experiment.	**2**	**2**
3	**Observe the Porcupine Opener** 3.1 Point out the brand, origin & different parts of porcupine opener. 3.2 Observe the operation techniques of porcupine opener. 3.3 Calculate the speed of porcupine opener. 3.4 Maintain the record of performed experiment.	**2**	**3**
4	**Observe the Lap Forming/Chute Feed System** 4.1 Point out the brand, origin & different parts of lap forming/chute feed system. 4.2 Observe the operation techniques of lap forming/chute feed system. 4.3 Maintain the record of performed experiment.	**1**	**2**
5	**Observe the Carding Machine** 5.1 Point out the brand, origin & different parts of Carding machine. 5.2 Illustrate material path diagram of Carding machine. 5.3 Demonstrate the setting, gauging & wiring of Carding machine. 5.4 Calculate the Carding efficiency & production. 5.5 Maintain the record of performed experiment.	**2**	**3**
6	**Observe the Draw Frame** 6.1 Point out the brand, origin & different parts of Draw Frame. 6.2 Illustrate material path diagram of Draw Frame. 6.3 Demonstrate the drafting system of Draw Frame. 6.4 Calculate the Draw Frame draft, production & efficiency. 6.5 Maintain the record of performed experiment.	**2**	**3**
7	**Observe the Emulsion Plant** 7.1 Point out the brand, origin & different parts of emulsion plant. 7.2 Find out the storage of emulsion ingredients in emulsion plant. 7.3 Observe the emulsion supply system as per desired percentage. 7.4 Demonstrate the operation techniques of emulsion plant (OD-batch mixer/Pedal mixer & Agitator/Homogenizer/Colloid mills). 7.5 Maintain the record of performed experiment.	**1**	**2**
8	**Observe the Jute Softening Machine** 8.1 Point out the brand, origin & different parts of Jute Softener/ Spreader machine. 8.2 Demonstrate dollop weight & clock length. 8.3 Observe the operation techniques of Jute Softener/Spreader	**1**	**2**

	machine. 8.4 Calculate draft & production of Softening machine. 8.5 Maintain the record of performed experiment.		
9	**Study on Breaker Card** 9.1 Point out the Brand, origin & different parts of Breaker Card. 9.2 Observe the operation techniques of Breaker Card. 9.3 Demonstrate the setting, gauging & wiring of Breaker Card. 9.4 Calculate the Carding roller speed, production & efficiency. 9.5 Maintain the record of performed experiment.	**2**	**3**
10	**Observe the Finisher Card** 10.1 Point out the Brand, origin & different parts of Finisher Card. 10.2 Observe the operation techniques of Finisher Card. 10.3 Demonstrate the setting, gauging & wiring of Finisher Card. 10.4 Calculate the Carding roller speed, production & efficiency. 10.5 Maintain the record of performed experiment.	**2**	**3**
	Total	**16**	**25**

Necessary Resources (Tools, Equipment and Machinery):

SL No.	Item Name	Quantity (Pcs)
01	Tools for setting & maintenance purposes	1
02	Bale Plucker	1
03	Step Cleaner	1
04	Porcupine Beater	1
05	Mixing/Blending	1
06	Lap Forming/Chute Feed	1
07	Cotton Carding Machine	1
08	Cotton Draw Frame	1
09	OD Batch Mixer	1
10	Softener	1
11	Spreader	1
12	Breaker Card	1
13	Finisher Card	1

Recommended Books:

SL No.	Book Name	Writer Name	Publisher Name & Edition
01	Cotton spinning, V-I, II & III	W.S. Taggart	
02	Manual of cotton spinning, V-I, Ii, III, IV & V	Textile Institute	CRE Press
03	Introduction to the study of spinning	W.E. Morton	
04	The technology of short staple spinning	Klein, W.	1st
05	Yarn Manufacturing Engineering (Bangla)	Mohibul Islam	

06	Textile Calculation (Bangla)	A. K. M. Fazlul Haque	Prime Publication, 3rd
07	Hand book on jute, V-I	T.C. Ranjan	
08	Speed and production calculation of jute spinning machinery	Hafij Uddin Ahmed	
09	A Hand Book of Quality Control and Its Techniques (Jute), V-I & II	S.C Mital& A.P. Asopa	
10	Jute Fibre to Yarn	R.R. Atkinson	
11	Comprehensive study in modern jute technology, V-I & II	Santosh Kumer Paul-B. SC.	
12	Jute Spinning & Weaving Calculations	S-N-KAR.	
13	A Book for spinning solution	Engr. Bahar Uddin Titu	Hasi Prokashoni, 2021 (1st)
14	Related Books published by BTEB	--	--

Website References:

SL No.	Web Link	Remarks
01	https://textilelearner.net/	
02	https://garmentsmerchandising.com/	
03	https://www.fibre2fashion.com/	
04	https://www.textileschool.com/	
05	https://www.slideshare.net/	
06	https://textileapex.blogspot.com/	

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DIPLOMA IN TEXTILE ENGINEERING

SYLLABUS

PROBIDHAN-2022
WET PROCESSING (13)
THIRD SEMESTER

Subject Code	Subject Name	Period Per Week		Credit
21231	FABRIC MANUFACTURING-I	T	P	C
		3	3	4

Rationale	Fabric Manufacturing is one of the core areas of study in textile engineering. Fabric manufacturing involves the conversion fibres and yarns to the fabric. There are various types of fabrics e.g. woven, knitted, nonwoven and braids, etc. are used for various purposes such as dress materials, shopping bags, mosquito nets and bandages used by doctors etc. The whole fabric manufacturing studies have been covered in four courses e.g Fabric manufacturing-1, 2, and 3. The present course Fabric manufacturing -1 will deal with basic information about fabric formation that will help to build up a career in this sector as well as to study the subsequent courses of Fabric Manufacturing specialization.
Learning Outcome (Theoretical)	**After completion of the subject, students will be able to:** - Classify & explain the different types of Fabrics and properties of yarn for weaving and Knitting. - Describe the winding process with the working principles of the Cone, Pirn, and cop winding machine. - Explain the warping process with working principles of Sectional warping, beam, and ball warping. - Explain sizing, size ingredients & sizing process in Slasher sizing machine. - Define drafting, and denting along with drafting denting procedure. -Describe knit fabric and different Knitting elements of the Knitting machine.
Learning Outcome (Practical)	**After completion of the subject, students will be able to:** - Identify different types of fabric. - Identify different yarn packages used in winding in Cone, Spool, Pirn & Cop winding machines. - Demonstrate the working procedure of Cone, Spool, Pirn, & Cop winding machine - Observe the warping process involved in the industry. - Demonstrate the working procedure of the sectional, beam, and ball warping machine. - Choose different size materials and Organize yarn in Slasher sizing machine for sizing. - Observe the procedure of drafting and denting involved in the industry. -Point out the different knitted fabrics and Knitting elements used in the Knitting machine.

Detailed Syllabus (Theory)

SL No.	Topics with Contents	Class (1 Period)	Final Marks

1	**BASIC CONCEPTS OF WEAVING** 1.1 Classify the Fabric. 1.2 Describe the characteristics of different types of Fabrics. 1.3 Define Weaving, warp, and weft yarns 1.4 Mention the flow chart of the conventional and modern Weaving process. 1.5 Describe the Properties of yarn used for Weaving.	**5**	**7**
2	**WINDING PROCESS** 2.1 Define winding. 2.2 List the objectives of winding. 2.3 Classify the winding. 2.4 Illustrate the different types of yarn packages. 2.5 Describe different types of traversing motion. 2.6 Describe the different types of yarn guides & Tensioning devices. 2.7 Discuss the faults and remedies of winding.	**2**	**5**
3	**WINDING MACHINE** 3.1 Describe the working principle of cone winding machine. 3.2 Describe the working principle of Pirn winding machine. 3.3 Discuss the working principle of Cop winding machine. 3.4 Describe the working principle of Auto-coner. 3.5 Calculate the Production and efficiency of Winding. 3.6 Calculate the production and efficiency of Winding.	**2**	**5**
4	**WARPING PROCESS** 4.1 Define Warping. 4.2 Mention objectives of Warping. 4.3 Classify the warping processes. 4.4 Describe Creel, Head stock and Control device of Warping. 4.5 Describe the consequences of end breakage during warping. 4.6 Discuss the methods of improving quality of warping. 4.7 Discuss the faults and remedies in warping process. 4.8 Calculate the production and efficiency of warping processes.	**5**	**10**
5	**SECTIONAL WARPING MACHINES** 5.1 List the objectives of Sectional warping. 5.2 Describe the functions of different parts of sectional warping machine. 5.3 Describe the working principle of sectional warping machine. 5.4 Discuss the purpose of tapering of warp beam. 5.5 Discuss the faults and remedies in Sectional warping process. 5.6 Calculate the production and efficiency of warping processes.	**3**	**6**
6	**BEAM & BALL WARPING MACHINES** 6.1 List the objectives of Beam warping machine. 6.2 Mention the functions of different parts of Beam warping machine. 6.3 Describe the working principle of Beam warping machine. 6.4 List the objectives of Ball warping machine.	**3**	**8**

