

**DIPLOMA IN
FOOTWEAR TECHNOLOGY**

**CURRICULAR STRUCTURE
AND
SYLLABUS OF PART – III**

**WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION
"KOLKATA KARIGORI BHAVAN" 110 S N BANERJEE ROAD (2ND FLOOR),
KOLKATA – 700 013**

CURRICULAR STRUCTURE FOR PART-II (3 rd YEAR) OF THE FULL TIME DIPLOMA COURSE IN FOOTWEAR TECHNOLOGY												
WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION												
TEACHING & EXAMINATION SCHEME FOR DIPLOMA IN ENGINEERING COURSES												
BRANCH: DIPLOMA IN FOOTWEAR TECHNOLOGY						SEMESTER: FIFTH						
SR.	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						
NO			L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
						TA	CT	TOTAL				
1	INTERNATIONAL TREND ON FOOTWEAR TECHNOLOGY	2	2		-	5	10	15	35			50
2	METHOD OF FOOTWEAR MANUFACTURE –PART- III	6	3		6	10	20	30	70	100		200
3	PRINCIPLES OF FOOTWEAR DESIGNING & PATTERN DEVELOPING III	6	3		6	10	20	30	70	100		200
4	FOOTWEAR MACHINERY -- PART-II	2	2			10	20	30	70			100
5	FOOTWEAR COSTING AND QUALITY MANAGEMENT	3	2	1		10	20	30	70		25	125
6	1) LEATHER TECHNOLOGY-I OR 2) LEATHER GOODS TECHNOLOGY-I	3	2		2	5	10	15	35	50		100
7	FOOTWEAR CAD 2D PART -II	2			2					50		50
8	PROFESSIONAL PRACTICE-III	2		2							50	50
	Total	26	14	3	16	50	100	150	350	300	75	875
STUDENT CONTACT HOURS PER WEEK: 33Hrs. Theory and Practical Period of 60 Minutes each. L – Lecturer, TU –TERM WORK, PR – Practical, TA – Teachers’ Assessment, CT – Class Test, ESE – End Semester Exam., TW – Term Work.												

INTERNATIONAL TREND ON FOOTWEAR TECHNOLOGY

Subject Code	Course offered in	Course Duration	2 lecture periods	Full Marks
FWT / 5 / T5 / ITFT	Part III – 1 st Semester	17 weeks	per week	50

EXAMINATION SCHEME

Internal assessment marks 15 and END SEMESTER EXAMINATION MARKS 35

Distribution of Internal assessment marks : Teacher's Assessment 5, Class Test 10,

SR.	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						MARKS TOTAL
			L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	
						T A	C T	TOTAL				
1	INTERNATIONAL TREND ON FOOTWEAR TECHNOLOGY	2	2	-	-	5	10	15	35			50

DETAIL COURSE CONTENT

INTRODUCTION TO FASHION: Definition, terminologies, fashion life cycle, consumer identification with fashion cycles, environment of fashion, theories of fashion adoption. (6)

INTRODUCTION TO DESIGN: Definition, concept of design, pattern, types: Fabric Design – natural, stylized geometric, historic and abstract; (6)

FASHION RESEARCH AND ANALYSIS: Fashion forecasting – techniques, market research, trend, colour, fabrics, silhouettes, texture, designs and seasons, presentation of forecast, Fashion services and Resources. (6)

ELEMENTS OF DESIGN: Introduction of Moodboard (4)

LIGHT AND COLOUR: Psychological effects and physical effects of light rays; Colour- concept - internal colour, external colour, theories, dimension, physical effects, psychological effects, colour schemes. (6)

TEXTURE AND PATTERN: Definition and concept, Determinants of texture, aspects of texture and uses, combining qualities of hand, surface and light reaction. Pattern - aspects of pattern, introducing pattern to fabric, visual effects. (4)

International Trend Presentation: (4)

TEXT BOOKS:

1. Marian L Davis, "Visual Design and Dress", Third edition, Prentice Hall, New Jersey, 1996.
2. Suzanne G Marshall, Hazel O Jackson "Individuality in Clothing and Personal Appearance", Prentice Hall, New Jersey, 2000.

