BANGLADESH TECHNICAL EDUCATION BOARD

AGARGAON, DHAKA-1207

4-YEARS DIPLOMA IN TEXTILE ENGINEERING CURRICULUM
COURSE STRUCTURE & SYLLABUS
(PROBIDHAN-2022)

APPAREL MANUFACTURING

SPECIALIZATION CODE: 14

2nd SEMESTER

(Effective from 2021-2022 Academic Session)

DIPLOMA IN TEXTILE ENGINEERING
COURSE STRUCTURE
PROBIDHAN-2022

APPAREL MANUFACTURING (14)
2nd SEMESTER

SPECIALIZATION NAME: APPAREL MANUFACTURING (14) **2nd SEMESTER**

Sl. No.	Subject		Period Per Week		Credit	Marks Distribution						
						Theory Assessment			Practical Assessment			Grand Total
	Code	Name	Theory	Practical		Continuous	Final	Total	Continuous	Final	Total	
1	21011	Engineering Drawing	0	6	2	-	-	-	50	50	100	100
2	21121	General Textile Processing -II	2	3	3	40	60	100	25	25	50	150
3	25721	Bangla-II	2	0	2	40	60	100	-	-	-	100
4	25722	English-II	2	0	2	40	60	100	-	-	-	100
5	25921	Mathematics-II	3	3	4	60	90	150	25	25	50	200
6	25922	Physics-II	3	3	4	60	90	150	25	25	50	200
7	25924	Chemistry-II	2	3	3	40	60	100	25	25	50	150
Total			**14**	**18**	**20**	**280**	**420**	**700**	**150**	**150**	**300**	**1,000**

DIPLOMA IN TEXTILE ENGINEERING
SYLLABUS
PROBIDHAN-2022
APPAREL MANUFACTURING (14)
2nd SEMESTER

Subject Code	Subject Name	Period per Week		Credit
21011	ENGINEERING DRAWING	T	P	C
		0	6	2

Rationale	Drawing is the language of engineers and technicians. Reading and interpreting engineering drawing is their day to day responsibility. The subject is aimed at developing basic graphic skills in the students so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation.
Learning Outcome (Practical)	**After undergoing the subject, the students will be able to:** • Identify and use of different grades of pencils and other drafting instruments which are used in engineering field. • Draw free hand sketches of various kinds of objects. • Utilize various types of lines used in engineering drawing. • Apply different dimensioning methods on drawing of objects. • Apply different types of scales and their utilization in reading and reproducing drawings of objects and maps. • Draw two dimensional view of different objects viewed from different angles (orthographic views) • Draw and interpret complete inner hidden details of an object which are otherwise not visible in normal view • Prepare projections of Solid • Generate isometric (3D) drawing from different 2D (orthographic) views/sketches • Identify conventions for different engineering materials, symbols, sections of regular objects and general fittings used in Civil and Electrical household appliances.

Detailed Syllabus (Practical)

Unit	Topics with Contents	Class (3 Period)	Continuous Marks
1.	**Practice with drawing instruments and materials.** 1.1 Identify the different types of drawing instruments. 1.2 Apply different types of drafting equipment. 1.3 Identify the standard sizes of drawing board and sheets. 1.4 Draw the border lines in drawing sheets following standard rule. 1.5 Draw horizontal, vertical and inclined lines. 1.6 Draw 15 degree, 75 degree, 105 degree and 120 degree angles by using set squares. 1.7 Apply lettering guide, template, scale pantograph and French curve.	**2**	**4**
2	**Practice Letter and number freehand and with instruments.** 2.1 Draw freehand single stroke vertical letters from A to Z (upper and lower case) and numbers 0 to 9. 2.2 Draw freehand inclined (75 degree) single stroke letters from A to Z (upper and lower case) and numbers from 0 to 9. 2.3 Draw block letters (Gothic) using 5: 4 proportions. 2.4 Select a suitable size of letters and write a few sentences using all the letters selecting suitable scale. 2.5 Draw title strip with proper placement using suitable size of letters and measurements.	**3**	**4**
3	**Draw lines.** 3.1 Select different lines in drawing. 3.2 Apply center line, hidden line, phantom line, break line, dimension line, extension line, section line and cutting plane line. 3.3 Apply different thickness of line to emphasize a part of drawing. 3.4 Select recommended grades of pencils for various types of lines for engineering drawing.	**2**	**4**
4	**Perform different dimensioning.** 4.1 Set dimensions in engineering drawing according to an accepted standard. 4.2 Identify the elements of dimensions from a given dimensioned drawing. 4.3 Apply aligned and unidirectional system of dimensioning. 4.4 Draw size and location of dimension, continuous dimension, staggered dimension and dimensioning in limited space. 4.5 Set necessary dimension to a given drawing with suitable arrows.	**2**	**4**
5	**Prepare scale for drawing application.** 5.1 Calculate representative fraction and interpret a scale reading. 5.2 Apply different types of scale to find full size dimension. 5.3 Draw a plain scale to show meter, centimeter and millimeter of a given distance on object. 5.4 Draw a diagonal scale to show three units having given RF. 5.5 Calculate particular distance on plain and diagonal scale. 5.6 Apply scale of chord. 5.7 Draw angle of 49 degree, 78 degree and 95 degree with the help of scale of chord.	**4**	**6**

6	**Draw Geometric figures (regular polygons) & Construction of conic sections.** **6.1** Draw regular polygons i.e. pentagon, hexagon and octagon having given one side. 6.2 Draw an ellipse by concentric circle method. 6.3 Draw an ellipse by parallelogram method. 6.4 Draw an ellipse by four center method. 6.5 Draw a parabola having given foci and director. 6.6 Draw a parabola from given abscissa and ordinate. 6.7 Maintain the record of performed task.	**3**	**6**
7	**Draw standard symbols in drawing.** 7.1 Identify symbols used in drawing. 7.2 Draw a legend using symbols of different engineering materials. 7.3 Draw the symbols of different plumbing fittings and fixtures used in drawing. 7.4 Draw the symbols of different electrical fittings and fixtures used in drawing. 7.5 Interpret information from drawing containing standard symbols. 7.6 Maintain the record of performed task.	**2**	**4**
8	**Draw different views of engineering drawing.** 8.1 Identify and interpret different types of views. 8.2 Draw the isometric view of rectangular and circular lamina. 8.3 Draw the isometric projection of solids such as: cube, cylinder, pyramid, prism and steps from different orthographic views. 8.4 Draw the isometric projection of three deterrent engineering parts from orthographic views 8.5 Draw the Oblique Projection of a square and rectangular solid. 8.6 Draw the Perspective Projection of a square and rectangular solid. 8.7 Convert of Orthographic Views to Isometric Views and Vice Versa.	**4**	**6**
9	**Apply the Principles of orthographic projection to a straight line.** 9.1 Draw Line parallel to both planes 9.2 Draw Line perpendicular in vertical plane and parallel to horizontal plan 9.3 Draw Line parallel to vertical plane and perpendicular to horizontal plane 9.4 Draw Line inclined at given angle to horizontal plane and parallel to vertical plane 9.5 Draw Line inclined at given angle to vertical plane and parallel to horizontal plane	**4**	**4**
10	**Apply Orthographic projection of rectangular and circular planes (Lamina)** 10.1 Draw the orthographic projection of rectangular lamina Parallel to both planes. 10.2 Draw the orthographic projection of rectangular lamina inclined at given angle to Horizontal plane. 10.3 Draw the orthographic projection of circular lamina parallel to both planes. 10.4 Draw the orthographic projection of a cube kept at an angle with one of the planes in first angle method. 10.5 Draw the orthographic projection of a pyramid kept at an angle with both the	**6**	**8**

	planes in 1st angle method. 10.6 Draw the orthographic projection of a cone kept at an angle with both the planes in third angle method. 10.7 Draw the orthographic projection of a prism kept at an angle with vertical plane in third angle method.		
	Total	**32**	**50**

Necessary Resources (Tools, Equipment and Machinery):

Sl	Item Name	Quantity
01	1. Drawing board	1 No
	2. Mini-draughter	1 No
	3. Instrument box	1 No
	4. Set squares	1 set
	5. Protractor	1 No
	6. Set of scales	2 set
	7. French curves	1 set
	8. Drawing sheets	28 Nos
	9. Pencils (B,2B,HB)	12 No
	10. Templates	1 No