	6.5 Mention the functions of different parts of Ball warping machine. 6.6 Describe the working principle of Ball warping machine.		
7	**SIZING PROCESS** 7.1 Define sizing. 7.2 List the objectives of sizing. 7.3 Mention the different types of size ingredients. 7.4 Mention the functions of size ingredients. 7.5 Point out the factors to be considered for selection of size ingredients. 7.6 Mention the various size recipe for different types and count of yarn.	**4**	**8**
8	**SIZE PREPARATION FOR WARP** 8.1 Describe the size mixing and preparation procedure. 8.2 Explain the size pick-up percentage. 8.3. Describe the factors needs to be considered for size pick up. 8.4 Describe the different size recipe for different yarn count. 8.5 Mention the different types of faults & remedies of sizing. 8.6 Describe the relation between pick up percentage & weaving efficiency.	**4**	**6**
9	**SIZING MACHINE** 9.1 Describe different types of sizing machine. 9.2 Describe different parts and functions of sizing machine. 9.3 Describe the controlling parameters of a sizing machine. 9.4 Describe the features of modern sizing machines. 9.5 Describe the Drying methods of sized yarn. 9.6 Calculate the production and efficiency of sizing machine.	**3**	**6**
10	**DRAFTING & DENTING** 10.1 Define drafting. 10.2 Classify drafting. 10.3 Define denting. 10.4 Classify denting. 10.5 Discuss the procedure of drafting. 10.6 Discuss the procedure of denting. 10.7 Discuss the faults and remedies of drafting. 10.8 Discuss the faults and remedies of denting. 10.9 Define reed count & heald count. 10.10 Calculate the drafting & denting related problems.	**4**	**6**
11	**WARP KNOTTING** 11.1 Define warp knotting process. 11.2 Classify knotting process. 11.3 Describe the Tie up and Auto knotting. 11.4 Describe the working principle and controlling points of Auto knotting machine. 11.5 Describe the quick style change (QSC).	**2**	**3**

12	**BASIC CONCEPTS OF KNITTING** 12.1 Define Knitting. 12.2 Distinguish between Weaving and Knitting. 12.3 Discuss the history of Knitting. 12.4 Classify the Knitting process. 12.5 Classify the Knitting machine. 12.6 Distinguish between Warp and Weft Knitting. 12.7 Discuss the characteristics of Knitting fabric. 12. 8 Discuss the characteristics of Knitting yarn.	**3**	**7**
13	**KNITTING MACHINE** 13.1 Define Hand Knitting and Power Knitting. 13.2 Distinguish between Circular and Flat Knitting Machine. 13.3 Discuss the Single Jersey Fabric. 13.4 Discuss the Double Jersey Fabric. 13.5 Distinguish between Single Jersey and Double Jersey Fabric. 13.6 Define the Single Jersey machine. 13.7 Define the Double Jersey machine.	**4**	**6**
14	**ELEMENTS OF KNITTING MACHINE** 14.1 Describe Needle, Sinker, Cam, Needle gauge, Cylinder, Dial, and Jack of Knitting machine. 14.2 Classify Sinker. 14.3 Describe the function of Sinker. 14.4 Mention the types of Needles. 14.5 Describe the function of different types of needle. 14.6 Illustrate the types of Cams. 14.7 Mention the function of Cam. 14.8 Describe the knit, miss and tuck loops.	**4**	**7**
	TOTAL	**48**	**90**

Detailed Syllabus (Practical)

SL No.	Topics with Contents	Class (3 Period)	Continuous Marks
1	**OBSERVE DIFFERENT TYPES FABRICS FROM THE SWATCH** 1.1 Identify & point out the characteristic of woven fabric. 1.2 Identify & point out the characteristic of Knitted fabric. 1.3 Identify & point out the characteristic of Non-woven fabric. 1.4 Maintain the record of performed experiment.	**1**	**3**
2	**OBSERVE THE DIFFERENT PACKAGES USED IN WINDING PROCESS** 2.1 Identify and draw the Cone package. 2.2 Identify and draw the Pirn package. 2.3 Identify and draw the Cop package.	**1**	**2**

	2.4 Maintain the record of performed experiment.		
3	**OBSERVE DIFFERENT TYPES OF YARN GUIDES AND TENSIONING DEVICES IN WINDING PROCESS** 3.1 Identify the different type of yarn guides and tensioning devices. 3.2 Draw the different types of yarn guides and tensioning devices. 3.3 Maintain the record of performed experiment.	**1**	**2**
4	**OBSERVE THE YARN PATH OF DIFFERENT WINDING MACHINE** 5.1 Observe the yarn path of Cone Winding machine. 5.2 Observe the yarn path of Pirn Winding machine. 5.3 Maintain the record of performed experiment.	**1**	**2**
5	**OBSERVE YARN PATH DIAGRAM IN WARPING MACHINE.** 6.1 Observe the yarn path diagram of Sectional warping machine. 6.2 Observe the yarn path diagram of Beam warping machine. 6.3 Observe the yarn path diagram of Ball warping machine. 6.4 Maintain the record of performed experiment.	**3**	**3**
6	**DRAW THE DRIVING DIAGRAM OF DIFFERENT WARPING MACHINE** 8.1 Draw the driving diagram of sectional warping machine. 8.2 Draw the driving diagram of Beam warping warping machine. 8.3 Draw the driving diagram of Ball warping machine. 8.4 Maintain the record of performed experiment.	**1**	**2**
7	**DRAW DIAGRAM OF SLASHER SIZING MACHINE** 10.1 Identify the different parts of Slasher sizing machine. 10.2 Observe the yarn path through different parts of Sizing machine. 10.3 Maintain the record of performed experiment.	**2**	**2**
8	**OBSERVE THE PROCESS OF DRAFTING, DENTING & WARP KNOTTING MACHINE.** 11.1 Demonstrate the drafting process. 11.2 Demonstrate the denting process. 11.3 Demonstrate operation of warp knotting machine. 11.4 Maintain the record of performed experiment.	**2**	**3**
9	**IDENTIFY THE WARP AND WEFT KNITTED FABRIC FROM SWATCH.** 12.1 Identify the warp knitted fabric from swatch. 12.2 Identify the weft knitted fabric rom swatch. 12.3 Draw the looping diagram of warp knitted fabric. 12.4 Draw the looping diagram of weft knitted fabric. 12.5 Maintain the record of performed experiment.	**2**	**3**
10	**OBSERVE DIFFERENT ELEMENTS OF KNITTING MACHINE** 13.1 Observe and point out different elements of Knitting machine 13.2 Sketch of different elements of Knitting machine. 13.3 Observe and point out the function of different elements of Knitting machine. 13.4 Maintain the record of performed experiment.	**2**	**3**

		Total	**16**	**25**

Necessary Resources (Tools, equipment's and Machinery):

SL NO.	ITEM NAME	QUANTITY (PIECE/S)
01	Yarn package (Cone, Pirn, Cop)	120 pcs
02	Measuring scale, scissor, measuring tape	120 pcs
03	Counting/ Magnifying Glass	120pcs
04	Fabric Swatch (Knitted and Non-woven)	3 kg
05	Fabric Swatch (Woven)	120yds
06	Mini Cone Winding machine	2pcs
07	Mini Pirn Winding machine	2pcs
08	Mini Cop Winding machine	2pcs
09	Sectional Warping machine	1pcs
10	Beam Warping machine	1pcs
11	Ball Warping machine	2pcs
12	Slasher sizing machine	1
13	Reed	10 sets
14	Heald Shaft	10 sets
15	Empty warp Beam	5 pcs
16	Swatch card	120pcs
17	Warp Knitting machine	1pc
18	Circular Knitting	2pcs
19	Latch Needle	500pcs
20	Compound needle	500pcs
21	Bearded needle	500pcs
22	Different CAM (Knit, Tuck, Miss)	100pcs
23	Sinker	50pcs
24	Different Tensioning device	50pcs
25	Creel	1 set
26	Yarn for Knitting process	500 cone

Recommended Books:

SL NO.	BOOK NAME	WRITER NAME	PUBLISHER NAME & EDITION
01	Related Books published by BTEB		
02	Fabric manufacturing-1	Md. Abdul Khalique	
03	Fabric manufacturing-1	Engr.Momtaz Uddin	Prime Series
04	Hand book of weaving	Sabit Adanur, B.S;M.S;Ph.d	
05	Textile Sizing	Bhuvenesh C.Goswami	
06	Knitted clothing technology	Terry brackenburry	
07	Principles of Woven fabric & manufacturing	Abhijit Majumdar	
08	Lecture notes provided	Local expert	

Website References:

SL	WEB LINK	REMARKS
01	https://www.youtube.com/watch?v=F8D9H4fe-nc	
02	https://www.youtube.com/watch?v=8htQg-Gq-eM	
03	https://textilelearner.net/	
04	https://www.youtube.com/watch?v=HqDMTHQ6IiE	

Md. Abu Sayed
Junior Instructor (Tech)
Textile Institue, Natore.

Md. Atowar Hossain
Manager
Metro Knitting and dyeing
Narayangonj.

Md. Mahfujhur Rahman
Deputy Director (Tech)
Department of Textile
Dhaka.

Nalini Kumar Ghosh
Chief Instructor (Tech)
Textile Institue, Dinajpur.

Md. Nizam Uddin
Principle (Retd.)
Textile Institute, Khulna

PROBIDHAN-2022
WET PROCESSING (13)
THIRD SEMESTER

Learning Outcome	**After completion of this course, students will be able to** • Effective business communication. • Developing and delivering effective presentations. • Effective interpersonal communications. • Good time management. • Effective problem solving. • Acquiring knowledge of Information and Communication Technology. • Effective business report writing.			
Subject Code	**Subject Name**	**Period Per Week**		**Credit**
		T	**P**	**C**
25831	**Business Communication**	**2**	**0**	**2**
Rationale	Business communication plays a vital role in modern time. Business communication the process of sharing information between employees within and outside a company. Business communication is essential for success and growth of every organization. By studying this course students will be able to acquire knowledge on communication, Communication model and feedback, Types of communication, Formal and informal communication, Report writing, Methods of communication, effective listening, Essentials of communication, Office management and developed skills on delivered effective presentation, interpersonal communication, listening, report writing and business letter.			