REFERENCES:

1. Anderson B and Anderson C, "Costume Design", Harcourt Brace second edition., 1999.
2. Caroline Tatham and Julian Seaman, "Fashion designing and drawing course", Thames and Hudson Publishers, 2003.
3. Harold Carr, "Fashion Design and Product Development" John Wiley and Sons Inc., New York, 1992.

METHOD OF FOOTWEAR MANUFACTURE - PART- III

Subject Code	Course offered in	Course Duration	3 lecture 6 Practical contact	Full Marks
FWT / 5 / T2 / MFM3	Part III – 1 st Semester	17 weeks	periods per week	100+100

EXAMINATION SCHEME

Internal assessment marks 30, END SEMESTER EXAMINATION MARKS 70 and Practical Marks 100

Distribution of Internal assessment marks: Teacher's Assessment 10, Internal Examination 20

Practical Marks:

Internal assessment of 50 marks shall be held throughout the Semester on the entire syllabus.

Distribution of marks: Practical Book –(open type 5+ close type 5); on the spot job – (open type 10+ close type 10); Assignment – (open type 10+ close type 10).

External assessment of 50 marks shall be held at the end of the Semester on the entire syllabus. One job per student from any one of the jobs done is to be performed. Job is to be set by lottery system. Distribution of marks: On the spot job – 40; Viva-voce – 10.

SR.	NO	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						
				L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
							T A	C T	TOTAL				
2		METHOD OF FOOTWEAR MANUFACTURE –PART- III	6	3		6	10	20	30	70	100		200

DETAIL COURSE CONTENT

A. Assembling:

1. Introduction
2. Definition & Introduction – Lasting, Sole Attaching, Finishing
3. Conditioning of Upper (Different Methods)
4. Attaching of Insole (Different Methods)
5. Toe – puff and Counter Reactivation (Different Methods)
6. Lasting
7. Sequential Operations of –
 - i) Stuck on construction
 - ii) Weltd Construction
 - iii) Stitch-down Construction
 - iv) Goodyear Weltd Construction
 - v) California Construction
 - vi) String lasted Construction
 - vii) Mocassin Construction
 - viii) DVP and DIP Construction
 - ix) Moulded Construction (Rubber/P.V.C / P.U./ EVA)

B. Shoe Rooming

The function and processes of the shoe room and their importance to sales appeal. Shoe room operations and techniques for different kinds of natural and man made upper and bottom materials.

Practical A (Close Type):

1. Making of Mocassin (Derby and Casual) .

Practical B(Open Type):

2. Women's chappal - – 2 different style (At least one by stitch down construction)
3. Women's Sandals– 2 different styles (At least one by stitch down construction)

TEXT BOOKS:

1. Somenath Ganguly , 'Comprehensive Footwear Technology' ILTA, Kolkata Publication.

PRINCIPLES OF FOOTWEAR DESIGNING & PATTERN DEVELOPING

III

Subject Code	Course offered in	Course Duration	3 lecture +6 practical contact	Full Marks
FWT / 5 / T3 / PFDP	Part III – 1 st Semester	17 weeks	periods	100+100
			per week	

EXAMINATION SCHEME

Internal assessment marks 30, END SEMESTER EXAMINATION MARKS 70 and Practical Marks 100

Distribution of Internal assessment marks: Teacher's Assessment 10, Internal Examination 20

Practical Marks:

Internal assessment of 50 marks shall be held throughout the Semester on the entire syllabus.

Distribution of marks: Practical Book –(open type 5+ close type 5); on the spot job – (open type 10+ close type 10); Assignment – (open type 10+ close type 10).