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
01	Geometrical Drawing	Arun Vikran Kothapalli	I K International First Edition,2012
02	Prathomic Engineering Drawing	Hemanta Kumar Bhattacharia	Somnath Book Agency Tenth Edition
03	Civil Engineering Drawing	Guru Charan Singh	Standard Publications First Edition,2009
04	Textbook of Engineering Drawing	K. Venkata Reddy	BS Publications Second Edition

Website References:

Sl	Web Link	Remarks
01	https://www.ikbooks.com	
02	https://www.researchgate.net	
03	https://www.books.google.com	

DIPLOMA IN TEXTILE ENGINEERING
SYLLABUS
PROBIDHAN-2022
APPAREL MANUFACTURING (14)
2nd SEMESTER

SUBJECT CODE	SUBJECT NAME	PERIOD PER WEEK		CREDIT
21121	GENERAL TEXTILE PROCESSING-II	T	P	C
		2	3	3

Rationale	Students need to gather basic knowledge and skill on overall processes for wet processing, garments manufacturing, fashion design and merchandising before in depth study on specific subject matter as well as specialization. Fundamental knowledge and skills are the prerequisite to study specialized subjects. This course outlines the overview of wet processing and apparel manufacturing as well as introduces the basic knowledge of fashion design and merchandising.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to:** ➢ Identify and classify the process sequence of wet processing ➢ Explain wet processing machinery ➢ Identify and classify the process sequence of garments manufacturing machinery ➢ Explain garments manufacturing process machinery ➢ Identify & describe basic principles of fashion designing ➢ Explain the activities of merchandising
Learning Outcome (Practical)	**After undergoing the subject, students will be able to:** ➢ Identify process sequence and machinery of wet preparatory process ➢ Identify machinery involved in dyeing, printing and finishing ➢ Point out the components of basic garments items ➢ Identify garments manufacturing machinery and their operations ➢ Identify sewing machinery ➢ Demonstrate elements of tech pack and swatch card

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**INTRODUCTION TO WET PROCESSING** 1.1 Explain Wet Processing 1.2 Mention the Flow Chart of Wet Processing for Fiber and Yarn Dyeing 1.3 Specify the Flow Chart of Wet Processing for Knit and Woven Fabric 1.4 State the Flow Charts of Wet Processing for Cotton, Synthetic & Blended Fabric	**2**	**4**
2.	**PRETREATMENT** 2.1 Define Singeing 2.2 Explain the purposes of Singeing 2.3 Explain Desizing 2.4 Define Scouring 2.5 Mention the purposes of Scouring 2.6 List the methods and machinery used for Scouring 2.7 Define Bleaching 2.8 Classify Bleaching 2.9 Mention the purposes of Bleaching 2.10 State the purposes of Mercerizing	**4**	**6**
3.	**DYEING** 3.1 Define Colour, Dye and Pigment 3.2 Classify Dyestuff 3.3 Point out suitable Dyestuff for the application on different Fibres 3.4 List various types of Dyeing Machinery	**3**	**6**
4.	**PRINTING AND FINISHING** 4.1 Define Printing 4.2 Mention the ingredients of Printing Paste 4.3 List the methods of Printing 4.4 Recognize the style of Printing 4.5 Distinguish between Dyeing and Printing 4.6 Define Textile Finishing 4.7 Mention the purpose of Textile Finishing 4.8 Recognize Mechanical Finishes 4.9 List the Chemical Finishes with objectives	**4**	**8**
5.	**INTRODUCTION TO GARMENTS MANUFACTURING** 5.1 Describe the history of Garment Industry in Bangladesh 5.2 Discuss the flow chart of Garments Manufacturing Process 5.3 List the common symbols used in Readymade Garments 5.4 Explain Apparel name based on product group 5.5 List Trims and Accessories	**3**	**6**

6.	**SAMPLING** 6.1 Define Sample and Sampling 6.2 Classify Sample 6.3 Mention the purpose of different Sample prepared in Garments	**2**	**4**
7.	**GARMENTS MANUFACTURING** 7.1 Define Pattern 7.2 Mention the purpose of Pattern Making 7.3 Define Marker 7.4 Mention the purpose of Marker 7.5 Recognize the purpose of Spreading 7.6 State the types of Fabric Cutting 7.7 Classify Sewing machine	**4**	**8**
8.	**INTRODUCTION TO FASHION DESIGN** 8.1 Define Fashion, Style, Trend, Fad, Classic & Portfolio 8.2 Define Fashion Follower and Fashion Leader 8.3 Distinguish between ready to wear and Haute Couture 8.4 Illustrate Fashion Cycle 8.5 List some of the renowned Fashion Designer and Fashion City	**3**	**6**
9.	**PRINCIPLES AND ELEMENTS OF DESIGN** 9.1 State the Principles of Design 9.2 Describe the principles of Design during product development 9.3 Recognize the elements of Design 9.4 Explain the theory of Fashion Adaption process (Trickle Up, Trickle Down, Trickle Across)	**3**	**6**
10.	**MERCHANDISING** 10.1 Define Merchandising 10.2 Specify common Terms and Terminology used in Merchandising 10.3 Mention the flow chart for Merchandising 10.4 List the roles of Merchandiser 10.5 Classify Merchandising 10.6 Recognize Tech Pack 10.7 List the Garments importer countries 10.8 Name some common Buyers & Brands 10.9 List the ways of getting order in Garment Factory 10.10 Point out the items of Sourcing	**4**	**6**
	Total	**32**	**60**

Detailed Syllabus (Practical)

Unit	Topics with Contents	Class (3 Period)	Continuous Marks
1.	**OBSERVE WET PREPARATORY PROCESS** 1.1 Identify the machinery involved in Wet Preparatory Process 1.2 Observe the operations involved in Wet Preparatory Process 1.3 Point out brand, origin and capacity of Wet Preparatory Machinery 1.4 Maintain the record of performed experiment	**1**	**2**
2.	**OBSERVE DYEING PROCESS** 2.1 Identify the machinery involved in Dyeing Process 2.2 Observe the operations involved in Dyeing Process 2.3 Point out the brand name, origin and capacity of different Dyeing Machinery 2.4 Maintain the record of performed experiment	**1**	**2**
3.	**OBSERVE PRINTING PROCESSES** 3.1 Identify Printing Equipment 3.2 Observe different methods of Printing 3.3 Demonstrate various Printed Products 3.4 Maintain the record of performed experiment	**1**	**3**
4.	**OBSERVE FINISHING PROCESSES** 4.1 Identify different Finishing machinery involved in Wet Processing 4.2 Observe the differences between Mechanical and Chemical finishes 4.3 Express the effect of different types of Finishing 4.4 Maintain the record of performed experiment	**1**	**3**
5.	**OBSERVE WOVEN SHIRT AND PANT** 5.1 Identify Woven Shirt and Pant 5.2 Point out the parts of Basic Shirt and Pant 5.3 Maintain the record of performed experiment	**2**	**3**
6.	**OBSERVE KNITTED T-SHIRT AND TROUSERS** 6.1 Identify T-shirt and Trousers 6.2 Point out the parts of Basic T-shirt and Trousers 6.3 Maintain the record of performed experiment	**2**	**3**
7.	**OBSERVE GARMENTS MANUFACTURING PROCESS** 7.1 Point out the machinery involved in Garments Manufacturing Process 7.2 Observe the operations involved in Garments Manufacturing Process 7.3 List the brand, origin and capacity of Garment Manufacturing Process 7.4 Maintain the record of performed experiment	**2**	**3**

8.	**OBSERVE SEWING MACHINES** 8.1 Identify different types of Sewing Machines 8.2 Observe the purpose of different types of Sewing Machines 8.3 Find out the brand name, origin, and capacity of Sewing Machines 8.4 Maintain the record of performed experiment	**2**	**2**
9.	**OBSERVE TECH PACK** 9.1 Observe the elements of Tech Pack 9.2 Identify the elements of Tech Pack 9.3 Point out the purpose of Tech Pack 9.4 Maintain the record of performed experiment	**2**	**2**
10.	**OBSERVE SWATCH CARD** 10.1 Observe the elements of Swatch Card 10.2 Identify the containing elements of Swatch Card 10.3 Maintain the record of performed experiment	**2**	**3**
	Total	**16**	**25**

Necessary Resources (Tools, Equipment and Machinery):