Detailed Syllabus (Theory)

SL No.	Topics with Contents	Class (1 Period)	Final Marks
1	**Business communication** 1.1 Define business. 1.2 Define communication. 1.3 Define business communication. 1.4 Describe the scope of business communication. 1.5 Mention the Importance of communication in modern	**4**	**8**

	business. 1.6 State the objectives of business communication. 1.7 State the functions of business communication. 1.8 Discuss the principles of communication. 1.9 Mention the essential elements of communication process.		
2	**Communication model and feedback** 2.1 Define communication model. 2.2 State the Importance of communication model. 2.3 State the basic functions of Communication model. 2.4 Mention the Limitation of communication model. 2.5 Define feedback. 2.6 State the basic principles of effective feedback. 2.7 State the essential feedback to complete communication process.	**3**	**6**
3	**Types of communication** 3.1 Define channel of communication. 3.2 Mention the channel of communication. 3.3 State the different types of communication. 3.4 Distinguish between upward and downward communication. 3.5 State the merits and demerits of upward communication. 3.6 State the merits and demerits of downward communication. 3.7 Define two-way communication. 3.8 Explain-`Two-way communication is more important now a days. 3.9 State the merits and demerits of two-way communication.	**5**	**9**
4	**Formal and informal communication** 4.1 Define the formal and informal communication. 4.2 Describe the advantages and disadvantages of formal communication**.** 4.3 Describe the advantages and disadvantages of informal communication. 4.4 Distinguish between formal and informal communication.	**2**	**4**
5	**Methods of communication** 5.1 Define communication methods. 5.2 Discuss the various methods of communication. 5.3 Discuss the merits and demerits of oral communication. 5.4 Discuss the merits and demerits of written communication. 5.5 Difference between oral and written communication.	**3**	**6**
6	**Effective listening** 6.1 Define listening. 6.2 State the different types of listening. 6.3 State the importance of listening. 6.4 Define effective listening.	**3**	**5**

	6.5 Discuss the barriers to effective listening. 6.6 Discuss the way for overcoming barriers to effective listening.		
7	**Essentials of communication** 7.1 Discuss the essential qualities of good communication. 7.2 Discuss the barriers of communication. 7.3 Discuss the way for overcoming barriers to good communication.	**2**	**4**
8	**Report writing** 8.1 Define report, business report and technical report. 8.2 State the essential features of a good report. 8.3 Mention the factors to be considered while drafting a report. 8.4 State the components of technical report. 8.5 Distinguish between a technical report and general report. 8.6 Prepare a technical report.	**4**	**7**
9	**Office management** 9.1 Define office and office work. 9.2 State the characteristics of office work. 9.3 Define filing and indexing. 9.4 Discuses the method of filing. 9.5 Discuses the method of indexing. 9.6 Distinguish between filing and indexing.	**3**	**5**
10	**Business letter, official and semi-official letters** 10.1 Define then business letter, official and semi-official letters. 10.2 State the Importance of business letter. 10.3 Prepare Curriculum vitae (CV), Appointment letter, Joining letter, Leave letter, Complain Letter and Tender notice.	**3**	**6**
	Total	**32**	**60**

REFERENCE BOOK:

1. Business Communication and Report writing-Professor Murtaza Ali
২. Business Communication- মো: খালেকুজ্জামান ও মো: মোশারফ হোসেন চৌধুরী

ক্রমিক নং	নাম ও ঠিকানা	স্বাক্ষর
০১.	মৃদুল দেবনাথ, চীফ ইন্সট্রাক্টর (নন-টেক), কুষ্টিয়া পলিটেকনিক ইন্সটিটিউট, কুষ্টিয়া। ০১৭২১৫৮৩৮৫৮	
০২.	মাহমুদুল হক, চীফ ইন্সট্রাক্টর (নন-টেক), টেক্সটাইল ইন্সটিটিউট, টাংগাইল। ০১৬৭৯৮৯৪৩২৩	
০৩.	পলাশ কান্তি বড়ুয়া, ইন্সট্রাক্টর (নন-টেক), বাংলাদেশ সুইডেন পলিটেকনিক ইন্সটিটিউট, কাপ্তাই, রাঙ্গামাটি। ০১৫৫৪৩৩৫৯৫০	
০৪.	মোহাম্মদ আব্দুল কাইউম, কারিকুলাম বিশেষজ্ঞ (টেক্সটাইল), বাংলাদেশ কারিগরি শিক্ষা বোর্ড, ঢাকা। ০১৭১৬-১৯২৭৭৮	

DIPLOMA IN TEXTILE ENGINEERING

SYLLABUS

PROBIDHAN-2022

WET PROCESSING (13)

THIRD SEMESTER

Subject Code	Subject Name	Period Per Week		Credit
25916	STATISTICS	T	P	C
		2	0	2

Rationale	Statistics is the science of learning from data. Statistical knowledge helps an engineer use the proper methods to collect the data and helps to analyze that data correctly to get genuine information from that data. Statistics also help the users how to present summarized information from those data. Engineers have to solve lots of problems on a daily basis and in doing this they need to deal with information in the form of data. Therefore, after learning statistics the students will be able to solve the problems in their working place in a scientific and appropriate way. Apart from this, statistics also help to assume any future data correctly and scientifically**.**
Learning Outcome (Theoretical)	**After completion of this course, students will be able to:** • Describe the basic concept and principles of statistics. • Illustrate the data collection process and presentation method. • Use different graphical representations in various field of application. • Calculate the possible outcome in the field of various aspects. • Explain the application of statistics.

Detailed Syllabus (Theory)

SL No.	Topics with Contents	Class (1 Period)	Final Marks
1	**STATISTICS, POPULATION, SAMPLE AND SPSS** 1.1 Define Statistics. 1.2 Describe the Functions of Statistics. 1.3 Describe the Role of Statistics. 1.4 Define Population and Sample. 1.5 Distinguish between Population and Sample. 1.6 Explain the uses of Statistics in various fields. 1.7 Describe Statistical Package for the Social Science (SPSS) 1.8 Mention the advantages of SPSS in data analysis	2	04
2	**DATA, ATTRIBUTE AND VARIABLE** 2.1 Define Data, Attribute and Variable. 2.2 Classify Data. 2.3 State the Methods of Collection of Primary and Secondary data. 2.4 Distinguish between Primary and Secondary data. 2.5 Classify Variable. 2.6 Differentiate between Attribute and Variable. 2.7 Distinguish between Variable and Constant.	3	05
3	**FREQUENCY DISTRIBUTION AND GRAPHICAL REPRESENTATION** 3.1 Define Frequency, Frequency Distribution and Cumulative Frequency. 3.2 Describe Different Types of Frequency Distribution. 3.3 Define Histogram, Frequency Polygon, Bar Diagram, Ogive Curve, Pie Chart. 3.4 Illustrate the Types of Graphical Representation. 3.5 State the importance of graphically presenting data. 3.6 Solve the Problems related Histogram and Pie Chart. 3.7 Mention the procedure for the Preparation of Pie Chart. 3.8 Distinguish between Histogram and Frequency Polygon. 3.9 State the Importance of Frequency Polygon. 3.10 Explain the Procedure of Frequency Distribution.	5	10
4	**CENTRAL TENDENCY** 4.1 Define Central Tendency, Arithmetic Mean, Geometric Mean and Harmonic Mean. 4.2 Classify Measures of Central Tendency. 4.3 Discuss the Properties of Arithmetic Mean. 4.4 Calculate the Arithmetic Mean for Grouped, Ungrouped data and Unequal Frequency Distribution. 4.5 Mention the advantage and disadvantage of Arithmetic mean. 4.6 List the uses of Arithmetic mean and Geometric mean. 4.7 Proof AM≥GM≥HM. 4.8 Solve the Problems of Harmonic mean and Geometric mean.	4	07

5	**MEDIAN AND MODE** 5.1 Define Median and Mode. 5.2 State the formula of Median and Mode. 5.3 Explain the uses of Median and Mode. 5.4 Mention the merits and demerits of Median and Mode. 5.5 Distinguish between Median and Mode. 5.6 Solve the problems of Median and Mode.	**4**	**06**
6	**DISPERSION AND RANGE** 6.1 Define Dispersion and Range. 6.2 Illustrate the different types of Dispersion. 6.3 Discuss the Relative Measures of Dispersion. 6.4 Mention the uses of Dispersion and Range. 6.5 Solve the problems of Dispersion and Range.	**2**	**04**
7	**VARIANCE AND STANDARD DEVIATION** 7.1 Define Variance, Standard Deviation and Mean Deviation. 7.2 State the formula of Variance and Standard Deviation. 7.3 State the Co-efficient of Variation. 7.4 Discuss the uses of Standard Deviation and Variance. 7.5 Distinguish between Mean Deviation and Standard Deviation. 7.6 State the Quartile Deviation. 7.7 Solve the problems of Standard Deviation and Variance.	**4**	**08**
8	**CORRELATION AND REGRESSION** 8.1 Define Correlation and Regression. 8.2 Classify the Correlation. 8.3 State the Co-efficient of Correlation. 8.4 Proof $-1 \leq r \leq +1$ for Correlation. 8.5 Solve the problems of Correlation. 8.6 State the Regression equation. 8.7 Differentiate between Correlation and Regression. 8.8 Show the Regression equation of Y on X. 8.9 Show the Regression equation of X on Y.	**3**	**06**
9	**PROBABILITY, TEST OF HYPOTHESIS AND SURVEY** 9.1 Define Probability. 9.2 Define Binomial, Poisson and Normal Probability Distribution. 9.3 State the formula of Binomial, Poisson and Normal Probability Distribution. 9.4 Define test of Hypothesis, Null Hypothesis and Alternative Hypothesis. 9.5 Define Type-I error, Type-II error and Level of Significance. 9.6 Define survey and Census survey. 9.7 State the classification of survey. 9.8 Describe the methods of Census survey.	**2**	**04**
10	**MENSURATION** 10.1 Define Mensuration. 10.2 Mention the Principles of Mensuration 10.3 State the Units of Mensuration	**3**	**06**

