DIPLOMA IN TEXTILE ENGINEERING SYLLABUS
PROBIDHAN-2022
4TH SEMESTER

Sl. No.	Subject		Period		C	Marks Distribution						
						Theory Assessment			Practical Assessment			Grand Total
	Code	Name	T	P		Continuous	Final	Total	Continuous	Final	Total	
1	21341	Wet Processing-I	3	3	4	60	90	150	25	25	50	200

This course will be conducted by: Md. Obydullah Al Masum

1) **Learning Outcome (Theoretical/Knowledge):**

• Identify & describe basic principles of modern technique and process sequence of water treatment, scouring, bleaching & mercerizing.
• Identify & explain modern equipment & devices involved in wet processing
• Explain different chemical properties
• Identify & classify different water
• Explain procedure of different pretreatment process
• Explain physical changes of textile goods after performing pretreatment
• Explain the advantages and limitations of different types of pretreatment.

2) **Learning Outcome (practical):**

• Identify process sequence and machineries of wet processing.
• Point out modern techniques and devices involved in different stages of pretreatment.
• Identify different chemicals, auxiliaries & their application.
• Demonstrate different chemicals, apparatus and equipment's.

Detailed Syllabus (Theory)

Unit	Topics with Contents	Final Marks
1	**Basic concept of wet process.** 1.1. Define wet processing. 1.2. Describe the importance of wet processing in Textile sector. 1.3. Mention the steps of wet processing. 1.4. Illustrate the process flow chart of pre-treatment for woven fabric. 1.5. Illustrate the process flow chart of pre-treatment for knit fabric.	4
2	**Treatments of water** 2.1 Discuss the importance of water quality in wet processing. 2.2 Mention the standard water quality for wet process. 2.3 Distinguish between hard and soft water. 2.4 Explain the problems of hard water in wet processing. 2.5 Define water treatment. 2.6 Describe the soda lime process. 2.7 Describe the base or ion exchange process. 2.8 Define sequestering/chelating. 2.9 Describe the methods of expressing hardness. 2.10 Describe the process of estimating hardness of water.	6
3	**Acid, Base and salts** 3.1. Define acid, base and salts. 3.2. Discuss the chemistry of acid, base and salts. 3.3. Classify acid, base and salts. 3.4. Mention the uses of acids, bases and salts in wet process. 3.5 Define alkalinity of acid and acidity of alkali.	6
4	**pH, Normality, Molarity,Molality of solution and waste water standard** 4.1 Define pH of a solution.	7

	4.2 Mention the importance of pH for solution. 4.3 Describe the process of pH determination. 4.4 Define buffer solution. 4.5 Discuss normality, molality and molarity. 4.6 Solve the problems of pH, normality, molality and molarity. 4.7 Discuss COD, BOD and DO. 4.8 Discuss the standard of discharge waste water in environment as per Bangladesh Government rules.	
5	**Auxiliaries for pretreatments** 5.1 Define auxiliaries for pretreatment. 5.2 Mention oxidizing agents. 5.3 Explain the uses of oxidizing agents in textile wet processing. 5.4 Mention the name of reducing agents. 5.5 Explain the uses of reducing agents in textile wet processing. 5.6 Define detergents. 5.7 Classify detergents. 5.8 Discuss the uses of detergents in textile wet processing. 5.9 Define sequestering agent. 5.10 Mention the uses of sequestering agents in textile wet processing.	7
6	**Brushing and shearing.** 6.1 Define brushing and shearing. 6.2 Explain the necessity of brushing and shearing. 6.3 Describe the process of brushing and shearing.	4
7	**Singeing and Heat setting** 7.1 Define singeing. 7.2 Explain the necessity of singeing. 7.3 Mention the processes of singeing. 7.4 Describe the process of gas singeing. 7.5 Discuss the faults and remedies of singeing. 7.6 Mention the use of enzymes in pretreatment process 7.7 Define heat setting for elastomeric fabric.	6

	7.8 State the objectives of heat setting. 7.9 Discuss the process of heat setting. 7.10 Mention the faults and remedies of heat setting.	
8	**Batching for knit dyeing** 8.1 Define batching. 8.2 State the objectives of batching. 8.3 Mention the factors for batch preparation. 8.4 Draw the process flow chart of batch preparation for dyeing.	4
9	**De-sizing** 9.1 Define de-sizing. 9.2 State the objectives of de-sizing. 9.3 Classify de-sizing process. 9.4 Describe the enzymatic de-sizing procedure. 9.5 Mention the faults and remedies of de-sizing.	4
10	**Scouring** 10.1 Define scouring. 10.2 Explain the necessity of scouring. 10.3 Mention the methods of scouring. 10.4 Mention the functions of chemicals used in scouring. 10.5 Describe the scouring process of cotton fabric for exhaust & continuous method 10.6 Mention the faults and remedies of scouring. 10.7 Describe the scouring of blended fibers.	10
11	**Bleaching** 12.1 Define bleaching. 12.2 Mention the objectives of bleaching. 12.3 State the types of bleaching agent. 12.4 Describe bleaching mechanism of hypochlorite. 12.5 Describe bleaching mechanism of cotton with peroxide. 12.6 Mention merits and demerits of hypochlorite and peroxide bleaching	8