Sl.	Item Name	Quantity (piece/s)
01	Oven	1
02	Boiler	1
03	Jigger Dyeing Machine	1
04	Hand Blocks	5
05	Screen Printing Accessories	1
06	Transfer Printing Tools	5
07	Boutique Printing with Accessories	50
08	T-Shirt, Pant, Trousers, Woven Shirt	4
09	Measuring Scale, Scissors, Measuring Tape	4
10	Chain Stitch Machine	2
11	Lock Stitch Machine	5
12	Overlock Machine	1
13	Flat Lock Machine	2
14	Tech Pack	5
15	Swatch Card	5
16	Zigzag Scissors	1
17	Straight Knife Cutting Machine	1

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
01	Machinery of Knit Fabric Processing	Dr. Shaikh Md. Mominul Alam & Md. Golam Kibria	
02	Garments and Technology	M. A. Kashem	
03	Understanding Textiles for a Merchandiser	Shah Alimuzzaman Belal	BMN-3 Foundation
04	Introduction to Textile Engineering	Dr. Abu Bakr Siddique & Dr. Hosne Ara Begum	Books Fair Publications
05	Basis Principle of Textile Coloration	Broadbent	Society of Dyes and Colourist
06	The Technology of Clothing Manufacturing	Harold carr and Barbara Latham	
07	Textile Printing and Finishing	Mohammad Shahjahan Feroze	Gronthonir Publication
08	Related Books published by BTEB		

Website References:

Sl.	Web Link	Remarks
01	https://www.youtube.com/channel/UCWqYV3o_68pcoAdJadtORrA	
02	https://nptel.ac.in/	
03	https://textilelearner.net/	
04	https://bunon.info/	

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DIPLOMA IN TEXTILE ENGINEERING
SYLLABUS
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বিষয় কোড	বিষয়ের নাম	টি	পি	সি
২৫৭২১	বাংলা-০২	২	০	২

উদ্দেশ্য:

বাংলা ব্যাকরণ অংশে সকল ডিপ্লোমা পর্যায়ের শিক্ষার্থীদের মধ্যে ব্যাকরণ ও ভাষা দক্ষতা বৃদ্ধির সাথে দেশপ্রেম ও মূল্যবোধকে উজ্জীবিত করবে। পঠনে ও লেখনিতে শিক্ষার্থীদের দক্ষতা অর্জন, সৃজনশীল প্রতিভার বিকাশ সাধন, সাহিত্য সংস্কৃতির প্রতি আগ্রহ সৃষ্টি এবং দৃষ্টিভঙ্গির কাঙ্খিত পরিবর্তন আনয়নে সম্যক ধারণা পাবে।

শিখনফল:

- ব্যবহারিক জীবনে ভাষা শিক্ষার প্রয়োজনীয়তার বিভিন্ন দিক বর্ণনা করতে পারবে।
- ব্যাকরণের সংজ্ঞা, পরিচয়, বিষয়বস্তু ও পরিধি সম্পর্কে অবহিত হবে।
- বাংলা সাহিত্যের যুগবিভাগ সম্পর্কে ধারণা লাভ।
- যতিচিহ্নের বহুমুখী ও ব্যাপক ব্যবহার জেনে তা প্রয়োগ করতে পারবে।
- প্রমিত বাংলা বানানের নিয়মের আলোকে বাংলা শব্দ ও বাক্য শুদ্ধভাবে প্রয়োগ করতে পারবে।
- প্রশাসনিক, দাপ্তরিক ও বিভিন্ন শিক্ষা সংশ্লিষ্ট প্রয়োজনীয় শব্দ ও পরিভাষা ব্যবহার করতে পারবে।
- চিঠিপত্র, চাকরির দরখাস্ত, প্রতিবেদন, মুঠোফোন ও ই-মেইলে যোগাযোগের জন্য বাংলা ভাষায় বার্তা ও চিঠি লিখতে পারবে।
- পাঠ্যসূচিভুক্ত এবং পাঠ্য বহির্ভূত ভাষা-সাহিত্য পাঠ করে নিজের অনুভূতি প্রকাশ করতে ও লিখতে পারবে।

	ক্লাস	নম্বর
০১। বাংলা ব্যাকরণ ও ব্যাকরণ পাঠের গুরুত্ব।	০৩	০৩
১.১ বিষয়বস্তু ও পরিধি।		
১.২ ব্যাকরণ পাঠের গুরুত্ব ও প্রয়োজনীয়তা।		
০২। বাংলা ভাষা	০৩	০৫
২.১ ভাষার সংজ্ঞা, উৎপত্তি ও ক্রমবিকাশ।		
২.২ বাংলা সাহিত্যের যুগবিভাগ।		
২.৩ বাংলা ভাষার রূপ ও রীতি।		
০৩। বাংলা ধ্বনিতত্ত্ব	০৩	১০
৩.১ ধ্বনি ও বর্ণ, উচ্চারণ স্থান ও উচ্চারণ প্রকৃতি।		
৩.২ বাংলা একাডেমি কর্তৃক প্রমিত বাংলা বানানের নিয়ম।		
৩.৩ ণ-ত্ব বিধান ও ষ-ত্ব বিধান।		

০৪। রূপতত্ত্ব ০৩ ০৯

৪.১ শব্দ, শব্দের শ্রেণিবিভাগ (সংজ্ঞা, উৎপত্তি, গঠন ও অর্থ অনুযায়ী)।
৪.২ সমার্থক শব্দ, বিপরীত শব্দ, সমোচ্চারিত ভিন্নার্থক শব্দ ও পারিভাষিক শব্দ।

০৫। বাক্যতত্ত্ব ০৩ ০৫

৫.১ বাক্য গঠন রীতি ও বাক্য প্রকরণ।
৫.২ বাক্যান্তর।
৫.৩ যতিচিহ্ন।

০৬। বাক্য সংকোচন, বাগধারা, প্রবাদ প্রবচন ০৩ ০৫

৬.১ বাক্য সংকোচন।
৬.২ বাগধারা।
৬.৩ প্রবাদ-প্রবচন।

০৭। বিরচন (ভাবসম্প্রসারণ, সারাংশ/সারমর্ম) ০৩ ০৫

৭.১ ভাবসম্প্রসারণ।
৭.২ সারাংশ/সারমর্ম।

০৮। ভাষণ ও প্রতিবেদন ০৩ ০৬

৮.১ জাতীয় দিবস বিষয়ক।
৮.২ প্রাতিষ্ঠানিক ও সংবাদপত্রে প্রকাশের উপযোগী।

০৯। পত্র লিখন ০৪ ০৬

৯.১ আবেদনপত্র ।
৯.২ যোগদানপত্র ও স্মারকলিপি ।
৯.৩ সংবাদপত্রে প্রকাশ ও যোগাযোগের জন্য ই-মেইল, ক্ষুদেবার্তা ।

১০। প্রবন্ধ রচনা ০৪ ০৬

১০.১ দেশপ্রেম, মুক্তিযুদ্ধ, স্মরণীয় দিবস ।
১০.২ প্রকৃতি, শিক্ষা, খেলাধুলা ।
১০.৩ বিজ্ঞান, জীবনী ।

সহায়ক গ্রন্থ:

০১। উচ্চতর স্বনির্ভর বিশুদ্ধ ভাষা শিক্ষা - ড. হায়াৎ মামুদ

০২। ভাষা সৌরভ
ব্যাকরণ ও রচনা - মাহবুবুল আলম

০৩। বাংলা লেখার নিয়ম কানুন - হায়াৎ মামুদ

০৪। প্রমিত বাংলা বানানের নিয়ম - বাংলা একাডেমি

০৫। উচ্চ মাধ্যমিক বাংলা সংকলন - জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড ।

০৬। বাংলা ব্যাকরণ ও নির্মিতি - জাতীয় শিক্ষাক্রম ও পাঠ্যপুস্তক বোর্ড ।

বোর্ড প্রয়োজনে পাঠ্যসূচি ইউনিটভিত্তিক নম্বরে কমবেশি করতে পারবে।

প্রণয়নে-

Marks Distribution (100)	
Attendance	05
Class Test(Listening Test)	06
Quiz Test (Speaking)	04
Presentation and Assignment	05
Midterm	20
Final	60
Total	**100**

কনকেন্দু ভৌমিক
ইন্সট্রাক্টর (বাংলা)
সিরাজগঞ্জ পলিটেকনিক ইন্স:

শহিদা বিনতে বারী
ইন্সট্রাক্টর (বাংলা)
রংপুর পলিটেকনিক ইন্স:

কৃষিবিদ মোঃ মোস্তফা কামাল
কারিকুলাম বিশেষজ্ঞ
বাংলাদেশ কারিগরি শিক্ষা বোর্ড

হমা আফরোজ
জুনিয়র ইন্সট্রাক্টর (বাংলা)
ঢাকা মহিলা পলিটেকনিক ইন্স:

মোঃ আমিরুল ইসলাম
ইন্সট্রাক্টর (বাংলা)
এম এস জোহা কৃষি কলেজ

ওমর খালেদ
ইন্সট্রাক্টর (বাংলা)
দিনাজপুর টেক্সঃ ইন্সঃ

DIPLOMA IN TEXTILE ENGINEERING
SYLLABUS
PROBIDHAN-2022
APPAREL MANUFACTURING (14)
2nd SEMESTER

Subject Code	Subject Name	Period per Week		Credit
25722	English-II	T	P	C
		2	0	2

Rationale	The main objective of this syllabus is to provide ample opportunities for the students to use English for a variety of purposes in different situations. Each chapter is based on a theme that contains reading text and a range of tasks and activities, designed to enable the students to practice the different skills, sometimes individually and sometimes in pairs or groups. This syllabus has integrated grammar items into the activities allowing grammar to assume a more meaningful role in learning language. Thus the students develop their language skills by practicing language activities and not merely knowing the rules of the language.
Learning Outcomes	After the completion of the course, learners will be able to: • Develop Reading, Writing, Listening &Speaking Skills • Acquire grammatical accuracy • Develop creative writing • Communicate effectively

Unit Description:

Unit	Topics with Contents/Lesson	Skills	Class (1 Period)	Final Marks
1. People or Institutions Making History	**NELSON MANDELA, FROM APARTHEID FIGHTER TO PRESIDENT** 1.1. Talk about the world famous personality 1.2. Know some renowned speeches of Nelson Mandela 1.3. Understand the meaning of confusing words 1.4. Develop reading, speaking & listening skills **Listening Practice (Only for contentious assessment)** **Follow the link(please play 2/3 minutes customized video):** https://www.youtube.com/watch?v=w42rHdvFpVM	Develop Reading, Writing Speaking & Listening skills	**1**	**15**

2. Human Relationships	**ETIQUETTE AND MANNERS** 2.1. Define etiquette's and manners 2.2. Know how to behave with elders and visitors 2.3. Learn the sources of learning etiquettes and manners 2.4. Interpret and critically appreciate stories, short plays https://www.youtube.com/watch?v=jPj0Z2lb8jg	Enhance Reading,Writing Speaking & Listening skills	**1**	
3. Adolescence	**ADOLESCENCE AND SOME (RELATED) PROBLEMS IN BANGLADESH** 3.1. Define adolescence 3.2. Know the adolescence related problems in Bangladesh 3.3.Interpret and appreciate the information critically https://www.youtube.com/watch?v=S05PBOIdSeE	Develop Reading,Writing Speaking & Listening skills	**1**	
4. Human Rights	**AMERIGO, A STREET CHILD** 4.1. Think about the life of street children 4.2. Know their activities 4.3. Describe the problems that they have in their lives 4.4. Listen for specific information on radio, television and other announcements	Develop Reading,Writing Speaking skills	**1**	
5. Diaspora	**WHAT IS DIASPORA?** 5.1.1. Learn new vocabulary 5.1.2. Talk about simple present to express state 5.1.3. Identify complex and compound sentences 5.1.4. Describe people, places and different cultures https://www.youtube.com/watch?v=awPKGBzCcXY	Strengthen Reading,Writing Speaking & Listening skills	**1**	
	'BANGLATOWN' IN EAST LONDON 5.2.1. Learn narrative sentences 5.2.2. Make casual connection, express attitudes 5.2.3. Learn new words and vocabulary 5.2.4. Describe people, places and different cultures	Develop Reading,Writing Speaking skills	**1**	
6. Peace and Conflict	**"THE OLD MAN AT THE BRIDGE" BY ERNEST HEMINGWAY** 6.1. Learn synonyms 6.2. Apprehend text 6.3. develop higher-order thinking ability 6.4. Read, tell and analyze stories	Develop Reading,Writing Speaking skills	**1**	

7. Environment and Nature	**THREATS TO TIGERS OF MANGROVE FOREST** 7.1. Prepare report on particular matter 7.2. Write slogans for posters 7.3. Participate in conversation, discussions and debates	Develop Reading,Writing Speaking skills	**1**	
8. Myths and Literature	**THE LEGEND OF GAZI** 8.1. Learn myth 8.2. Learn simple past tense 8.3. Read, tell and analyze stories	Enhance Reading,Writing Speaking skills	**1**	
9. Path to Higher Education	**21ST CENTURY HIGHER EDUCATION** 9.1. Know 21st century education 9.2. Learn the factors that determine the nature of higher education 9.3. Know about the entrepreneurial thinking skills 9.4. Ask for and give opinion/suggestions	Develop Reading,Writing Speaking & Listening skills	**1**	
10.Grammar	**USE THE RIGHT FORM OF VERBS** 10.1.1.Use the verbs in correct form maintain the tense of the verb	Learn grammar as sub-skill	**3**	**15**
	CHANGING VOICE FROM ACTIVE TO PASSIVE & VISE-VERSA 10.2.1.Change active voice to passive and vise-versa 10.2.2.Use voice in sentence	Learn grammar as sub-skill	**3**	
	APPROPRIATE PREPOSITIONS 10.3.1.Learn the appropriate usage of preposition 10.3.2. Apply the appropriate prepositions in sentence	Learn grammar as sub-skill	**1**	
	COMPLETING SENTENCE 10.4.1.Gather knowledge of sentence structure 10.4.2.Develop writing skills	Learn grammar as sub-skill	**2**	
	PUNCTUATION AND CAPITALIZATION 10.5.1.Use punctuation's and capital letters appropriately in the sentence	Learn grammar as sub-skill	**1**	
	SENTENCE STRUCTURE 10.6.1. Analyze different types grammatical terms 10.6.2.Apply sentence correctly	Learn grammar as sub-skill	**3**	
	PHRASE 10.7.1.use phrases in conversation	Learn grammar as sub-skill	**1**	
11.Composition	**PROCESS WRITING** 11.1.1.Use writing elements(prewriting, drafting, revising and editing)	Strengthen Writing & Speaking skills	**1**	**30**
	DESCRIPTIVE, NARRATIVE AND CREATIVE WRITING (SUCH AS TELLING / COMPLETING STORIES)	Develop Writing & Speaking	**1**	

	11.2.1.Develop speaking fluency develop creative writing ability	skills		
	DIALOGUE WRITING	Develop Speaking & Writing skills	**1**	
	POSTER 11.3.1.Prepare poster 10.10.2.Describe poster	Extend creative thinking ability, Develop presentation and speaking skills	**1**	
	REPORT WRITING 11.4.1.Write reports on newspaper and problem identification	Develop Reading & Writing skills	**2**	
	ACADEMIC WRITING 11.5.1.Analyze graphs and charts Summary writing 10.12.2.Extend analytical skills	Enhance Reading & Writing ability	**2**	
		Total	**32**	**60**

Recommended Books:

SL	Book Name	Writer Name	Publisher Name & Edition
01	**English For Today** **Classes XI – XII & Alim**	Quazi Mustain Billah Fakrul Alam M Shahidullah Shamsad Mortuza Zulfeqar Haider Goutam Roy	**NATIONAL CURRICULUM AND TEXT BOOK BOARD,BANGLADESH**

Website References:

SL	Web Link	Remarks
01	https://www.youtube.com/watch?v=w42rHdvFpVM	
02	https://www.youtube.com/watch?v=jPj0Z2Ib8jg	
03	https://www.youtube.com/watch?v=S05PBOIdSeE	
04	https://www.youtube.com/watch?v=awPKGBzCcXY	

Marks Distribution (100)	
Attendance	05
Class Test(Listening Test)	06
Quiz Test (Speaking)	04
Presentation and Assignment	05
Midterm	20
Final	60
Total	**100**

Assessment:

1. **Test Items: Unseen Comprehension: (No text will be borrowed from the seen comprehension given in the text book, but the given assessment criterion can be followed. Texts may be taken from contemporary journals)**

Skills	Total Marks	Test Items	Notes
Listening	**06**	**MCQ, Gap filling, Taking Notes**	Test items must be newly prepared for each test by the question setters themselves on their own.
Speaking	**04**	Describing/narrating answering questions based on everyday familiar topics/events/situations such as family, school, home city/village, books, games and sports, movie/TV show, recent events and incidents etc.	Five to ten sentences used coherently with acceptable English with understandable pronunciation