	10.4 State the formula of Area of Square, Area of Rectangle, Area of Triangle. 10.5 Explain the formula of Circle, Cone and Pyramid. 10.6 State the formula of Sphere and Cylinder. 10.7 Solve the problems related to Mensuration.		
	Total	**32**	**60**

Recommended Books:

SL No.	Book Name	Writer Name	Publisher Name & Edition
01	Mensuration and Statistics	Dr. Md. Motiur Rahman Md. Masuduzzamn	-
02	Mensuration and Statistics	Nagendra Nath Paul Herombo Kumar Roy	Hague Publications & 01 November, 2013
03	Statistics	Md Abdul Aziz	The Angels Publications & June, 2013
04	Statistics	Khan Mohammad Sharif	Hasan Book House & June, 2013

Website References:

SL No.	Web Link	Remarks
01	Youtube.com	**-**

SL NO	Name, Designation and Institution	Signature
01	Md Abul Hossain Deputy Secretary(Admin) Bangladesh Technical Education Board Agargaon, Dhaka-1207	
02	Dr. Indrani Dhar Deputy-Inspector(BMT) Bangladesh Technical Education Board, Agargaon, Dhaka-1207	
03	Nirendra Nath Paul Senior Instructor (Non-Tech) Monjilpukur Agriculture Technical and Commercial College Lalpur, Natore.	
04	Musfiqur Rahman Lecturer (Textile) Textile Engineering College, Noakhali	
05	Gias Uddin Instructor(Non-Tech) Textile Institute Dinajpur	

DIPLOMA IN TEXTILE ENGINEERING

SYLLABUS

PROBIDHAN-2022

WET PROCESSING (13)

THIRD SEMESTER

Subject Code	Subject Name	Period Per Week		Credit
26711	BASIC ELECTRICITY	T	P	C
		3	3	4

Rationale	Diploma in Engineering Level students are required to acquire the knowledge and skill on concept of nature of electricity, electrical house wiring, Earthing and Electrical wiring tests. By the completion of this course student will be able to perform different types of joints and splices, Fittings of electrical installation works such as lamp circuit, Tube light circuit and Calling bell circuit. As such the knowledge of basic electricity the pre-requisite for these fields for effective discharge of their duties. These necessities the introduction of Electrical Engineering subject in the curriculum of Diploma in Engineering level. The subject covers only such topics which will enable the diploma engineers to identify and classify the different types of Hand tools used in electrical house wiring, Different types of switches, Lamps, Electrical Fittings and fixtures Conductor, Insulator, Semiconductor, Wires and cables, Joint and splices. They will be able to verify and apply Ohms law, Joules law, Series and Parallel circuit. Have been given more emphasis on practical aspect rather than theory in teaching learning approach.
Learning Outcome (Theoretical)	**After Completing the subject, students will be able to:** ▪ Classify various types Materials used in electrical works ▪ Describe Capacitance, Inductance and the Laws of resistance ▪ State the Ohms law and Joules law ▪ Describe Series, parallel and combined circuit ▪ Acquire the knowledge of joints and splices ▪ Achieve knowledge of Controlling and protective devices ▪ Acquaint the knowledge of House wiring
Learning Outcome (Practical)	**After undergoing the subject, students will be able to:** ▪ Identify various types hand tools and Materials used in electrical works ▪ Verify the Ohms law and Joules law ▪ Verify the characteristic of Series and parallel circuit ▪ Identify the types of wires and cables ▪ Perform different types of joints and splices ▪ Operate Controlling and protective devices ▪ Perform House wiring (Channel wiring)

Detailed Syllabus (Theory)

SL No.	Topics with contents	Class (1 Period)	Final Marks
1	**ELECTRICITY AND ITS NATURE** 1.1 State the meaning of electricity. 1.2 Describe the structure of atom. 1.3 Define current, voltage and resistance. 1.4 Mention units of current, voltage and resistance.	2	3
2	**CONDUCTOR, SEMI-CONDUCTOR AND INSULATOR** 2.1 Define conductor, semiconductor and insulator. 2.2 Explain the conductor, semiconductor, and insulator according to electron theory. 2.3 List different types of conductors, semiconductors and insulators. 2.4 Describe the factors affecting the resistance of a conductor. 2.5 State laws of resistance. 2.6 Prove the relation, $R= \rho \frac{L}{A}$ 2.7 Explain the meaning of resistivity 2.8 Mention the unit of resistivity. 2.9 Solve problems relating to laws of resistance.	3	6
3	**CAPACITORS AND INDUCTORS** 3.1 Define capacitor and capacitance. 3.2 Mention the unit of capacitance. 3.3 Name the different types of capacitors. 3.4 Define inductor and inductance. 3.5 Mention the unit of inductance 3.6 Classify the different types of inductors. 3.7 List the uses of capacitor and inductor. 3.8 Determine the equivalent capacitance of a number of capacitors connected in series and parallel. 3.9 Explain the energy storage in a capacitor. 3.10 Solve the problems relating to capacitors.	3	8
4	**OHM'S LAW & JOULE'S LAW** 4.1 State Ohm's law. 4.2 Explain the limitations of Ohm's law 4.3 Deduce the relation among current, voltage and resistance. 4.4 Solve problems relating to Ohm's law. 4.5 Describe the heating effect of electricity.	3	9

	4.6 Explain Joule's law regarding heat produce in electric circuit. 4.7 Describe mechanical equivalent of heat (J) 4.8 Solve problems relating to Joule's law.		
5	**ELECTRICAL CIRCUIT** 5.1 Define electric circuit. 5.2 State the elements of electric circuit 5.3 Classify electric circuits. 5.4 Define series circuit, parallel circuit and combined circuit. 5.5 Describe the characteristics of series circuit and parallel circuit. 5.6 Calculate the equivalent resistance of series circuit, parallel circuit and combined circuit. 5.7 Solve problems relating to series, parallel and combined circuit.	**6**	**10**
6	**ELECTRICAL POWER AND ENERGY** 6.1 Define electrical power and energy. 5.2 State the unit of electrical power and energy. 5.3 Show the relation between electrical power and energy. 5.4 List the name of instruments for measuring electrical power and energy. 5.5 Draw the connection diagram of wattmeter and energy meter in an electric circuit. 5.6 Solve problems relating to electrical power and energy.	**3**	**8**
7	**ELECTRICAL WIRES, CABLES, JOINT AND SPLICES** 7.1 Define electrical wires and cables. 7.2 Distinguish between wire and cable. 7.3 Describe the construction and uses of PVC, VIR, TRS or CTS and flexible wires. 7.4 Describe the procedure of measuring the size of wires and cables by wire gauge. 7.5 Describe the current carrying capacity of a wire. 7.6 Define the meaning of joints and splices. 7.7 State the five steps of making a joint. 7.8 Explain the procedure to make a pig tail joint, western union. joint, Britannia joint, duplex joint, tap joint and simple splice. 7.9 List uses of joints.	**3**	**6**

8	**METHODS OF HOUSE WIRING** 8.1 State the meaning of wiring. 8.2 List the types of wiring. 8.3 State the procedure for channel wiring, surface conduit wiring and concealed wiring. 8.4 State the types of wiring used in Residential building and Cinema Hall/Auditorium. 8.5 State the types of wiring used in State the types of wiring used in Temporary Sed and Workshop 8.6 List the name of fittings used in different types of electrical wiring. 8.7 Explain the different tests of electrical wiring such as Polarity test, Continuity test, short circuit test, Insulation resistance test and Earth test.	**4**	**8**
9	**ELECTRICAL CONTROLLING DEVICES** 9.1 Define controlling device. 9.2 Mention different types of controlling device. 9.3 Describe the constructional features and uses of tumbler switch, iron clad switch, push button switch and gang switch. 9.4 Sketch the wiring diagram of one lamp controlled by one SPST switch and describe its uses. 9.5 Sketch the wiring diagram of one lamp controlled by two SPDT switches and describe its uses. 9.6 Draw the wiring diagram of a calling bell. 9.7 Draw the wiring diagram of a calling bell with more than one lamp controlled from more than one point. 9.8 Draw the wiring diagram of a fluorescent tube light circuit. 9.9 Illustrate the working principle of fluorescent tube light.	**2**	**4**
10	**ELECTRICAL PROTECTIVE DEVICES** 10.1 Define protective device. 10.2 List the different types of protective device. 10.3 List the different types of fuses used in house wiring. 10.4 Describe the construction and uses of renewable fuse. 10.5 Mention the different types of circuit breaker used in house wiring. 10.6 Describe safety procedure against electrical hazards. 10.7 List the performance of safety practices for electrical equipment, machines and accessories. 10.8 Explain the meaning and uses of SPST, SPDT, DPST, DPDT, TPST, Sliding switch, MCB and MCCB. 10.9 Describe the construction of MCB and its advantages.	**3**	**6**