External assessment of 50 marks shall be held at the end of the Semester on the entire syllabus. One job per student from any one of the jobs done is to be performed. Job is to be set by lottery system. Distribution of marks: On the spot job – 40; Viva-voce – 10.

SR.	NO	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						
				L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
							T A	C T	TOTAL				
3		PRINCIPLES OF FOOTWEAR DESIGNING & PATTERN DEVELOPING III	6	3		6	10	20	30	70	100		200

DETAIL COURSE CONTENT

- The effects of shoe construction
 - shoe dimensions relative to the foot and shape differences between foot last.
 - Foot comfort considered in terms of designing .
 - Positions of seams, cut outs and straps.
 - Fit and flexibility of different constructions
 - The mechanical properties of the shoes and its component materials and their effect on foot movement and comfort adjustment.
 - The physical properties of materials and which effect foot health, water vapour permeability, water absorption, air permeability, thermal conductivity, vapour barrier principles.
 - The choice and the combination of upper material to allow for perspiration transmission or temporary absorption, heat dissipation and conservation under foot comfort
 - the use of cushioning and thermoplastic materials.
 - Choice of bottom filling and thickness of under foot components.
 - Frictional effects between hose and counter lining, hose and insole, sole and ground.
 - Choice of counter linings, heel grips, non-slip sole.
 - Pattern making materials and their effects on processes.
 - Accuracy and tolerance level and acceptability in designing.
 - Interlock of patterns as the basis of upper.
 - Materials and product specification – production guide.
 - Pattern cutting procedure from forme cutting to working patterns, pattern trials and proving test.
 - Pattern cutting considerations – seam, area, material allowances, marker dies and knives, silk screen etc.
2. a) Different systems of pattern making for various types of constructions such as good year welted, California or slip lasting, Veldtschoen etc.

Practical A (Close Type):

Designing of followings

1. Making of Mocassin (Derby and Casual) .

Practical B(Open Type):

Designing of followings

2. Women's chappal - – 2 different style (At least one by stitch down construction)
3. Women's Sandals– 2 different styles (At least one by stitch down construction)

TEXT BOOKS:

1. Somenath Ganguly , 'Comprehensive Footwear Technology' ILTA, Kolkata Publication.

FOOTWEAR MACHINERY -- PART – II

Subject Code	Course offered in	Course Duration	2 lecture periods	Full Marks
FWT / 5 / T3 / FM2	Part III – 1 st Semester	17 weeks	per week	100

EXAMINATION SCHEME

Internal assessment marks 30 and END SEMESTER EXAMINATION MARKS 70

Distribution of Internal assessment marks : Teacher's Assessment 10, Class Test 20,

SR.	NO	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						
				L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
							T A	C T	TOTAL				
4		FOOTWEAR MACHINERY -- PART-II	2	2	-		10	20	30	70			100

Insole attaching machine—Mechanical. Pneumatic.

Upper Pre forming machine(Moccasin).

Counter Moulding Machine [for Solvent dip Counter, Thermoplastic Counters].

Forepart Lasting machine (Function, Features)

Heel Lasting Machine.

Heat Setting Machine.

Roughening Machine

Heat Reactivating Machine.

Sole Pressing machine.

Un-lasting Machine.

Sole Stitching Machine.

Injection Moulding machine.

PU pouring machine.

Work Station In assembling and related machines

TEXT BOOKS:

1. Somenath Ganguly , 'Comprehensive Footwear Technology' ILTA, Kolkata Publication.

FOOTWEAR COSTING AND QUALITY MANAGEMENT

Subject Code	Course offered in	Course Duration	2 lecture + tw contact periods	Full Marks
FWT / 5 / T5 / FCQC	Part III – 1 st Semester	17 weeks	per week	125

EXAMINATION SCHEME

SR.	NO	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						
				L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
							T A	C T	TOTAL				
4		FOOTWEAR COSTING AND QUALITY MANAGEMENT	3	2	1		10	20	30	70		25	125