12	**Bleaching processes** 13.1 Describe the bleaching process in exhaust process 13.2 Describe pad-roll/pad- batch process. 13.3 Describe continuous process for bleaching. 13.5 Describe the bleaching of polyester-cotton blended fabrics. 13.6 Mention the factors considered for the selection of bleaching agent.	7
13	**Combined preparatory processes** 14.1 State the necessity of combined processes. 14.2 Describe combined de-sizing & scouring. 14.3 Describe combined scouring & bleaching. 14.4 Describe combined de-sizing, scouring & bleaching.	7
14	**Souring/Neutralization** 11.1 Define souring. 11.2 Mention the necessity of souring. 11.3 Describe souring processes. 11.4 Distinguish between scouring and souring.	4
15	**Mercerization** 15.1 Define mercerization. 15.2 Classify mercerization processes. 15.3 Mention the objectives of mercerization. 15.4 State the mechanism of mercerization. 15.5 Describe the methods of mercerization for yarn & fabric. 15.6 Discuss the steps of mercerizing.	4
	Total	**90**

Detailed Syllabus (Practical)

Unit	Topics with Contents	Final Marks
1	**Observe the pH of water.** 1.1 Identify the devices involved in pH. 1.2 Observe the operations involved in pH. 1.3 Sketch the pH meter. 1.4 Demonstrate working principle using the pH meter. 1.5 Maintain the record of performed experiments.	2.5
2	**Observe hardness of water & its removal process.** 2.1 Identify the devices involved in this experiment. 2.2 Observe the operations involved in water hardness removal process. 2.3 Sketch the experiment related instruments. 2.4 Demonstrate working principle using material. 2.5 Maintain the record of performed experiments.	2.5
3	**Observe the acidity of a solution.** 3.1 Identify device involved acidity of a solution. 3.2 Sketch the respective apparatus. 3.3 Demonstrate working principle using material. 3.4 Maintain the record of performed experiments.	2.5
4	**Observe cotton fabric by enzyme de-sizing.** 4.1 Identify the different chemicals for enzyme de-sizing. 4.2 Observe the operations involved in enzyme de-sizing. 4.3 Sketch the fabric path of enzyme de-sizing. 4.4 Demonstrate working principle using material. 4.5 Maintain the record of performed experiments.	2.5
5	**Observe the scouring of cotton fabric using caustic soda.** 5.1 Identify the different chemicals involved in the process. 5.2 Observe the operations involved in scouring.	2.5

	5.3 Sketch the respective apparatus. 5.4 Demonstrate working principle using material. 5.5 Maintain the record of performed experiments.	
6	**Observe the scouring of cotton-polyester blended fabric.** 6.1 Identify the different chemicals involved in cotton-polyester blended fabric scouring. 6.2 Observe the operations involved in experiment. 6.3 Sketch the respective apparatus. 6.4 Demonstrate working principle using material. 6.5 Maintain the record of performed experiments.	2.5
7	**Observe the bleaching cotton fabric using hypochlorite.** 7.1 Identify the different chemicals involved in experiment. 7.2 Observe the operations involved in experiment. 7.3 Sketch the respective apparatus. 7.4 Demonstrate working principle using material. 7.5 Maintain the record of performed experiments.	2.5
8	**Observe the bleaching cotton fabric using H_2O_2** 7.1 Identify the different chemicals involved in experiment. 7.2 Observe the operations involved in experiment. 7.3 Sketch the respective apparatus. 7.4 Demonstrate working principle using material. 7.5 Maintain the record of performed experiments.	2.5
9	**Observe combined scouring & bleaching** 9.1 Identify the different chemicals involved in experiment. 9.2 Observe the process involved in experiment. 9.3 Sketch the respective apparatus. 9.4 Demonstrate working principle using material. 9.5 Maintain the record of performed experiments.	2.5

10	**Observe mercerization process** 10.1 Identify the different chemicals involved in experiment. 10.2 Observe the process involved in experiment. 10.3 Sketch the respective apparatus. 10.4 Demonstrate working principle using material. 10.5 Maintain the record of performed experiments.	2.5
	Total	**25**