11	**ELECTRICAL EARTHING** 11.1 Define earthing and mention the elements of earthing. 11.2 Explain the necessity of earthing. 11.3 List the different types of earthing. 11.4 List the value of earthing resistance in different conditions. 11.5 Discuss the factors to be considered in performing earthing. 11.6 Explain the working principles of pipe earthing with diagram. 11.7 Narrate the working principles of plate earthing with diagram. 11.8 Explain the working principles of sheet earthing with diagram. 11.9 Describe the working principles of rod earthing with diagram.	**4**	**5**
12	**MODERN ELECTRIC LAMPS** 12.1 Explain the working principle of a fluorescent lamp describing the function of the choke coil and starter. 12.2 Describe constructional details of Sodium Vapor & Mercury Vapor lamps. 12.3 Explain working principle of a Compact Fluorescent lamp with circuit diagram. 12.4 Describe constructional details of a Compact Fluorescent lamp. 12.5 Explain working principle of a Light Emitting Diode (LED) lamp and LED tube light with circuit diagram. 12.6 Describe constructional details of LED lamp and LED tube light. 12.7 Explain working principle of Liquid Crystal Diode (LCD) lamp with circuit diagram. 12.8 Describe constructional details of LCD lamp. 12.9 Describe constructional details of a Cold Cathode Filament (CCF) lamp.	**4**	**6**
13	**ELECTROMAGNETISM** 13.1 Describe magnetic field, magnetic lines of force and its properties. 13.2 Describe field intensity and magnetic flux density. 13.3 Distinguish between absolute permeability and relative permeability. 13.4 Describe the concept of magnetic effect of electrical current. 13.5 States Maxwell's cork screw rule and Fleming's left-hand rule. 13.6 Explain the force experienced in a current carrying conductor in a magnetic field.	**4**	**5**

	13.7 Explain the work done by a moving conductor in a magnetic field 13.8. Explain the force between two parallel current carrying conductors.		
14	**ELECTROMAGNETIC INDUCTION** 14.1 Define Faraday's laws of electromagnetic induction. 14.2 Describe the magnitude of dynamically induced emf and statically induced emf. 14.3 Solve problems relating to emf generation. 14.4 Define Lenz's law and Fleming's right-hand rule for determining the direction of induced emf and current. 14.5 Define self-induced emf and self-inductance. 14.6 Explain inductance of an iron cored inductor. 14.7 Define mutual inductance and co-efficient of coupling	**4**	**6**
	Total	**48**	**90**

Detailed Syllabus (Practical)

SL No.	EXPERIMENT NAME WITH PROCEDURE	Class (3 Period)	Continuous Marks
1	**OBSERVE ELECTRICAL HAND TOOLS AND MEASURING INSTRUMENTS** 1.1 Identify hand tools used in electrical wiring. 1.2 Justify the function of the hand tools used in electrical wiring. 1.3 Draw neat sketches of hand tools used in electrical wiring. 1.4 Identify Voltmeters, Ammeters, Ohmmeter, Wattmeter, Energy meter, AVO meter and Frequency meter, Power factor meter, Lux meter. 1.5 Select & read the scale of given meters. 1.6 Connect correctly voltmeter, ammeter, wattmeter and energy meter to a given circuit. 1.7 Maintain the record of performed task.	**1**	**2**
2	**VERIFY OHM'S LAW** 2.1 Sketch the circuit diagram for the verification of Ohm's Law. 2.2 List tools, equipment and materials required for the experiment. 2.3 Prepare the circuit according to the circuit diagram using proper equipment. 2.4 Check all connections before the circuit is energized. 2.5 Verify the law by collecting relevant data and calculations. 2.6 Maintain the record of performed task.	**1**	**2**

3	**VERIFY THE CHARACTERISTICS OF SERIES AND PARALLEL CIRCUITS** 3.1 Draw the working circuit diagram. 3.2 List tools, equipment and materials required for the experiment. 3.3 Prepare the circuit according to the circuit diagram using proper equipment. 3.4 Check all connections before the circuit is energized. 3.5 Record data and verify that in a series circuit total voltage and resistance is equal to the summation of individual voltage and resistance respectively but total current is equal to the individual current. 3.6 Record data and verify that for a parallel circuit supply voltage is equal to the branch voltage, supply current is equal to summation of branch currents and total conductance is equal to the summation of branch conductance. 3.7 Maintain the record of performed task.	**2**	**3**
4	**MEASURE THE POWER OF AN ELECTRIC LOAD** 4.1 Sketch the necessary circuit diagram of an electrical circuit with electrical load, ammeter, voltmeter and wattmeter. 4.2 Prepare the circuit according to the circuit diagram using ammeter, voltmeter and wattmeter. 4.3 Record the power, measured by the wattmeter and verify the reading with that of calculated from ammeter and voltmeter. 4.4 Compare the measured data with that of calculated and rated power. 4.4 Maintain the record of performed task.	**1**	**2**
5	**MEASURE THE ENERGY CONSUMED IN AN ELECTRICAL LOAD** 5.1 Sketch the necessary diagram of an electric circuit with wattmeter, energy meter and electrical load. 5.2 Prepare the circuit according to the circuit diagram user wattmeter and energy meter. 5.3 Record the energy measured by the energy meter and verify with that of calculated from wattmeter for a fixed time. 5.4 Maintain the record of performed task.	**1**	**2**
6	**MAKE A PIGTAIL JOINT, T-JOINT, DUPLEX JOINT, TAP JOINT AND SIMPLE SPLICE** 6.1 Sketch a pigtail joint, t-joint, duplex joint, tap joint and	**1**	**2**

	simple splice. 6.2 Collect required tools, equipment and materials. 6.3 Perform skinning and scraping of two pieces of PVC cables and two pieces of simplex PVC cables. 6.4 Make the joints according to sketches. 6.5 Maintain the record of performed task.		
7	**PERFORM WIRING CIRCUIT OF ONE LAMP CONTROLLED FROM ONE POINT** 7.1 Sketch a working diagram of one lamp controlled by one switch. 7.2 Collect required tools, equipment and materials. 7'.3 Complete the wiring circuit using required materials and equipment on wiring board. 7.4 Test the connection of circuit by providing proper supply. 7.5 Maintain the record of performed task.	**1**	**2**
8	**PERFORM WIRING CIRCUIT ONE LAMP CONTROLLED FROM TWO POINTS** 8.1 Sketch a working circuit of one lamp controlled by two SPDT tumbler switches. 8.2 Collect required tools, equipment and materials. 8.3Make the wiring circuit using required materials and equipment on a wiring board. 8.4 Test the connection of circuit by providing proper supply. 8.5 Maintain the record of performed task.	**1**	**2**
9	**PERFORM THE WIRING CIRCUIT OF ONE BELL WITH TWO INDICATING LAMPS CONTROLLED FROM TWO POINTS** 9.1 Sketch a working diagram of one bell with two indicating lamps controlled by two push button switches. 9.2 Collect required tools, equipment and materials. 9.3 Make the wiring circuit using required materials and equipment on wiring board. 9.4 Test the connection of circuit by providing proper supply. 9.5 Maintain the record of performed task.	**2**	**2**
10	**PERFORM THE WIRING CIRCUIT OF A FLUORESCENT TUBE LIGHT** 1O.1 Sketch a working diagram of a fluorescent tube light circuit. 10.2 Collect required tools, equipment and materials. 10.3 Make the connection of a fluorescent tube light circuit using required materials and equipment. 10.4 Test the connection of the circuit by providing supply. 10.5 Maintain the record of performed task.	**2**	**2**
11	**PERFORM THE CHANNEL WIRING CIRCUIT OF ONE LAMP, ONE**	**3**	**4**

	TUBE AND ONE FAN WITH REGULATOR INCLUDING ENERGY METER LIGHT 11.1 Sketch a circuit diagram of one lamp, one tube light and one fan with regulator including energy meter light. 11.2 Sketch a working diagram on the working board 11.3 Collect necessary tool, equipment and materials. 11.4 Make the connection according to the circuit diagram. 11.5 Set Channel, fittings and Fixture on the working board 11.6 Test the connection of the circuit by providing supply. 11.6 Maintain the record of performed task.		
	Total	**16**	**25**

Necessary Resources for implement this subject (Tools, equipment's and Machinery):

SL No.	Item Name	Quantity
01	Screw drivers, Neon tester, Pliers, Chisels, Hammer, Mallet, Hack saw, Hand saw, Soldering Iron, Electrician Knife, Wire strippers, Poker, Plumb bob,	Each item 25 no's
02	Ammeter, Voltmeter, Ohm meter, AVO meter, Wattmeter, Energy meter, Frequency meter, Power factor meter, Lux meter, Megger	Each item 15 no's
03	Resistor, Inductor, Capacitor	Each item 50 no's
04	Different types of Wires and Cables (1.0 to 3.5rm	5 coils of different sizes
05	Switches (SPST, SPDT, SPTT, DPST, DPDT, DPTS, TPST, TPDT, TPTT, Tumbler switch, Push button switch, Piano switch, Gang switch, two pin socket, Tree pin socket, Combined switch and socket, two pin plug, Tree pin Plug, Adaptor,	Each item 10 no's
06	Incandescent Lamp, Fluorescent lamp, Mercury lamp, Vapor lamp, LED, LCD, LED tube light, Hydrogen lamp, Halogen lamp	Each item 25 no's
07	Calling bell, Choke coil, Starter	Each item 25 no's
08	Batten holder, Pendent holder, Bracket holder, Tube light holder set	Each item 25 no's

Recommended Books:

SL No.	Book Name	Writer Name	Publisher Name & Edition
01	A text book of Electrical Technology	B. L. Theraja	S.Chand, 2021
02	Basic Electricity	Charles W. Ryan	S. Chand 2021
03	Basic Electrical theory and Practice	E. B. Babler	S.Chand, 2020
04	Solved Examples in Electrical Calculation	D. K. Sharma	S. Chand 2021

05	Introduction to Electrical Engineering	V.K. Mehta	S. Chand2021

Website References:

SL	Web Link	Remarks
01	http//www.electricalengineering.org	
02	http//www.electrical-installation.org	
03	http//www.eetiimes.eu	
04	http//www.interestingengineering .com	
05	http//www.electrical-engineering-portal.com	
06	http//www.electrical4u.com	

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4. **Engr. Md. Enayet Karim**
   Deputy Controller of Exam, BTEB

5. **Mohammed Abdul Kayum**
   Curriculum Specialist (Textile), BTEB

DIPLOMA IN TEXTILE ENGINEERING
SYLLABUS
PROBIDHAN-2022
WET PROCESSING (13)
THIRD SEMESTER

Subject Code	Subject Name	Period Per Week		Credit
28511	COMPUTER OFFICE APPLICATION	T	P	C
		0	6	2

Rationale	This is a generic course for all diploma programs required to enable the graduates to use and work with ICT competently. It includes typing in Bangla and English, using the internet for e-communication & e-interaction, operating a computer and allied devices, Operating Word Processing, Spreadsheet Analysis, and Presentation software. This course also enables a graduate to adopt further study in upper-level courses using IT and other sectors. This course is designed to emphasize practical aspects rather than theory.
Course Learning Outcome	**After undergoing the subject, students will be able to:** • type Bangla and English smoothly • use internet for e-communication & interaction • operate a computer and allied devices • perform the operation of Word Processing App, Spreadsheet Application, and Presentation Package.

Detailed Syllabus (Practical)

SL No.	Experiment name with the procedure	Class (3 Period)	Marks
1	**TYPE TEXT AND DOCUMENTS IN ENGLISH AND BANGLA** **1.1 Startup and Shutdown of a computer** 1.1.1 Identify Basic Computer Hardware devices Computer Hardware: System Unit, Motherboard, Processor, Power supply, SSD, Hard Disk, RAM, ROM 1.1.2 Check Peripherals and connect with the system unit. Peripherals: Monitor, Keyboard, Mouse, Modem, Scanner, Printer, Multimedia Projector 1.1.3 Connect Power cords/adapter properly with computer and power outlets socket. 1.1.4 Switch on the Computer gently. 1.1.5 Arrange and customize PC Desktop / GUI settings as per requirement. Desktop / GUI settings: Icons, Taskbar, View, Resolutions 1.1.6 Close Unsaved files and folders 1.1.7 Close Open software and switch off hardware devices. 1.1.8 Switch off Computer gently. 1.1.9 Switched off Power at the respective power outlets. **1.2 Install the Typing Tutor software** 1.2.1. Identify Required Hardware and software of typing Tutor software. **Software**: Operating System, Microsoft Office, Open Office, Typing Tutor, Bangla Typing Software, Google doc, Avro, Bijoy. 1.2.2. Install English and Bangla Typing tutor software. 1.2.3. Install Bangla Unicode Typing Tutor Software. 1.2.4. Install Required fonts for typing of Bangla and English. **1.3 Practice text Typing in English and Bangla** 1.3.1 Start Typing tutor software. 1.3.2 Practice English Home key drilling systematically. 1.3.3 Practice Typing in English as per Standard procedure (30 WPM) 1.3.4 Install Specialized Bangla Typing tutor software. 1.3.5 Practice systematically Bangla Home key typing. 1.3.6 Type Bangla document as per standard procedure (20 WPM).	**4**	**5**

	1.3.7 Type Text documents repeatedly to increase typing speed in both English and Bangla. **1.4 Maintain the record of the performed job.**		
2	**USE THE INTERNET FOR E-COMMUNICATION & INTERACTION** **2.1 Access resources from the internet** 2.1.1. Interpret **Internet Terms** and their uses. **Internet Terms:** Browser, web page, URL, HTML and http/https, E-mail, social media, IP, Download, Malware, Router, Bookmark, E-commerce 2.1.2. Select and install Appropriate **internet browsers** **Internet browsers:** Microsoft Edge, Google Chrome, Internet Explorer, Opera, Safari, QQ Browser, UC, Yandex 2.1.3. Carry out **Browser Settings** for smooth operation. **Browser Settings:** Synchronization, Privacy and Security, Auto fill, Appearance, Language, Download, Accessibility 2.1.4. Open the Internet browser and write/select a web address / URL in /from the address bar to access **Information.** **Information:** Text Information, Graphics, Video 2.1.5. Use **Search engines** to access information. **Search engines:** Google, Yahoo, Alta Vista, Msn,Bing 2.1.6. Use internet resources (Free and Paid Platform) 2.1.7. Share/download/upload Video / Information From/to web site/**social media.** **social media:** Facebook, Twitter, LinkedIn, YouTube 2.1.8. Communicate using social media and professional's Media. 2.1.9. Search and follow Netiquette' (or web etiquette) Principles. **2.2 Use Web Services** 2.2.1. Identify **Web Services** and service provider as per job requirement. **Web Services:** Communication (Zoom, Bip, Meet), Storage (Drop box, Mega, One Drive, Google Drive) 2.2.2. Interpret the Function of the web services 2.2.3. List Information for creating an account in web Services. 2.2.4. Identify **Google services**. **Google services:** Drive, Calendar, Map, Translator, Docs, Sheets, Slide, Forms, Search, Contact, Classroom, Image Search, Blogger, Meet	**4**	**6**

	2.2.5. List Functions of Google services. 2.2.6. Demonstrate Google Services. **2.3 Use and manage E-mail** 2.3.1 Identify and select **E-mail services** to create a new e-mail address. **E-mail services:** Free mail services (Gmail, Yahoo, Hotmail), Webmail Services 2.3.2 Compose E-mail and attach prepared document. 2.3.3 Send E-mail to different types of recipients using the CC and BCC option. 2.3.4 Read, forward, reply, and delete E-mail as per requirement. 2.3.5 Create and manipulate custom email folders. 2.3.6 Print E-mail message. **2.4 Maintain the record of the performed job.**		
3	**OPERATE A COMPUTER AND ALLIED DEVICES** **3.1 Perform Basic Setting** 3.1.1 Change power options properties as per requirement. 3.1.2 Terminate Non-responding application as specified. 3.1.3 Identify and adjust System information, operating system version, date & Time display system, color settings, and available RAM as per job requirement. 3.1.4 Set Keyboard Language according to the instructions. 3.1.5 Install Fonts following standard procedures. 3.1.6 Adjust Screen Resolution as per job requirement. 3.1.7 Identify Basic **Hardware and Software problems** and take the remedy. **Hardware and Software problem**: Can't Open, Slow, Hang, Display Problem, Setting Problem, Keyboard and Mouse Problem, Sound Problem, Input devices are not working, No network, Slow internet, Printer is not working, Software installation problem **3.2 Operate Computer** 3.2.1 Create Files and folders 3.2.2 **Manipulate** Files and folders as per requirement. **Manipulated**: Opened, Copied, Renamed, Deleted, Sorted. 3.2.3 View and search Properties of files and folders. 3.2.4 Practice Control panel settings. 3.2.5 Format and defragment **Storage devices** as per requirement. **Storage devices**: Hard drive, Flash Drive, Flash Memory	**4**	**5**

	3.2.6 Take Backups as required. 3.2.7 use and change Password as per job requirement **3.3 Manage Security of Hardware and Software** 3.3.1 Installed Custom software and Antivirus software according to standard operating procedure. 3.3.2 Scan Storage devices using antivirus software. 3.3.3 Scan Folders and Files using the current version of Software. 3.3.4 Update Scanning software or virus definition regularly. 3.3.5 Identify **Cyber Security issues** or hardware and software. **Cyber Security issues**: Hacking, Phishing, Data Leakage, Threat 3.3.6 Recognize and avoid Cyber threats and attacks. **3.4 Manage Printer and Printer settings** 3.4.1 Install Printers on the computer according to the manufacturer's instructions. 3.4.2 Print Documents from an application. 3.4.3 Print, pause, restart, or cancel using print manager. **3.5 Maintain the record of performed job.**		
4	**OPERATE WORD PROCESSING APPLICATION** **4.1 Create documents.** 4.1.1. Open **Word-processing application.** **Word-processing application**: MS Word, Open Office 4.1.2. Create **Documents.** (Word documents, Standard CV with different text & Fonts, image, and table, Application / Official letter with proper paragraph and indenting, spacing, styles, illustrations, tables, header & footers and symbols, Standard report/newspaper items with column, footnote, and endnote drop cap, indexing and page numbering) 4.1.3. Add Text and Data according to information requirements. 4.1.4. Use Document templates as per the job required. 4.1.5. Use **Formatting Tools** when creating the document. **Formatting Tools**: (Bold, Italic, Underline, Strikethrough, Subscript, Superscript, Change case, Text highlight color, Font color, Font, Font size, Clear formatting, Format painter, Illustrations and styles, Text, Table, Symbols, Header & footer, Text alignment) 4.1.6. Insert and edit Equation as per job requirement. 4.1.7. Save Documents are as per job requirements.	**8**	**16**

4.2 Customize basic settings to meet page layout conventions

4.2.1 Adjust Page layout to meet information requirements

4.2.2 Open and use User interface and **toolbars** as per job requirement.

Toolbars: File tab, Title bar, Ribbon, Ruler, Status bar, View button, Zoom control, Document area, Dialog box launcher, Backstage view

4.2.3 Change **Font Format** to suit the purpose of the document.

Font Format: Times New Roman, Arial, Nikosh, NikoshBan, Kalpurush, SutonnyMJ, Century, Century gothic, Vrinda

4.2.4 Change **Alignment** and line spacing according to document requirements.

Alignment: Left, Right, Center, Top, Text direction, Cell margins

4.2.5 Modify Margins to suit the purpose of the document.

4.3 Format documents

4.3.1 Use formatting features, Symbols, and styles as per requirement.

4.3.2 Highlight and Copy Text from other areas in the document or form another active document.

4.3.3 Insert headers and footers to incorporate necessary data.

4.3.4 Save Documents in another **file format**

file format: .doc, .docx, .pdf, . xps , .xml

4.3.5 Save and close document to **Storage device.**

Storage device: Flash Drive, Hard Disk Drive, Memory Card, CD/DVD

4.4 Create a table

4.4.1 Insert the standard table into the document.

4.4.2 Split and /or merge the cells to meet the Information requirement.

4.4.3 Insert, delete, modify and move columns and rows if Necessary.

4.4.4 Insert Text into the table.

4.4.5 Operation carried for **Data Handled** as per job Requirement.

Data Handled: Sort, Repeat Header row, convert to Text, Formula, Autofit.