DETAIL COURSE CONTENT

Internal assessment marks 55 and END SEMESTER EXAMINATION MARKS 70

Distribution of Internal assessment marks : Teacher's Assessment 10, Class Test 20, Term work 25

INTRODUCTION TO COST ACCOUNTING: Responsibility of accounting, uses of cost accounting, elements of cost. Direct material, direct labour, factory overhead. Cost of goods manufactured statements, cost behavior patterns in the apparel industry – fixed, variable, semi variable. Job order costing, Process costing. (10)

ACCOUNTING FOR FACTORY OVERHEAD: Capacity level concepts, production and service departments, direct and indirect costs, over and under applied overhead. (5)

COST VOLUME PROFIT ANALYSIS: Breakeven analysis, Contribution margin, variable, cost ratio, marginal income. Sales mix by garment style, effect of volume change, price/volume analysis. (8)

STANDARD COSTING: Variance analysis, setting cost standards, price variance analysis for material, labour and overheads. (6)

DETERMINING PRICING OF FOOTWEAR PRODUCTS: Procedures used for estimating allowances for footwear components and effects on these allowances of material variations. The influence on these allowances of the type of part being produced in respect of wear requirements, conditioning during manufacture, constructional details and shape and size of the individual components. The incorporation of cost factors in footwear specifications. Export pricing : FOB, CIF, C&F and other cost related terms. (6)

THE BUDGETING PROCESS: Budgeting principles for the Footwear industry, fixed vs. flexible budget, master budget, limitations of budgets. (7)

QUALITY CONTROL

- a) The quality concept from the consumers point of view.
- b) The quality concept from the traders point of view.
- c) The quality concept from the manufacturer's point of view.
- d) Relation between quality standard levels & price.
- e) The main factors on the quality of a product.
- f) Quality control & quality determination
- g) Main aspects in the establishment of quality system.
- h) When and what to control.
- i) How to apply quality control.
- j) Who shall be involved in quality control.
- k) Human aspect & the quality function.

Quality Management:

Total Quality Management, Quality Circle, ISO Series, SA

TERM WORK

1. Per piece pattern costing for non leather material.
2. Wastage calculation for leather upper material.
3. Preparation of cost sheet in MS Excel.

TEXT BOOKS:

1. Maheswari S N, "Management Accounting", Sultan Chand & Sons, New Delhi, 2000.
2. Jain S P and Narang K L, "Cost Accounting", Kalyani Publishers, New Delhi, 1998.

REFERENCES:

1. Chakraborty S K, "Cost Accounting and Financial Management", New age International, 2004.
2. Pandey I M, "Management Accounting", Vikas Publishing House, New Delhi, 1999.

LEATHER TECHNOLOGY – I (ELECTIVE)

Subject Code	Course offered in	Course Duration	Lecture + 2 tw contact	Full Marks
FWT / 5 / T6 / ELC1	Part III – 1 st Semester	17 weeks	periods per week	50+50

EXAMINATION SCHEME

Internal assessment marks 15 and END SEMESTER EXAMINATION MARKS 35, Practical Marks 50

Distribution of Internal assessment marks : Teacher's Assessment 5, Class Test 10

Practical Marks:

Internal assessment of 25 marks shall be held throughout the Semester on the entire syllabus.

Distribution of marks: Practical Book – 5; on the spot job – 10; Assignment – 10.

External assessment of 25 marks shall be held at the end of the Semester on the entire syllabus. One job per student from any one of the jobs done is to be performed. Job is to be set by lottery system. **Distribution of marks: On the spot job – 15; Viva-voce – 10.**

SR. NO	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						
			L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
						T A	C T	TOTAL				
6	1) LEATHER TECHNOLOGY-I	3	2		2	5	10	15	35	50		100

DETAIL COURSE CONTENT

1. Recovery, collection & classification of Raw Hides & Skins.
2. Preservation of Raw Hides & skins:
Control, pH control using toxic materials, Drying Simple salting, Concrete mixer, Brine curing, combined method, Indian method.
3. Pretanning operations for leather making (Principles, Materials, Methods & Machineries).
Soaking, Liming, Deliming, Bating, Pickling, Degreasing.
4. Tanning operations for leather making (Principles, Materials, Methods & Machineries). Chrome tanning, Aluminium tanning, Zirconium tanning. Vegetable tanning, Combination tanning, Syntans; Aldehyde, Oil & Resin Tannage.

