NEP-2020 Aligned Curriculum for

Three Year (Six Semester) Diploma Programme in

LEATHER TECHNOLOGY FOOTWEAR (CASD)

For the State of Uttar Pradesh
(Effective from Session ___2026-27)

Prepared by:
Curriculum Development Centre
Institute of Research Development & Training
U. P. Kanpur

UPDATED AND APPROVED BY BOARD OF TECHNICAL EDUCATION U.P. LUCKNOW IN C.D.C MEETING HELD ON 16.07.2026

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PREFACE

An important issue generally debated amongst the planners and educator's world over is how technical education can contribute to sustainable development of the societies struggling hard to come in the same bracket as that of the developed nations. The rapid industrialization and globalization have created an environment for free flow of information and technology through fast and efficient means. This has led to the shrinking of the world, bringing people from different culture and environments together and giving rise to the concept of world turning into a global village. In India, a shift has taken place from the forgettable years of closed economy to knowledge based and open economy in the last few decades. To cope with the challenges of handling new technologies, materials and methods, we have to develop human resources having appropriate professional knowledge, skills and attitude. Technical education system is one of the significant components of the human resource development and has grown phenomenally during all these years. Now it is time to consolidate and infuse quality aspect through developing human resources in the delivery system. Polytechnics play an important role in meeting the requirements of trained technical manpower for industries and field organizations. The initiatives being taken by Technical Education, UP to revise the existing curricula of diploma programmes as per the needs of the industry and making them NEP-2020 compliant, are laudable.

In order to meet the requirements of future technical manpower, we will have to revamp our existing technical education system and one of the most important requirements is to develop outcome-based curricula of diploma programmes. The curricula for diploma programmes have been revised by adopting time-tested and nationally acclaimed scientific method, laying emphasis on the identification of learning outcomes of diploma programme.

The real success of the diploma programme depends upon its effective implementation. However best the curriculum document is designed, if that is not implemented properly, the output will not be as expected. In addition to acquisition of appropriate physical resources, the availability of motivated, competent and qualified faculty is essential for effective implementation of the curricula.

It is expected of the polytechnics to carry out job market research on a continuous basis to identify the new skill requirements, reduce or remove outdated and redundant courses, develop innovative methods of course offering and thereby infuse the much-needed dynamism in the system

Director
Institute of Research Development &Training.
Kanpur

ACKNOWLEDGEMENTS

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6. All the participants from industry/field organizations, engineering colleges, polytechnics, and other technical institutions for their professional inputs during curriculum workshops.

Coordinator
Institute of Research Development & Training,
Kanpur, U.P.

1. SALIENT FEATURES

- Name of the Programme: Diploma Programme Leather Technology Foot-wear(CASD)

- Duration of the Programme: Three years (Six Semesters)

- Entry Qualification: Matriculation or as Prescribed by State BTE, UP

- Intake: As prescribed by the Board

- Pattern of the Programme: Semester Pattern

- Ratio between theory and Practical: 40 : 60 (Approx.)

2. EMPLOYMENT OPPORTUNITIES

- **JOB POTENTIAL / JOB OPPORTUNITIES**

The following are the job opportunities for diploma holders in leather technology.

1. As a leather technologist to manufacture various types of heavy and light leathers, sports goods leathers, garment leather etc.
2. As supervisor/production manager in the tanneries/leather and allied industries in the following sections:
   Liming Department, Tanning Department, Dyeing Department, Curing Department, Finishing Department, Testing and Quality control.
3. As research assistant for developing tanning processes for manufacture of various types of leathers.
4. As technical officer/sales officer in chemicals and auxiliary manufacturing companies.
5. As supervisor in quality control and purchases (Finished leather)
6. As an analyst in tanneries.
7. As supervisor or manager in raw hide curing, preservation and flaying centre.
8. As a field officer for procurement of new materials in shoe industry/Tannery
9. As a marketing officer in tanneries and allied industries.
10. As a laboratory assistant in leather test laboratories.
11. 11.As assistant/ Deputy Director leather in Govt. departments.
12. 12.As a design/planning supervisor in leather goods manufacturing and allied industries.
13. As a maintenance supervisor in leather industry

PROGRAM OUTCOMES (POs)

PO1: Basics and Discipline specific Knowledge

Assimilate knowledge of basic mathematics, science, engineering fundamentals, and electronics and communication engineering.

PO2: Problem's Analysis and solution

Identify, analyse and solve problems using standard methods and established techniques.

PO3: Design and Development

Design solutions for technical problems.

Assist in designing components, systems, or processes to meet specific requirements.

PO4: Engineering Tools, Experimentation, and Testing

Use modern engineering tools and appropriate techniques to conduct experiments as per BIS standard.

PO5: Socio/ Economic /Environmental impact assessment/remedy.

Apply relevant technologies while considering societal needs, environmental impact keeping in view sustainable and ethical responsibilities.

PO6: Project Management and Communication

Apply engineering management principles, work effectively as an individual or in a team, and communicate clearly on activities.

PO7: Lifelong Learning

Recognize the importance of continuous learning and actively pursue self-improvement to keep pace with technological developments.

