



**DIPLOMA IN TEXTILE ENGINEERING SYLLABUS
PROBIDHAN-2022
5TH 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	21151	Textile Testing & Quality Control-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):

- Interpret testing, quality and quality control.
- Describe the atmospheric condition for textile testing.
- State fiber length, strength, fineness, maturity and neps measurement.
- Explain yarn counting system, yarn twist, yarn evenness and yarn faults.

Detailed Syllabus (Theory)

Unit	Topics with Contents	Final Marks
1	Introduction to Textile Testing & Quality Control 1.1. Define Textile Testing. 1.2. Mention the objectives of textile testing. 1.3. Illustrate the importance of textile testing. 1.4. Define Quality Control. 1.5. Differentiate between process control and product control. 1.6. State the affecting factors on test results. 1.7. List the name of Fibre, yarn, grey fabric, dyed/printed fabric and apparel test.	6
2	Sampling Technique 2.1. Define sample and sampling. 2.2. State the necessity of sampling. 2.3. Describe the influencing factors of sampling method.	7

	2.4. Discuss different sampling methods.	
3	<p>Identification of Textile Fibre</p> <p>3.1.Explain the necessity of Fibre identification.</p> <p>3.2. State the method of sample preparation for identification.</p> <p>3.3.Explain burning method for fibre identification.</p> <p>3.4.Explain microscopic method for fibre identification.</p> <p>3.5.Explain chemical method for fibre identification.</p>	6
4	<p>Humidity & Moisture in Textile</p> <p>4.1.Define humidity, Relative humidity, absolute humidity, standard atmospheric condition, testing atmospheric condition and conditioning of sample.</p> <p>4.2.Define Moisture, Moisture regain and moisture content.</p> <p>4.3.Relate between moisture regain and moisture content.</p> <p>4.4.Discuss the effect of humidity on textile materials.</p> <p>4.5.Describe the working principles of dry&wet bulb hygrometer.</p> <p>4.6. State the factors affecting moisture regain of textile materials.</p> <p>4.7.Discuss advantages and disadvantages of atmospheric condition on textile processing.</p>	10
5	<p>Fibre Length Measurement</p> <p>5.1.Define Staple length and effective length.</p> <p>5.2.Define mean length, modal length and span length.</p> <p>5.3.Define Mean Length(ML) and Upper Half Mean Length(UHML)</p> <p>5.4.Define floating Fibre percentage.</p> <p>5.5. State uniformity index and uniformity ratio.</p> <p>5.6. State the importance of fibre length.</p> <p>5.7.Describe the methods of Fibre length measurement by comb sorter and digital fibro graph.</p> <p>5.8.Describe the methods of Fibre length measurement by High Volume Instrument (HVI) and Advanced Fibre Information System (AFIS)</p>	8
6	<p>Fibre Fineness</p> <p>6.1 Define Fibre fineness.</p> <p>6.2 Define micronaire value.</p> <p>6.3 Discuss the principle of fibre fineness measurement.</p> <p>6.4 Discuss the importance of fibre fineness measurement.</p> <p>6.5 Illustrate the working procedure of fibre fineness measurement by air flow method.</p> <p>6.6 Mention the range of micronaire value for measuring the fibre fineness.</p>	6

7	<p>Fibre Strength Measurement</p> <p>7.1 Define fibre strength. 7.2 State the importance of bundle Fibre strength. 7.3 Mention the factors influencing bundle Fibre strength. 7.4 Describe the working principle of bundle Fibre strength (Tenacity) measurement by Stelometer.</p>	5
8	<p>Fibre Maturity</p> <p>8.1. Define fiber maturity. 8.2. Explain the importance of Fibre maturity. 8.3. Classify cotton fibre according to maturity. 8.4. Distinguish among matured, immature and dead fibre. 8.5. Discuss the maturity ratio measurement system. 8.6. Mention the range of maturity ratio.</p>	6
9	<p>Trash and Neps Measurement</p> <p>9.1. Define trash, Neps & seed coat neps. 9.2. Discus the necessity of trash & neps measurement. 9.3. Describe the problems of neps on processing steps and products. 9.4. Interpret Shirley trash analyzer, High Volume Instrument (HVI) and Advanced Fibre Information System (AFIS). 9.5. Discuss color grading measurement system by High Volume Instrument (HVI).</p>	6
10	<p>Yarn Numbering System</p> <p>10.1 Define yarn count. 10.2 State different yarn counting system with formula. 10.3 Mention different conversion formula related to yarn count. 10.4 Calculate relevant mathematical problems of yarn count. 10.5 Prepare a table of units of length and weight of different yarn numbering system. 10.6 List different instrument used for measuring yarn count. 10.7 Explain the method to find the count of plied/folded and cabled/cord yarn. 10.8 Describe the working principle of wrap reel & balance method for yarn count measurement. 10.9 Illustrate the principle of yarn count measurement by beezley's balance.</p>	8
11	<p>Twist in Yarn</p> <p>11.1. Define yarn Twist Per Inch (TPI), Twist Per Meter (TPM) and Twist Per Centimetre (TPC). 11.2. Define Twist Multiplier (TM) and Twist Factor (TF). 11.3. State the measurement procedure of twist.</p>	4