Practical: Visiting Tanneries; Thorough study of Practical procedures to make leather specially in tanning Section.
Preparing Practical Handbook.

Recommended Books:

1. Dutta. S.S., "An Introduction to the Principles of Leather Manufacture".
2. Sarkar K.T. " Theory & Practice of Leather Manufacture".

LEATHER GOODS TECHNOLOGY – I (ELECTIVE)

Subject Code	Course offered in	Course Duration	2 lecture+ 2 tw contact	Full Marks
FWT / 5 / T6 / ELC1	Part III – 1 st Semester	17 weeks	periods per week	50+50

EXAMINATION SCHEME

Internal assessment marks 15 and END SEMESTER EXAMINATION MARKS 35, Practical Marks 50

Distribution of Internal assessment marks : Teacher's Assessment 5, Class Test 10

Practical Marks:

Internal assessment of 25 marks shall be held throughout the Semester on the entire syllabus.

Distribution of marks: Practical Book – 5; on the spot job – 10; Assignment – 10.

External assessment of 25 marks shall be held at the end of the Semester on the entire syllabus. One job per student from any one of the jobs done is to be performed. Job is to be set by lottery system. **Distribution of marks: On the spot job – 15; Viva-voce – 10.**

SR. NO	SUBJECT	CREDIT S	PERIODS			EVALUATION SCHEME						
			L	T U	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
						T A	C T	TOTAL				
6	2) LEATHER GOODS	3	2		2	5	10	15	35	50		100

TECHNOLOGY-I										
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DETAIL COURSE CONTENT

- Introduction to leather goods:** Introduction; Definition, Classification.
- Tools Used:** Introduction; Tools storage & maintenance; List of tools, Work Table, Work Board, Square Ruler & Divider, Punching Tools, Hammer, Cutting Tools, Scissors, Gauge, Edging, Folding & Creasing Tools, Sewing & Lacing tools, Miscellaneous Tools.
- Machines Used:** Clicking Machine; Splitting Machine; Skiving Machine; Sewing Machine,
- Diferent Fitting Used:** Introduction, Rivets, Eyelets; Grommets; Snaps; Zipper; Buckles; Loop, Dees; Rings; Frames; Corner Fittings' Locks; Studs; Wires; Elastic; Wheelers.
- Materials Overview:** Introduction; Leather; Lining; Reinforcements; Adhesives; Needles & threads' Wax.

PRACTICAL:

- Pattern Technology: Introduction, Pattern Making from Sample; Pattern Developing (Allowances etc.).
- Cutting Technology: Introduction; Method; Material Selection; Pattern Interlocking; Splitting; Skiving; Strap Cutting.
- Fabrication Technology: Introduction; Different Techniques; Stitching & Assembling; Gluing Method.
- Designing and Manufacturing: small Goods – Key pouch, Wallet.

TEXT BOOKS:

- Somenath Ganguly , 'Comprehensive Footwear Technology' ILTA, Kolkata Publication.

FOOTWEAR CAD Part - II

Subject Code	Course offered in	Course Duration	2 sessional contact	Full Marks
FWT / 5 / T5 / FC2	Part III – 1 st Semester	17 weeks	periods per week	50

OBJECTIVE

On satisfactory completion of the course, the students should be in a position to solve two dimensional drafting and design problems by being able to use Footwear CAD commands to make a 3D drawing, make pattern, Edit pattern, add Sole and Insole, and finally visualizing the whole in different light. They will also be able to convert 3D to 2D.