2. **Grammar Test Items:**
   - Gap filling activities without clues
   - Cloze test without clues
   - Using preposition in sentence
   - Use of punctuation and capitalization
   - Making sentence with given structure
   - Making sentence with phrase
3. **Composition Test Items:**
   - Writing process
   - Completing an incomplete stories
   - Writing dialogue on a given situation

- Preparing an attractive poster on a given topic and describing it
- Preparing report on given context
- Describing a given graph/chart (descriptive, analyzing, analytic)
- Writing summary (given seen comprehension) with title

Implemented by:

.....	.....	.....
Md. Abdur Razzaque Mian	**Razia Sultana Daisy**	**Md. Zahid Hasan**
Curriculum specialist (short course)	Instructor (English)	Instructor (English)
Bangladesh Technical Education Board	Ahsanullah Institute (AITVET)	Dhaka Mohila Polytechnic Institute
.....	.....	.....
Md. Abdur Razzaque Mian	**Razia Sultana Daisy**	**Md. Zahid Hasan**
Curriculum specialist (short course)	Instructor (English)	Instructor (English)
Bangladesh Technical Education Board	Ahsanullah Institute (AITVET)	Dhaka Mohila Polytechnic Institute
.....	.....	.....
Md. Mahmudul Hassan	**Nahid Hasan**	**Md. Moshtafijar Rahman**
Instructor (English)	Instructor (English)	Chief Instructor (English)
Barishal Polytechnic Institute	Daffodil Polytechnic Institute)	Dhaka Mohila Polytechnic Institute

DIPLOMA IN TEXTILE ENGINEERING

SYLLABUS

PROBIDHAN-2022

APPAREL MANUFACTURING (14)

2nd SEMESTER

Subject Code	Subject Name	Period per Week		Credit
25921	Mathmetics-II	T	P	C
		3	3	4

Rationale	To be able to understand the functions. To make understand the exponential series. To provide ability to apply the knowledge of differential Calculus in solving problem like slope gradient of a curve, velocity acceleration, rate of a flow of liquid etc. To enable to apply the process of integration in solving Practical Problems like Calculation of area of a regular figure in two dimensions and volume of regular solids of different shapes.
Learning Outcome (Theoretical)	To express partial fractions, understand geometric Express meaning of $\frac{dy}{dx}$ Develop differential of integral calculus. To understand vectors in Physics.
Learning Outcome (Practical)	**To able to solve problems related to limit, differentiation, integration and vector operations.**

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**ALGEBRA(Partial Fractions):** 1.1 Define proper and improper fractions. 1.2 Resolve into partial fraction of the following types: a) Denominator having a non-repeated linear factor. b) Denominator having a repeated linear factor. c) Denominator having a quadratic factor. d) Denominator having a combination of repeated, non-repeated and quadratic factors.	**3**	
2	**ALGEBRA (Exponential series):** 2.1 Define e.	**3**	

	2.2 Prove that e is finite and lies between 2 and 3. 2.3 Prove that $e^x = 1 + \frac{x}{L^1} + \frac{x^2}{L^2} + \frac{x^3}{L^3} + \frac{x^4}{L^4}$ ..... to ∞ 2.4 Solve problems of the followings types: i) $1 + \frac{1}{L^2} + \frac{1}{L^4} + \frac{1}{L^6}$ + ... to ∞ ii) $\frac{1}{L^2} + \frac{1+2}{L^3} + \frac{1+2+3}{L^4} + \frac{1+2+3+4}{L^5}$ + ... to ∞		
3	**ALGEBRA(Binomial theorem):** 3.1 State binomial expression. 3.2 Express the binomial theorem for positive, negative and fractional index. 3.3 Find the general term, middle term, equidistant term and term independent of x. 3.4 Solve the problems related to above.	**3**	
4	**DIFFERENTIAL CALCULAS (Functions and Graph of Functions):** 4.1 Define constant, variable, function, domain, range 4.2 Solve problems related to functions.	**3**	
5	**DIFFERENTIAL CALCULAS (Limit):** 5.1 Define limit and continuity of a function. 5.2 Distinguish between $\underset{x \to a}{Lim}$ f(x) and f(a). 5.3 Establish (i) $\underset{x \to 0}{Lim} \frac{\sin x}{x} = 1$ (ii) $\underset{x \to 0}{Lim} \frac{\tan x}{x} = 1$	**2**	
6	**DIFFERENTIAL CALCULAS (Differential co-efficient and differentiation):** 6.1 Prove that $\frac{dy}{dx} = \underset{h \to 0}{Lim} \frac{f(x+h) - f(x)}{h}$ 6.2 Find the differential co-efficient of algebraic and trigonometrical functions from first principle.	**2**	
7	**DIFFERENTIAL CALCULAS (Apply the concept of differentiation):** 7.1 State the formulae for differentiation: (i) sum or difference (ii) product (iii) quotient (iv) function of function (v) logarithmic function 7.2 Find the differential co-efficient using the sum or difference formula, product formula and quotient formula. 7.3 Find the differential co-efficient function of function and logarithmic function.	**3**	
8	**DIFFERENTIAL CALCULAS (Geometrical meaning of $\frac{dy}{dx}$):**	**3**	

	8.1 Interpret $\frac{dy}{dx}$ geometrically. 8.2 Explain $\frac{dy}{dx}$ under different conditions. 8.3 Solve problems related to above.		
9	**DIFFERENTIAL CALCULAS (Use Leibnitz's theorem to solve the problems of successive differentiation):** 9.1 Find 2nd, 3rd and 4th derivatives of a function and hence find n-th derivatives. 9.2 Express Leibnitz's theorem. 9.3 Solve the problems of successive differentiation and Leibnitz's theorem.	**4**	
10	**DIFFERENTIAL CALCULAS (Partial differentiation):** 10.1 Define partial derivatives. 10.2 State formula for total differential. 10.3 State formulae for partial differentiation of implicit function and homogenous function. 10.4 State Euler's theorem on homogeneous function. 10.5 Solve the problems of partial derivatives.	**4**	
11	**INTEGRAL CALCULUS (Indefinite integrals):** 11.1 Explain the concept of integration and constant of integration. 11.2 State fundamental and standard integrals. 11.3 Write down formulae for: (i) Integration of algebraic sum. (ii) Integration of the product of a constant and a function. 11.4 Integrate by method of substitution, integrate by parts and by partial fractions. 11.5 Solve problems of indefinite integration.	**4**	
12	**INTEGRAL CALCULUS (Definite integrals):** 12.1 Explain definite integration. 12.2 Interpret geometrically the meaning of $\int_a^b f(x)\,dx$ 12.3 Solve problems of the following types: (i) $\int_0^{\pi/2} \cos^2 x\,dx$. (ii) $\int_0^1 \frac{(\sin^{-1}x)^2}{\sqrt{-x^2}}dx$	**4**	
13	**VECTOR(Vector algebra):** 13.1 Define scalar and vector. 13.2 Explain null vector, free vector, like vector, equal vector, collinear vector, unit vector, position vector, addition and subtraction of vectors, linear combination, direction cosines and direction ratios, dependent and independent vectors, scalar fields and vector field. 13.3 Prove the laws of vector algebra. 13.4 Resolve a vector in space along three mutually perpendicular directions. 13.5 Solve problems involving addition and subtraction of vectors.	**4**	
14	**VECTOR (Dot product of Vectors):** 14.1 Define dot product of Vectors. 14.2 Interpret dot product of vector geometrically. 14.3 Deduce the condition of parallelism and perpendicularity of two vectors. 14.4 Prove the distributive law of dot product of vector.	**4**	

	14.5 Explain the scalar triple product and vector triple product. 14.6 Solve problems involving dot product.		
15	**VECTOR (Cross product of vectors):** 15.1 Define cross product of vectors. 15.2 Interpret cross product of vector geometrically. 15.3 Deduce the condition of parallelism and perpendicularity of two vectors. 15.4 Prove the distributive law of cross product of vector. 15.5 Explain the scalar triple product and vector triple product. 15.6 Solve problems involving cross product.	**2**	
	Total	**48**	**90**

Detailed Syllabus (Practical)

Sl.	Experiment name with procedure	Class (3 Period)	Continuous Marks
1	**Practical:** Solve problems related to following Topics: 1. Partial fractions 2. Exponential series 3. Functions 4. Limits 5. Differential co-efficient of Differentiation 6. Geometrical meaning of $\frac{dy}{dx}$ 7. partial differentiation 8. Indefinite Integral 9. Definite Integral 10. Vector dot & cross product	16	25
	Total	16	25