	<p>11.4. Discuss direction of twist (S and Z).</p> <p>11.5. Interpret the effect of twist on yarn and fabric.</p> <p>11.6. Describe the working principle of a modern twist measurement instrument.</p>	
12	<p>Yarn Strength and Elongation</p> <p>12.1. Define single yarn strength.</p> <p>12.2. Illustrate measuring procedure of single yarn strength tester.</p> <p>12.3. Define lea strength.</p> <p>12.4. Define Count-Strength Product (CSP).</p> <p>12.5. Define elongation percentage of single yarn.</p> <p>12.6. State the factors affecting yarn strength and elongation.</p>	6
13	<p>Yarn Evenness and Imperfection</p> <p>13.1. Define yarn evenness (Um Percentage and CVm Percentage) and imperfection (IPI).</p> <p>13.2. Define yarn hairiness.</p> <p>13.3. Describe the measuring principle of yarn evenness tester.</p> <p>13.4. State the effects of hairiness on processing and fabric.</p> <p>13.5. Discuss the principle of hairiness measurement.</p>	6
14	<p>Yarn Faults</p> <p>14.1. Define seldom occurring fault.</p> <p>14.2. Define frequent occurring fault.</p> <p>14.3. Define classimat matrix.</p> <p>14.4. Describe working principle of classimat.</p> <p>14.5. Discuss measuring parameters of classimat.</p>	6
	Total	90

Detailed Syllabus (Practical)

Unit	Topics with Contents	Final Marks
1	<p>Measure Humidity</p> <p>1.1. Identify the model, brand, origin and manufacturing year of wet and dry bulb hygrometer.</p> <p>1.2. Measure Relative Humidity (RH%) by wet and dry bulb hygrometer.</p> <p>1.3. Maintain the record of performed experiment.</p>	2

2	<p>Measure Moisture in Textiles</p> <p>2.1. Identify model, brand, origin and manufacturing year of oven and moisture meter.</p> <p>2.2. Measure moisture regain percentage of textile fibre by necessary instrument.</p> <p>2.3. Measure moisture content percentage of textile fibre by moisture meter.</p> <p>2.4. Maintain the record of performed experiment.</p>	3
3	<p>Identify Textile Fibre</p> <p>3.1. Identify the chemicals used for different fibres.</p> <p>3.2. Observe the specification of microscope.</p> <p>3.3. Detect the nature of fibres by burning method.</p> <p>3.4. Recognize cross-sectional and longitudinal view of textile fiber by microscope.</p> <p>3.5. Recognize fibres by chemical test.</p> <p>3.6. Maintain the record of performed experiment.</p>	2
4	<p>Determine Fibre Properties</p> <p>4.1. Collect specification from different machine.</p> <p>4.2. Measure fibre length by Comb Sorter.</p> <p>4.3. Detect fibre strength by Stelometer & High Volume Instrument (HVI).</p> <p>4.4. Test fibre fineness by The Wool Industries Research Association (WIRA) Fineness Meter & High Volume Instrument (HVI).</p> <p>4.5. Detect fibre maturity by NaOH & High Volume Instrument (HVI).</p> <p>4.6. Demonstrate trash measurement procedure by Shirley Trash Analyzer & High Volume Instrument (HVI).</p> <p>4.7. Maintain the record of performed experiment.</p>	4
5	<p>Count Neps</p> <p>5.1. Identify specification and modules of Advanced Fibre Information System (AFIS).</p> <p>5.2. Perform different set up for neps test of fibre, Lap/mat, sliver, mini lap and roving.</p> <p>5.3. Calculate Neps generation percentage (NGP) in Blowroom.</p> <p>5.4. Compute Neps Removal Efficiency (NRE) of carding and comber.</p> <p>5.5. Demonstrate counting procedure in Neps counter.</p> <p>5.6. Maintain the record of performed experiment.</p>	1
6	<p>Identify Yarn Numbering System</p> <p>6.1. Identify the wrap reel, electrical balance, Beesley balance and auto sorter machinery.</p> <p>6.2. Determine the count of cotton, jute, wool, nylon, polyester yarn by Wrap reel & electronic balance, Beesley balance and Auto sorter.</p>	3

	6.3. Maintain the record of performed experiment.	
7	Measure Yarn Twist 7.1. Recognize the specification of twist tester. 7.2. Observe the basic settings for twist tester. 7.3. Apply ordinary, semi-automatic and automatic twist tester. 7.4. Maintain the record of performed experiment.	2
8	Measure Yarn Strength and Elongation 8.1. Recognize the specification of single yarn strength tester, lea strength tester and tensile strength tester for jute. 8.2. Observe the basic settings for single yarn strength tester, tensile strength tester for jute and lea strength tester. 8.3. Demonstrate the testing procedure of Count Strength Product (CSP) and Quality Ratio (QR). 8.4. Maintain the record of performed experiment.	3
9	Perform Yarn Evenness and Imperfection Analysis 9.1. Collect specification of yarn evenness tester. 9.2. Observe the settings for sliver, roving and different count of yarn. 9.3. Demonstrate the testing procedure of sliver, roving and different count of yarn. 9.4. Conduct visual method by blackboard wrapping. 9.5. Maintain the record of performed experiment.	3
10	Perform Yarn Fault Analysis 10.1. Identify model, brand, origin and manufacturing year of classimat. 10.2. Demonstrate fault analysis from classimat. 10.3. Maintain the record of performed experiment.	2
	Total	25