COURSE & EXAMINATION SCHEDULE

Internal assessment of 25 marks

Distribution of marks: Lab notebook 5, drawing sheets 20.

External assessment of 25 marks shall be held at the end of the Semester on the entire syllabus. One job per student from any one of the jobs done is to be performed. Job is to be set by lottery system. **Distribution of marks: Drawing sheets – 10; On the spot job – 10; Viva-voce – 5.**

EXAMINATION SCHEME

SR.	SUBJECT	CREDIT	PERIODS			EVALUATION SCHEME							
			L	T	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL	
						T	C	TOTAL					
7	FOOTWEAR CAD 2D PART -II	2			2	A	T				50		50

DETAIL COURSE CONTENT

GRADING:

12

SHELL GRADING, The grading sizes/fittings and definitions concept, Grading Rules, Reference Grading , Grade Move Grading , Grade Like Region Grading, Parallel Grading, Radius Grading (circle, ellipse, fillet) , Marker Grading

PLOTTING , NESTING AND CUITTING

8

PLOT command – Plot Configuration – Pen Assignments – Paper Size & Orientation Area – Plot Rotation & Origin – Plotting Area – Scale, Nesting, Selective Cutting.

PRACTICE WITH COMPLETE DRAWING

30

Each student is required to prepare a Base Design and make pattern as per designing. The drawing of Footwear base pattern will be supplied by the teacher-in-charge.

Introduction to 3D:**30**

Understanding the Technology, Recommended ways of combined 2D/3D work, Drawing for complex Designs
 Import 3D Last, 3D Designing (Direct Designing), 3D Pattern Making, Stitch Making, Eyeleting, Lacing,
 Decoration, Sole and Insole Making, 3D Output Visualizing in Different Light

REFERENCE BOOKS:

1. 'Training Manual' , Procam for Dimensions 5.2.
2. 'Training Manual' , Shoemaster QS 10.4
3. 'Training Manual' , Delcam Crispin.

PROFESSIONAL PRACTICE -III

Subject Code	Course offered in	Duration	2 lecture contact periods	Full Marks
FWT / 5/ T1 / PR3	3 rd Year 1 st Semester	17 weeks	per week	50

OBJECTIVE

- Acquire information from different sources.
- Prepare notes for given topic.
- Present given topic in a seminar.
- Interact with peers to share thoughts.
- Prepare a report on industrial visit, expert lecture.

EXAMINATION SCHEME**Internal assessment marks : 50**

Distribution of Internal assessment marks : Visit Report-10, Seminar Presentation 15, Internal Assignment-25

CREDITS	PERIODS			EVALUATION SCHEME						
	L	TU	PR	INTERNAL SCHEME			ESE	PR	TW	MARKS TOTAL
				TA	CT	TOTAL				
2		2							50	50

DETAIL COURSE CONTENT**Module-1**

1. Analysis of Footwear Design trends by
 - Press review
 - Retail window shopping
 - Magazines
 - Websites
2. Formation of Moodboard
3. Trend presentation

Module-2

1. Operation and adjusting controlling parameter of Insole attaching machine
2. Operation and adjusting controlling parameter of Upper Pre forming machine(Moccasin).
3. Operation and adjusting controlling parameter of Counter Moulding Machine
4. Operation and adjusting controlling parameter of Forepart Lasting machine
5. Operation and adjusting controlling parameter of Heel Lasting Machine.
6. Operation and adjusting controlling Heat Setting Machine.
7. Operation and adjusting controlling Roughening Machine

8. Operation and adjusting controlling Heat Reactivating Machine.
9. Operation and adjusting controlling Sole Pressing machine.
10. Operation and adjusting controlling Un-lasting Machine.
11. Operation and adjusting controlling Injection Moulding machine.
12. Operation and adjusting controlling of PU Pouring machine.

Visit a Footwear Making Unit 2 times