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

Sl	Item Name	Quantity
01	**Scale**	**1 no**
02	**Geometric Box**	**1 no**

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
1.	Companian to basic Maths	G. V. Kumbhojkar	Phadke Prakashan
2.	Vector & Tensor Analysis	Murary R Spigel	Schaum's Outline Series
3.	Vector & Tensor Analysis	Md. Abu Yousuf	Mamun Brothers
4.	Co-ordinate Geometry & Vector Analysis	Rahman & Bhattacharjee	H.L. Bhattacharjee
5.	Higher Mathematics	Md. Nurul Islam	Akkhar Patra Prakashani
6.	Mathematics for Polytechnic Students	S. P Deshpande	Pune Vidyarthi Graha Prakashan
7.	Mathematics for Polytechnic Students (Volume I)	H. K. Das	S.Chand Prakashan
8.	Engg.Maths Vol I & II	Shri Shantinarayan	S.Chand & Comp
9.	Higher Mathematics	Dr. B M Ekramul Haque	Akshar Patra Prakashani
10.	Differential & Integral Calculus	Md. Abu Yousuf	Mamun Brothers
11.	Mathematics for Polytechnic Students (Volume I)	H. K. Das	S.Chand Prakashan
12.	Higher Mathematics	Ashim Kumar Saha	Akshar Patra Prakashani
13.	Higher Mathematics	S.U Ahamed & M A Jabbar	Alpha Prakashani

Website References:

Sl	Web Link: www.youtube.com	Remarks

DIPLOMA IN TEXTILE ENGINEERING

SYLLABUS

PROBIDHAN-2022

APPAREL MANUFACTURING (14)

2nd SEMESTER

Subject Code	Subject Name	Period per Week		Credit
25922	PHYSICS-II	T	P	C
		3	3	4

Rationale	Physics is the basic science for all engineering students as well as diploma engineering students. To develop a foundation in scientific principles and processes for the understanding and application of various technology. It will help the students to study in technical subject of diploma engineering students.
Learning Outcome (Theoretical)	After undergoing the subject students will be able: 1. Identify and classify various types of source of heat and temperature. Describe determination procedure temperature of materials and heat capacity of solid and liquid. 2. Describe second law of thermodynamics, heat engine. 3. Describe static electricity current electricity, magnetism, reflection of light. Refraction of light, photoelectric effect, structure of atom, Theory of relativity, semiconductor and electronics.
Learning Outcome (Practical)	After undergoing the subject (Practical) the students will be able to: 1. Compare the operation of common thermometers. 2. Determine the co-efficient of liner expansion of solid. 3. Measure the specific heat capacity of Bruss, steel etc. 4. Determine the latent heat of fusion of ice. 5. Verify the Ohm's Law. 6. Determine the Mechanical Equivalent of Heat by using Joule's Calorimeter. 7. Verify the laws of reflection. 8. Find out the focal length of a concave minor. 9. Determine the refractive index of a glass slab 10. Determine the angle of minimum deviation & refractive index of prism.

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**THERMOMETRY** 1.1 Define Heat & Temperature	3	5

	1.2 Mention the unit of Heat & Temperature 1.3 Relate between different scale of Temperature 1.4 State the construction and graduation of mercury Thermometer 1.5 Define specific heat, thermal capacity and water equivalent 1.6 Mention units of specific heat, thermal capacity and water equivalent 1.7 Explain the principle of Calorimetry, 1.8 Discuss various kinds of specific latent heat		
2	EFFECT OF HEAT ON MATERIALS 2.1 Define linear, superficial and cubical expansion of solid. 2.2 Define Coefficient of linear, superficial and cubical expansion of solid. 2.3 Relate between coefficient of linear, superficial and cubical expansion of solid. 2.4 Explain the methods of heat transfer by conduction, convection and Radiation with example. 2.5 Define Thermal conductivity and Coefficient of the thermal conductivity 2.6 List the factors which determine the quantity of heat (Q) flowing through a material and Show that the quantity of heat flowing through a material can be found from $Q = \frac{KA(\theta_H - \theta_C)t}{d}$ 2.7 State Stefan-Boltzman Law. 2.8 State Newton's law of cooling. 2.9 State wine's law. 310 Explain Greenhouse effect.	4	7
3	NATURE OF HEAT AND MECHANICAL EQUIVALENT 3.1 Describe the caloric theory and kinetic theory of heat 3.2 State the limitation of the caloric theory of heat 3.3 Explain the mechanical equivalent of heat 3.4 Explain the first law of thermodynamics 3.5 Explain Isothermal and adiabatic change. 3.6 Describe Specific heat of a gas, Molar specific heat or molar heat capacity. 3.7 Relate between pressure and volume of a gas in adiabatic change i, e; PV^{γ}=const. 3.8 Relate between C_P and C_V for and ideal gas (C_P-C_V=R)	4	6
4	SECOND LAW OF THERMODYNAMICS 4.1 Explain Reversible process and irreversible process. 4.2 Explain 2nd law of thermodynamics 4.3 Define heat engine 4.4 Explain the principle of Carnot's cycle 4.5 Mention the formula thermal efficiency of a heat engine 4.6 Distinguish between internal combustion engine and external combustion engine. 4.7 Describe Entropy 4.8 Mention the significant of entropy	4	6

	4.9 Describe Change of entropy in a reversible and irreversible process.		
5	**ELECTROSTATIC** 5.1 Define Charge and Nature of charge. 5.2 State the Law of attraction and repulsion of charge. 5.3 Explain the Coulomb's Law 5.4 Define Electric field and electric intensity. 5.5 Define Electric Potential and Potential difference 5.6 Relate between electric intensity and electric Potential. 5.7 Define Capacitor and capacitance. 5.8 Explain Energy of Capacitor. 5.9 Mention the Uses of capacitor.	**3**	**5**
6	**MAGNETISM** 6.1 Describe Earth's Magnetism. 6.2 Define Magnet, Magnetic Substance, Non-magnetic Substance, Magnetic Pole 6.3 Define Magnetic field, Magnetic Intensity. 6.4 Explain Magnetic Permeability, Magnetic Susceptibility 6.5 Explain Declination & inclination, Horizontal Component of Earth's Magnetic field B_H or H of Magnetic Elements of Earth 6.6 Classify Magnetic Materials 6.7 Compare among Diamagnetic, Paramagnetic and Ferromagnetic substance. 6.8 Describe Magnetic Domain.	**4**	**7**
7	**REFLECTION OF LIGHT** 7.1 Define mirror (plane and spherical), image (real and virtual) and magnification. 7.2 Classify mirror and image 7.3 Describe the reflection of light 7.4 State the laws of reflection of right 7.5 Describe the verification of laws of reflection 7.6 Define pole, principal axis, center of curvature, radius of curvature, Principal focus in case of concave and convex mirrors 7.7 Express the general equation of concave and Convex mirror 7.8 Mention the uses of mirror and identify of Mirror.	**3**	**6**
8	**REFRACTION OF LIGHT** 8.1 Describe refraction of light 8.2 State the laws of refraction 8.3 Express the verification of laws of refraction 8.4 Describe critical angle and total internal refract reflection. 8.5 Relate between refractive index, minimum deviation of angle of the prism. 8.6 Define lens 8.7 Mention the kinds of lens.	**3**	**8**

	8.8 Define center of curvature, radius of Curvature, Principal axis, first and second Principal focus, Optical center. 8.9 Derive general equation of the lens (Concave and convex) 8.10 Explain power of lens and equivalent of lens.		
9	PHYSICAL OPTICS 9.1 Describe Electromagnetic Wave 9.2 Define Poynting Vector 9.3 Describe Electromagnetic Spectrum 9.4 Mention the wavelength of visible light spectrum 9.5 Define Light Year 9.6 Define Wave and Wave front 9.7 State the Huygens' Principle 9.8 Define Coherent Source 9.9 Define Interference of Light, Diffraction of Light and Polarization of Light. 9.10 Classify Interference of Light, Diffraction of Light and Polarization of Light.	4	8
10	PHOTO ELECTRIC EFFECT 10.1 Describe Electrical conductivity of gases. 10.2 Describe Discharge tube. 10.3 Define Cathode ray and X- Ray 10.4 Mention the properties of Cathode ray and X- Ray 10.5 Mention the use of X- Ray 10.6 Discuss photo electric effect 10.7 Derive Einstein's photo electric equation.	4	6
11	STRUCTURE OF ATOM 11.1 Describe the concept of structure of Atom 11.2 Discuss Thomson of Atomic models 11.3 Discuss Rutherford model of Atomic models 11.4 Discuss Bohr model of Atomic models 11.5 Derive the equation of Radius and Energy by using Bohr model 11.6 Explain Energy level of Electron 11.7 Derive the frequency of Photon by using Hydrogen atom Spectrum	3	6
12	NUCLEAR PHYSICS 12.1 Explain radioactivity 12.2 Describe radioactive rays 12.3 Deduce Radioactive decay law 12.4 Define half- life and mean-life of radioactive atom 12.5. Relate between half-life and radioactive decay constant 12.6 Describe Nuclear Reactor 12.7 Explain nuclear fission & fusion.	3	7
13	MODERN PHYSICS 13.1 Describe the concept of Modern Physics	3	7