4.4.6 Use Styling tools according to style requirements.

4.4.7 Add formula to the table as per job requirement.

4.5 Add illustrations

4.5.1 Insert appropriate **illustrations** into the document and

	Customize if necessary. **Illustrations:** Picture, clip art, Shapes, Smart Art, Chart 4.5.2 Position and resize images according to the Document formatting requirements. **4.6 Perform mail merge operation** 4.6.1 Determine sender and recipients as per job Requirements. 4.6.2 Follow preparatory steps for mail merge. 4.6.3 Add recipients for mail merge. 4.6.4 Perform Mail merge operation. 4.6.5 Send mail. **4.7 Create references** 4.7.1 Plan Footnote, endnote, and citation. 4.7.2 Create Footnote and endnote. 4.7.3 Create citation. **4.8 Print information** 4.8.1 Connect **printer** with computer and power outlet Properly. **Printer:** Dot matrix printer, Laser Printer, Inkjet printer 4.8.2 Switch on power at both the power outlet and printer. 4.8.3 Install and add printer. 4.8.4 Select correct printer settings and print the document or selected part as per job requirements. 4.8.5 View or cancel print from the printer spool. **4.9 Maintain the record of the performed job.**		
5	**OPERATE SPREADSHEET APPLICATION** **5.1 Create spreadsheets** 5.1.1. Open **Spreadsheet Application**, 5.1.1. Create spreadsheet files and enter numbers, text, and symbols into cells according to information requirements. 5.1.2. Enter simple **formulas and functions** using cell Referencing where required. **Formulas:** SUM, AVERAGE, IF, MAX, MIN, COUNT, RANK, Date and Time, Math and Trig, AND, OR, NOR, Between, ABS, Greater than, less than **Functions:** Mathematics, Logical, Simple statistical 5.1.3. Correct formulas when error messages occur. 5.1.4. Use a range of common tools during spreadsheet	**6**	**10**

development.

5.1.5. Edit columns and rows within the spreadsheet.

5.1.6. Use the auto-fill function to increment data where required.

5.1.7. Save spreadsheet file to directory or folder.

5.2. Customize basic settings

5.2.1. Adjust page layout to meet user requirements or special needs.

5.2.1. Open and view different toolbars.

5.2.2. Change font settings so that they are Appropriate for the purpose of the Document.

5.2.3. Change **alignment** options and line spacing according to spreadsheet formatting features.

Alignment: Right, Left, Centre, Top, Middle, Bottom

5.2.4. **Format** cell to display different styles as required.

Format: Bold, Italic, Underline, Font size, color, change case, Alignment, and intend

5.2.5. Modify margin sizes to suit the purpose of the spreadsheets.

5.2.6. View multiple spreadsheets concurrently.

5.3. Format spreadsheet

5.3.1. Use formatting features as per job requirements.

5.3.2. Copy selected formatting features from another cell in the spreadsheet or from another active spreadsheet.

5.3.3. Use formatting **tools** as required within the spreadsheet.

5.3.4. Align information in a selected cell as required.

5.3.5. Insert headers and footers using formatting features.

5.3.6. Save the spreadsheet in another format.

5.3.7. Save and close the spreadsheet to the storage device**.**

5.4. Sort and filter data in worksheet

5.4.1. Create worksheets.

5.4.2. Insert data into the sheet.

5.4.3. Sort data with different criteria.

5.4.4. Filter data with different conditions,

5.4.5. Print sorted or filtered data

5.5. Incorporate object and chart in the spreadsheet

5.5.1. Import an object into an active spreadsheet.

5.5.2. Manipulate imported objects by using formatting features.

5.5.3. Create a chart using selected data in the spreadsheet.

5.5.4. Display selected data in a different chart.

5.5.5. Modify chart using formatting features.

5.6. Create worksheets and charts

	5.6.1. Create Worksheets as pre-requirement. 5.6.2. Enter Data as per job requirement. 5.6.3. use function for calculating and editing logical operations. 5.6.4. Format **Sheets** as per requirement. **Sheets:** Salary Sheet with sorting, filtering, and chart, Mark/Grade/Tabulation sheets for simple result processing. 5.6.5. Create **Charts and Graphs** as per job requirements. **Charts and Graphs:** Column, Pie, Line, Bar, Table, Scatter 5.6.6. Preview and print Charts/ Sheets. **5.7. Print spreadsheet** 5.7.1. View spreadsheet in print preview mode. 5.7.2. Select basic printer options. 5.7.3. Print spreadsheet or selected part of the spreadsheet. 5.7.4. Submit the spreadsheet to the appropriate person for approval or feedback. **5.8. Maintain the record of the performed job.**		
6	**OPERATE PRESENTATION PACKAGE:** **6.1. Create presentations** 6.1.1 Open **Application package** for presentation and create a simple design for a presentation according to organizational requirements. **Application package**: PowerPoint, Prezi 6.1.2 Open a blank presentation and add text and graphics using the user interface and toolbar. 6.1.3 Apply existing styles within a presentation. 6.1.4 Use presentation templates and slides to create a presentation. 6.1.5 Use various **Illustrations,** audio, video, and **effects** in the presentation. **Illustrations**: Picture, Clip art, Photo, Shape, Smart art, Chart **Effects**: Entrance, Emphasis, Exit, Motion path, Sound 6.1.6 Add design, transition, and animation as per job requirement 6.1.7 Save the presentation to the correct directory. **6.2 Customize basic settings** 6.2.1 Adjust display to meet user requirements. 6.2.2 Open and view different **toolbars** to view options. 6.2.3 Ensure **font settings** are appropriate for the purpose of the presentation. 6.2.4 Select necessary font tools as per job requirements. 6.2.5 View multiple slides at once. **6.3 Format presentation** 6.3.1 Use and incorporate organizational charts, bulleted lists and modify as required. 6.3.2 Add and manipulate **objects** to meet presentation purposes. **Objects**: image, chart, worksheet, equation, slide	**6**	**8**

	6.3.3 Import and modify **objects** for presentation purposes. 6.3.4 Modify slide layout, including text and colors to meet presentation requirements. 6.3.5 Use **formatting tools** as required within the presentation. 6.3.6 Duplicate slides within and/or across a presentation. 6.3.7 Record the sequence of slides and/or delete slides for presentation purposes. **6.3.8** Save the presentation in another **format.** 6.3.9 Save and close presentation to disk. **6.4 Add Slide show effects** 6.4.1 Incorporate animation and multimedia effects into the presentation as required to enhance the presentation and present the presentation. 6.4.2 Add **Slide transition effect to** ensure a smooth presentation. 6.4.3 Test the presentation for overall impact 6.4.4 Use on-screen navigation tools to start and stop slide shows or move between different slides. **6.5 Create a template using a master slide** 6.5.1 Open Blank presentation and click the slide master form view tab. 6.5.2 Create slide layout and/or customized as per requirements. 6.5.3 Add Theme based colors, fonts, effects, backgrounds and style to the presentation. 6.5.4 Set page orientation for all of the slides. 6.5.5 Save and close presentation **6.6 Print presentation and notes** 6.6.1 Select the appropriate print format to print presentation. 6.6.2 Select preferred slide orientation. 6.6.3 Add notes and slide numbers. 6.6.4 Preview slide and check spells before presentation. 6.6.5 Print selected slides. **6.7 Maintain the record of performed job.**		
	Total	**32**	**50**

Necessary Resources (Tools, equipment's and Machinery):

SL No.	Item Name	Quantity
01	Computer System / Laptop	01 per student
	Accessories	
02	Extra Key Board	05 Piece
03	Extra Mouse	05 Piece
04	Extra System / Laptop Unit	02 Piece
05	Extra Mother Board	02 Piece

06	Extra RAM	05 Piece
07	Extra Hard Disk	02 Piece
08	Extra SSD	02 Piece
09	Multimedia Projector	01 Piece
10	Multimedia pointer	01 Piece
11	Potable wireless Sound System	01 set
12	Network Adapter	02 Piece
13	VGA cable	02 Piece
14	Printer (LASER)	01 Piece
15	Printer (Dot Matrix)	01 Piece
16	Printer (Inkjet)	01 Piece
17	Printer Cable	01 Piece
18	Monitor	01 Piece
19	Modem	01 Piece
20	Scanner	01 Piece
21	Power cords/Power adapter	01 Piece
22	UPS/ IPS	01 Piece