	13.2 Discuss about Reference frame 13.3 Explain Inertial and Non-Inertial Reference 13.4 Describe reference frame and Motion 13.5 Postulates of special Theory of Relativity 13.6 Explain the Galilean Transformation 13.7 Describe Lorentz Transformation 13.8 Define Black Holes and black body radiation.		
14	**THEORY OF RELATIVITY AND ASTRO PHYSICS** 14.1 Describe Relativity 14.2 Discuss the types of Relativity 14.3 Explain Einstein's theory of Relativity 14.4 Describe the Relativity of time: Time Dilation 14.5 Discuss Relativity of Length : Length Contraction 14.6 Discuss Relativity of mass 14.6 Relate between mass and Energy ($E=mc^2$)	**3**	**6**
	Total	**48**	**90**

Detailed Syllabus (Practical)

Unit	Topics with Contents	Class (3 Period)	Continuous Marks
1	COMPARE THE OPERATION OF COMMON THERMOMETERS 1.1 Observe the different types of thermometer 1.2 Apply relation formula 1.3 Measure the temperature of liquid such normal water, hot water & ice 1.4 Calculate and compare the operation of thermometer 1.5 Maintain the record of the performance of experiment.	1	1
2	DETERMINE THE CO-EFFICIENT OF LINEAR EXPANSION OF A SOLID BY PULLINGER'S APPARATUS 2.1 Collect Pullinger's Apparatus , Thermometer and screw gauge 2.2 Apply heat to boil producer 2.3 Calculate the Linear expansion of solid 2.4 Maintain the record of the performance of experiment.	1	1
3	MEASURE THE SPECIFIC HEAT CAPACITY OF VARIOUS SUBSTANCES. (BRASS, STEEL) 3.1 Collect Calorimeter, Thermometer, Brass, Balance 3.2 Apply the formula for specific heat 3.3 Measure various terms according to formula 3.4 Calculate Specific heat capacity 3.5 Maintain the record of the performance of experiment.	1	2

4	DETERMINE THE LATENT HEAT OF FUSION OF ICE 4.1 Collect Calorimeter, Thermometer, Brass, Balance and ice 4.2 Apply the formula for latent heat of fusion 4.3 Measure various terms according to formula 4.4 Calculate latent heat of fusion 4.5 Maintain the record of the performance of experiment.	1	2
5	DETERMINE THE LATENT HEAT OF FUSION OF ICE 5.1 Collect Calorimeter, Thermometer, Brass, Balance and Vapor producer 5.2 Apply the formula for latent heat of Vapor 5.3 Measure various terms according to formula 5.4 Calculate latent heat of fusion 5.5 Maintain the record of the performance of experiment.	1	2
6	DETERMINE THE MECHANICAL EQUIVALENT OF HEAT BY USING JOULE'S CALORIMETER 6.1 Collect Joule's Calorimeter, Thermometer, Voltmeter 6.2 Apply Joule's formula for heat equivalent 6.3 Measure various terms according to formula 6.4 Determine the Mechanical Equivalent of Heat 6.5 Maintain the record of the performance of experiment.	2	2
7	VERIFY THE LAWS OF REFLECTION 7.1 Collect Plane mirror, pin and drawing board 7.2 Apply the laws of reflection 7.3 Measure the incident angle and reflection angle 7.4 Verify the laws of reflection 7.5 Maintain the record of the performance of experiment.	2	4
8	FIND OUT THE FOCAL LENGTH OF A CONCAVE MIRROR 8.1 Collect Optical bench & concave mirror 8.2 Apply focal length formula. 8.3 Measure the object length & Image length 8.4 calculate the focal length by using formula 8.5 Maintain the record of the performance of experiment.	2	4
9	DETERMINE THE REFRACTIVE INDEX OF A GLASS SLAB 9.1 Collect glass slab, pin, drawing paper and drawing board 9.2 Apply the Snell's law 9.3 Measure incident and refractive angle 9.4 calculate the refractive index 9.5 Maintain the record of the performance of experiment.	3	4

10	DETERMINE THE ANGLE OF MINIMUM DEVIATION AND REFRACTIVE INDEX OF A GLASS PRISM BY USING 1-D GRAPH 10.1 Collect prism, pin, drawing paper and drawing board 10.2 Apply the laws of minimum deviation 10.3 Measure incident angle and minimum deviation 10.4 Calculate the refractive index of prism 10.5 Maintain the record of the performance of experiment.	2	3
	Total	16	25

Recommended Books:

Sl	Book Name	Writer Name
	REFERENCE BOOKS: 1. Higher Secondary Physics - Second Part 2. A Text Book of Heat and Thermodynamics 3. A Text Book of Optics 4. Higher Secondary Physics - Second Part 5. Higher Secondary Physics -Second Part 6. Thermodynamics	- by Dr. Shahjahan Tapan - by N Subrahmanyam and Brij Lal - by N Subrahmanyam and Brij Lal - by Prof. Golam Hossain Pramanik - by Ishak Nurun Nabi - by K K Ramalingam

Website References:

Sl	Web Link	Remarks
1	www.nctb.gov.bd	

DIPLOMA IN TEXTILE ENGINEERING
SYLLABUS
PROBIDHAN-2022
APPAREL MANUFACTURING (14)
2nd SEMESTER

SUBJECT CODE	SUBJECT NAME	PERIOD PER WEEK		CREDIT
25924	CHEMISTRY-II	T	P	C
		2	3	3

Rationale	Chemistry is the most important branch of Science and Technology. It deals with study of matter, composition, physical and chemical properties. Specially, organic chemistry is the important part of chemistry which is the study of the structure, properties, composition, reactions and preparation of carbon containing compounds. It is essential for whole diploma courses to have knowledge of chemistry as those may face problems in fields as diverse as design and development of new materials, quality control and structure determination of new compound. Students must always remain careful in laboratory. Almost all chemical reagents are poisons. They are harmful and destructive to health. So, when you will use them for experiments be careful so that they come in contact with your body and others. Every experiment number, name, data should be written on the top of page.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to** ➢ State organic chemistry ➢ Describe Various type of hydrocarbon ➢ State Different types of alcohol ➢ State uses of organic acids ➢ Describe Aromatic compound and its use ➢ Describe the derivatives and Application of benzene ➢ Describe the uses Biomolecules & carbohydrate ➢ Illustrate aliphatic aldehyde and ketone ➢ Describe Polymer & their importance ➢ Describe effects & remedies of environment pollution
Learning Outcome (Practical)	**After undergoing the subject, students will be able to** ➢ Identify the various functional group ➢ Identify the carbonyl group ➢ Identify chloroform ➢ Determine the melting point of solid ➢ Determine the boiling point of liquid ➢ Prepare solution of oxalic acid ➢ Calculate the strength of unknown base ➢ Prepare solution of oxidizing agent ➢ Perform Quantitative analysis of Fe^{2+} from respective salt ➢ Identify various solution

DETAILED SYLLABUS (THEORY)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**BASIC CONCEPT OF ORGANIC CHEMISTRY** 1.1 Define Organic Chemistry 1.2 Classify Organic Compound 1.3 Mention the Catenation properties of Carbon 1.4 Distinguish between Organic & Inorganic compound 1.5 Explain homologous series of organic compound 1.6 State molecular & structural formula of Methane, Ethane, Propane & Butane 1.7 Describe functional group of organic compounds	**4**	**6**
2.	**ALIPHATIC HYDROCARBON** 2.1 Define Hydrocarbon, Saturated and Unsaturated Hydrocarbon 2.2 Describe nomenclature of Alkane, Alkene and Alkyne IUPAC system 2.3 Mention the uses of Hydrocarbon Methane, Ethane and Ethyne	**3**	**6**
3.	**ALCOHOL** 3.1 Define Alcohol 3.2 Describe the classification of Alcohol 3.3 Define absolute Alcohol, Rectified Sprit and Power Alcohol 3.4 Define Enzyme and Fermentation	**3**	**6**
4.	**ORGANIC ACID** 4.1 Define Organic Acid 4.2 Describe the classification of organic acid 4.3 Describe preparation of Methanoic & Ethanoic Acid 4.4 Mention the uses of Methanoic & Ethanoic Acid 4.5 Discuss the preparation and uses of Vinegar	**3**	**6**
5.	**AROMATIC COMPOUND** 5.1 Define Aromatic Compound 5.2 Define Aromaticity and Hackle's Theory 5.3 Describe Synthesis Benzene from Phenol, Acetylene and Benzoic Acid 5.4 Mention the uses of Benzene	**3**	**6**
6.	**DERIVATIVES OF BENZENE** 6.1 Describe derivatives of Benzene 6.2 Illustrate the preparation of Toluene 6.3 Describe physical and chemical properties of Toluene 6.4 Describe ortho-para and meta directing group 6.5 Illustrate the preparation of TNT, Gammaxene and Picric Acid 6.6 Mention the uses of TNT, Gammaxene and Picric Acid	**4**	**6**

7.	**BIOMOLECULE AND CARBOHYDRATE** 7.1 Define Biomolecule and Carbohydrate 7.2 Describe the classification of Carbohydrates 7.3 Define Sugar, Non-Sugar and D /L Glucose 7.4 Describe DNA & RNA 7.5 Define Cellulose and Starch	**3**	**6**
8.	**ALDEHYDE AND KETONE** 8.1 Define Aldehyde and Ketone 8.2 Describe the preparation of Methanol and Ethanal 8.3 Define Formalin 8.4 Mention the uses of Formalin 8.5 Describe the physical and Chemical properties of Aldehyde and Ketone 8.6 Point out the uses of Aldehyde and Ketone 8.7 Distinguish between Aldehyde and Ketone	**3**	**6**
9.	**POLYMER CHEMISTRY** 9.1 Define Polymer and Polymerization 9.2 Describe classification of polymer based on heat and source 9.3 Distinguish between Homopolymer and Co-polymer 9.4 Describe the preparation of Nylon 6,6 and PET 9.5 Describe the importance of Polymer.	**3**	**6**
10.	**ENVIRONMENTAL CHEMISTRY** 10.1 Define environmental Pollution 10.2 Define pollution and pollutant 10.3 Describe types of pollution 10.4 Explain the emitted air pollutant in Industries 10.5 Describe Green House gases 10.6 Mention the effects of Green House gases 10.7 Mention the causes and remedies of Acid Rain 10.8 List the bad effects of Pesticide and Chemical Fertilizer on Environment 10.9 Define DO, BOD, COD and Recycling.	**3**	**6**
	Total	**32**	**60**

DETAILED SYLLABUS (PRACTICAL)

Sl.	Experiment Name with Procedure	Class (3 Period)	Continuous Marks
1.	**IDENTIFY FUNCTIONAL GROUPS** 1.1 Collect Test Tube, Sprit Lamp, Tongs 1.2 Collect Ethanol, Ethanoic acid, Chlorobenzene, Propanone (Ketone), Methanol 1.3 Identify functional groups of -OH, -COOH, -X, -CO-, -CHO 1.4 Maintain the record of performed job	1	2
2.	**DISTINGUISH ALDEHYDE AND KETONE WITH TOLLEN'S REAGENT AND FEHLING SOLUTION** 2.1 Collect Test Tube, Spirit Lamp, Water Bath 2.2 Collect Tollen's Reagent and Fehling Solution 2.3 Maintain the record of performed job	1	2
3.	**TEST FOR CHLOROFORM** 3.1 Collect Test Tube, Spirit Lamp, Tongs 3.2 Collect Chloroform, Aniline and Sodium Hydroxide 3.3 Maintain the record of performed job	1	2
4.	**DETERMINE MELTING POINT OF SOLID ORGANIC COMPOUND (BENZOIC ACID)** 4.1 Collect melting point apparatus or Capillary Tube, Thermometer, Stand, Clamp, Sprit Lamp, Tripod Stand, Wire Gauze 4.2 Collect Benzoic acid and Paraffin 4.3 Maintain the record of performed job	1	2
5.	**DETERMINE BOILING POINT OF LIQUID ORGANIC COMPOUND (ETHANOL)** 5.1 Collect Capillary Tube, Fusion Tube, Thermometer, Stand, Clamp, Sprit Lamp, Tripod Stand and Wire Gauze 5.2 Collect Ethanol and Paraffin 5.3 Maintain the record of performed job	2	2
6.	**PREPARE 0.1 M SOLUTION OF OXALIC ACID** 6.1 Collect Electrical Balance, Burette, Pipette, Volumetric Flask, Stand and Clamp 6.2 Collect Oxalic Acid and Water 6.3 Maintain the record of performed job	2	3
7.	**STANDARISE OF NAOH WITH STANDARD OXALIC ACID ($H_2C_2O_4$. 2 H_2O)** 7.1 Collect Electrical Balance, Burette, Pipette, Volumetric Flask, Stand and Clamp 7.2 Collect Oxalic acid NaOH and water 7.3 Collect phenolphthalein indicator	2	3

	7.4 Maintain the record of performed job		
8.	**PREPARE OF 0.1M $KMNO_4$ SOLUTION** 8.1 Collect Electrical Balance, Pipette, Beaker, Stand and Clamp. 8.2 Collect $KMNO_4$, Water and Sulfuric Acid **8.3** Maintain the record of performed job	**2**	**3**
9.	**DETERMINE FE^{2+} WITH STANDARD $KMNO_4$ FROM $FES0_4$** 9.1 Collect Electrical Balance, Pipette, Beaker, Stand and Clamp 9.2 Collect $KMNO_4$, Water and Sulfuric Acid 9.3 Maintain the record of performed job	**2**	**3**
10.	**DILUTE OF SOLUTION** 10.1 Collect electrical balance, measuring cylinder, beaker, pipette 10.2 Collect Sulfuric acid, Hydrochloric acid 10.3 Maintain the record of performed job	**2**	**3**
	Total	**16**	**25**

NECESSARY RESOURCES (TOOLS, EQUIPMENT'S AND MACHINERY):

Sl	Item Name	Quantity
1.	Test tube, Test tube holder, Test tube Stand, Test tube brush, Bunsen burner, Cork borer, Spatula, Dropper, Clamp	
2.	Beaker, Conical flask, Round bottomed flask, Volumetric flask, Distillation flask , Pneumatic trough	
3.	Melting point apparatus, Boiling point apparatus.	
4.	Thermometer 360 degree, Fusion tube, Capillary tube	
5.	Woulfs bottle, Wash bottle, Reagent bottle,	
6.	Stand, Clamp, Sprit.	
7.	Tripod stand, Burette stand, Ring stand.	
8.	Burette, Pipette, Measuring cylinder, Glass rod	
9.	Digital balance, pH meter, pH paper, Litmus paper (Red & Blue), Filter paper.	
10.	Safety glass, Gloves, Apron, Mask, Fire Extinguisher, First aid box	

Required Chemicals:

Sl	Item Name (Consumables Materials)	Quantity
1	Distilled water, Ethanoic acid, Chlorobenzene, Propanone, Methanol, Chloroform etc.	
2	Different type of acid : Oxalic acid, CH_3C00H, HCl, H_2SO_4	
3	Different type of salt : $FeSO_4$, NH_4Cl	
4	Different type of base : Sodium Hydro oxide (NaOH), KOH	
5	Different type of indicator Methyl Orange , Methyl Red	
6	Different type of reagent such as Tollens Reagent, Fehling Solution, Paraffin etc.	
7	Different type of Oxidizing agent such as , $KMnO_4$, $K_2Cr_2O_7$	

RECOMMENDED BOOKS:

Sl.	Book Name	Writer Name	Publisher Name & Edition
01	Chemistry 2	Soroj Kanti	Mc Hill
02	Chemistry 2	Md. Abdus Sattar	Books Fair

WEBSITE REFERENCES:

Sl.	Web Link	Remarks
01	www.youtube.com	Search here with topics

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