Recommended Books:

SL No.	Book Name	Writer Name	Publisher Name & Edition
01	MOS 2010, Study Guide	Joan ambert, Joyce Cox	**Up-to-date Edition**
02	Computer Application in Business	R. Parameswaran	

Website References:

SL No.	Web Link	Remarks
01	**https://teachers.tech/microsoft-office-tutorials/**	
02	**https://www.javatpoint.com/ms-word-tutorial**	
03	**https://www.tutorialspoint.com/word/index.htm**	

DIPLOMA IN TEXTILE ENGINEERING

SYLLABUS

PROBIDHAN-2022

WET PROCESSING (13)

THIRD SEMESTER

Subject Code	Subject Name	Period per Week		Credit
27011	Basic Workshop Practice	T	P	C
		0	3	1

Rationale	Diploma in engineering Student performs the manufacture of machine parts and other mechanical engineering product following the drawing & design in industry/ factory. The subject covers only such topics which will enable the diploma engineers to identify and classify the different types of machine operation, tools selection and proper use in the field for various types of mechanical engineering product. The emphasis will be more on teaching practical aspect rather than theory.
Learning Outcome (Practical)	**At the end of the course the students will be able to:** • Apply occupational safety and health practices in the work place. • Use hand tools, equipment and machines used simple fitting and welding works. • Cut and size metals and sheets. • Perform simple fitting work. • Develop sheet metal. • Perform shielded metal arc welding (SMAW). • Perform gas welding. • Perform soldering. • Perform Resistance Welding.

Detailed Syllabus (Practical)

Unit	Experiment name with procedure	Class (3 Period)	Marks (Continuous)
1	**APPLY OCCUPATIONAL SAFETY AND HEALTH IN THE WORK PLACE.** 1.1. Identify Personal Protective equipment (PPE) as per requirement. 1.2. Select and collect PPE. 1.3. Apply safety and health procedure related to fitting and welding works. 1.4. State the importance of good housekeeping/Tidy up 1.5. Maintain Record of performed task.	1	2

02	**SHAPE METALS & SHEET METALS** 2.1. Select and collect tools and equipment. 2.2. Select and collect metals as per Job requirement (metals limited to: MS rod, MS Flat bar, Angle bar and pipes). 2.3. Perform Lay out as per drawing. 2.4. Cut metals as per lay out using hand tools and machines (cutting tools may include-hacksaw, power saw, metal cutting disk and hand shares.). 2.5. Select and collect sheet metals as per Job requirement (Sheet metal limited to: MS sheet, GI Sheet and SS sheets and pipes). 2.6. Cut Sheet metals as per lay out using hand tools and machines (cutting tools may include-hacksaw, Snips, metal cutting disk, hand shares, Sharing machine). 2.7. Clean work place and store tools and equipment's. 2.8. Maintain Record of performed task.	2	3
03	**PERFORM FITTING WORK FOR INTERNAL & EXTERNAL THREAD.** 3.1. Hold and clamp work piece as per job requirement. 3.2. Chip and file metals as per lay out. 3.3. Perform drilling and reaming as per job requirement using hand/bench drill machine. 3.4. Cut internal thread as per instruction. 3.5. Cut external thread as per instruction. 3.6. Check the part as per instruction. 3.7. Assemble internal & external thread. 3.8. Clean work place and store tools and equipment. 3.9. Maintain Record of performed task.	2	2
04	**DEVELOP SHEET METAL AND MAKE PRODUCTS.** 4.1. Select and collect tools and equipment as per job requirement. 4.2. Perform layout as per job requirement. 4.3. Cut sheets as per lay-out. 4.4. Bend, fold and roll sheets as per job. 4.5. Seam and hem sheets as per job requirement. 4.6. Perform riveting as per job requirement. 4.7. Solder the joints as per job requirement. 4.8. Rectangular tray, Belcha, Funnel etc. 4.9. Clean work place and store tools and equipment. 4.10 Maintain Record of performed task.	2	2
05	**PERFORM SHIELDED METAL ARC WELDING (SMAW) BEAD** 5.1. Select and collect tools and equipment as per job requirement. 5.2. Prepare work piece for welding. 5.3. Select and collect appropriate electrode. 5.4. Set welding machine (set current, electrode in the holder and connect neutral line/earthing). 5.5. Make single and multiple straight beads. 5.6. Inspect welded joint quality. 5.7. Clean work place and store tools and equipment.	1	3

	5.8. Maintain Record of performed task.		
06	**PERFORM SHIELDED METAL ARC WELDING (SMAW)1F(LAP JOINT & BUTT JOINT)** 6.1. Select and collect tools and equipment as per job requirement. 6.2. Prepare work piece for welding. 6.3. Select and collect appropriate electrode. 6.4. Set welding machine (set current, electrode in the holder and connect neutral line/earthing). 6.5. Perform 1F (lap joint) welding lap joint. 6.6. Perform 1F(Butt joint) welding. 6.7. Inspect welded joint quality. 6.8. Clean work place and store tools and equipment. 6.9. Maintain Record of performed task.	2	3
7	**PERFORM SHIELDED METAL ARC WELDING (SMAW)1F(CORNER & T- JOINT)** 7.1. Select and collect tools and equipment as per job requirement. 7.2. Prepare work piece for welding. 7.3. Select and collect appropriate electrode. 7.4. Set welding machine (set current, electrode in the holder and connect neutral line/earthing). 7.5. Perform 1F (corner joint) welding. 7.6. Perform 1F (T- joint) welding. 7.7. Inspect welded joint quality. 7.8. Clean work place and store tools and equipment. 7.9 Maintain Record of performed task.	2	3
08	**PERFORM SHIELDED METAL ARC WELDING (SMAW) 1G (BUTT JOINT).** 8.1. Select and collect tools and equipment as per job requirement. 8.2. Prepare work piece for welding. 8.3. Select and collect appropriate electrode. 8.4. Set welding machine (set current, electrode in the holder and connect neutral line/earthing). 8.5. Perform 1G welding 8.6. Inspect welded joint quality. 8.7. Clean work place and store tools and equipment. 8.8. Maintain Record of performed task.	1	2
09	**PERFORM GAS WELDING AND BRAZING STRAIGHT BEAD & (1F LAP JOINT).** 9.1. Select and collect tools and equipment. 9.2. Prepare work piece for welding 9.3. Select and collect appropriate filler rod. 9.4. Select and collect appropriate flux as required. 9.5. Make different flames (carburizing, neutral and	2	3

	oxidizing). 9.6. Make straight bead with filler metal. 9.7. Perform 1F welding (Lap joint). 9.8. Inspect welded joint quality. 9.9. Clean work place and store tools and equipments. 9.10. Maintain Record of performed task.		
10	**PERFORM RESISTANCE WELDING.** 10.1 Demonstration of resistance welding machines. 10.2 Demonstration of accessories and tools for resistance welding. 10.3 Make spot welding joints. 10.4 Inspect welded joint quality. 10.5 Follow safe working procedures during working with spot welding machine. 10.6 Clean work place and store tools and equipments. 10.7 Maintain Record of performed task.	1	2
	Total	16	25

Necessary Resources (Machinery):

Sl	**ITEM NAME**	**QUANTITY**
01	Arc Welding Machine	10 no
02	Gas Welding Set (Oxy-Acetylene Cylinder)	04 Set
03	Resistance Welding Machine	02 no
04	Pillar / Gaze Drill Machine	02 no
05	Hand Drill Machine	04 no
06	Hand Grinding Machine	10 no
07	Pillar/ Bench Grinding Machine	04 no
08	Power Saw Machine	01 no
09	Shearing Machine	02 no
10	Bending Machine	02 no

Necessary Resources (Tools and equipments):

Sl	**ITEM NAME**	**QUANTITY**
1	Soldering Iron	05 nos
2	Table Vise	20 nos
3	Pipe Vise	04 nos
4	Anvil	05 nos
5	Hand shield	30 nos
6	Hand gloves	40 pairs
7	Chipping hammer	20 nos
8	Ballpin hammer (0.5, 01, 1.5 lb.)	Each 05 nos
9	Ball pin hammer 2 lb.	02 nos
10	Slage hammer 5lb	02nos

11	Mallet (Soft hammer) Various size	20nos
12	Tongs	20nos
13	Wire brash	20nos
14	Flat file (smooth, rough) 8”,10”,12”	Each group 12nos
15	Round file (smooth, rough) 6”,8”,10”	Each group 4nos
16	Half round file (smooth, rough) 8”,10”,12”	Each group 12nos
17	Triangle file (smooth, rough) 6”,8”,10”	Each group 6nos
18	Steel rule, Measuring Tap	Each 1dozon
19	Wire gauge	4nos
20	Virnear calipers	04nos
21	Micrometer (0-25mm)	02nos
22	Combination Players	10nos
23	Players(nose,cutting)	Each 05nos

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
1	Basic Sheet Metal Practice	J. W. Giachino	
2	Prathomic Fitting Sikkha	Hemanta Kumar Bhattacharia	
3	Workshop Practice Manual	K. Venkata Reddy	B.S Publications.
4	Mechaniacal Workshop Practice	K.C. John	PHI.
5	Welding Principles for Engineers	Morris	
6	Metal Fabrication	Robert L. O’con	
7	Workshop Technology-1	W.A.J. Chapman	Taylor & Francis

Website References:

Sl	WEB LINK	REMARKS
01	www.youtube	

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