3. **STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME IN LEATHER TECHNOLOGY FOOTWEAR (CASD)**

FIFTH SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week			Cred-its	MARKS IN EVALUATION SCHEME								Total Marks of Internal & Ex-ternal	Exam Type
						INTERNAL AS-SESSMENT			EXTERNAL ASSESSMENT						
		L	T	P		Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot		
5.1	Summer Internship-II	-	-	-	2	-	60	60	-	-	40	3	40	100	Intern-ship
5.2	Open Elective-III or	2	-	-	2	50	-	50	-	-	-	-	-	-	Qualify-ing
	Advance Skill Development	-	-	-		-	-	-	-	-	-	-	-	-	Certification
5.3	Footwear Construction	2	0	8	6	-	60	60	-	-	40	3	40	100	Practi-cum
5.4	Leather Goods Manufacturing*	0	0	7	3	-	60	60	-	-	40	3	40	100	Practical
5.5	Financial Costing and Account-ing*	4	0	0	4	40	-	40	60	3	-	-	60	100	Theory
5.6	Footwear Material Testing	0	0	7	3	-	60	60	-	-	40	3	40	100	Practical
5.7	Indian Constitution	2	0	0	-	50	-	50	-	-	-	-	-	-	Qualify-ing
#Student Centred Activities (SCA)		-	-	4	-	-	50	50	-	-	-	-	-	50	-
Total		**10**	**0**	**26**	**20**	**40**	**290**	**330**	**60**	**-**	**160**	**-**	**220**	**550**	**-**

* Common with Diploma in Leather Technology (Tanning)

\# Student Centred Activities will comprise of co-curricular activities like extension lectures, self study, games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities, disaster management and safety etc. The periods allotted to SCA can also be utilized to complete the syllabus of other subjects.

List of Subjects for Open Elective-III (Any One)

SR. NO.	SUBJECT NAME
1	Disaster Management
2	Artificial Intelligence
3	Any Course Of Minimum 02 Credit From (Advance Skill Development) • Nptel • Moocs Through Swayam • Aicte-Elis And Centrally Funded Technical Institutes • C-DAC • Certificates Conducted By The Institute Of National Importance (IIT, NIT, IIT Etc.) • ISRO E-Learning • Courses Offered By Tata Technology (Annexure-1) Or Other Reputed Orgnisation.

Advance Skill Development:
To fulfill the requirements for Advanced Skill Development, a minimum of 20 hours of skill certification is necessary. This certification must be obtained from a recognized national or international agency or institute. The assessment and certification process will be conducted by the respective agency or institute. Students must present their certificate to earn 02 credits for this subject.

SIXTH SEMESTER

A: NORMAL PATHWAY

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week			Cred-its	MARKS IN EVALUATION SCHEME								Total Marks of Internal & Ex-ternal	Exam Type
						INTERNAL AS-SESSMENT			EXTERNAL ASSESSMENT						
		L	T	P		Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot		
6.1	Project	-	-	24	**12**	-	240	240	-	-	160	3	160	400	Intern-ship/Proje ct
6.2	Entrepreneurship & Start Ups**	2	0	0	2	40	-	40	60	3	-	-	60	100	Theory
6.3	Pollution Control And Industrial Safety*	**3**	0	0	**3**	40	-	40	60	3	-	-	60	100	Theory
6.4	Leather Product Merchandising*	**3**	0	0	**3**	40	-	40	60	3	-	-	60	100	Theory
#Student Centred Activities (SCA)		-	-	4	-	-	50	50	-	-	-	-	-	50	-
Total		**08**	**0**	**28**	**20**	**120**	**290**	**410**	**180**	**-**	**160**	**-**	**340**	**750**	**-**

** Common with other diploma programme

* Common with Diploma in Leather Technology (Tanning)

Student Centred Activities will comprise of co-curricular activities like extension lectures, self-study, games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities, disaster management and safety etc. The periods allotted to SCA can also be utilized to complete the syllabus of other subjects.

B: Internship Pathway

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week			Credits	MARKS IN EVALUATION SCHEME								Total Marks of Internal & External	Exam Type
						INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT						
		L	T	P		Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot		
6.1	*Entrepreneurship And Start-Ups (Online Mode)	-	-	-	2	-	-	-	100	3	-	-	100	100	Theory
6.2	Industry Hands on Practice	-	-	-	4	-	-	-	-	-	-	-	-	350	-
	Industrial Project	-	-	-	12	-	-	-	-	-	-	-	-	200	-
	Seminar (In Institute)	-	-	-	**2**	**-**	100	100	-	-	-	-	-	100	Seminar
Total		**-**	**-**	**-**	**20**	**-**	**100**	**100**	**100**	**-**	**-**	**-**	**100**	**750**	**-**

* Common with another diploma programme

NOTE:
1. The Industrial training tenure should not be less than 4 months.
2. Industry must be registered with MSME / Directorate of industries/Limited Organization/ State/Central Government establishments.
3. Monthly progress reports of Intern/ Trainee should be attested and forwarded by industrial supervisor (allotted to Intern/Trainee) during industrial Internship/Training.
4. The Industrial unit/organisation must evaluate students using the format provided by polytechnic in the form of marks.
5. The Industrial Hands on Practice, Industrial Project and seminar must be evaluated on the basis of the BTE Internship / Training Policy -2025.
6. "Entrepreneurship and Start-up" course is also mandatory in Industrial internship/training mode. It will be conducted online mode by his/her polytechnic institute. After completing the online course, students must appear for exam conducted by the Board of Technical Education, Lucknow.

4. GUIDELINES FOR ASSESSMENT OF STUDENT CENTRED ACTIVITIES (SCA)

It was discussed and decided that the maximum marks for SCA should be 50 as itinvolves a lot of subjectivity in the evaluation. The marks may be distributed as follows:

i. 10 Marks for general behavior and discipline
(by HODs in consultation with all the teachers of the department)

ii. 10 Marks for attendance as per following:
(by HODs in consultation with all the teachers of the department)

a) 75 - 80% 8 Marks
b) 80 - 85% 9 Marks
c) Above 85% 10 Marks

iii. 30 Marks maximum for Sports/ NCC/ Cultural/ Co-curricular/ NSS activities as per following:
(by In-charge Sports/NCC/Cultural/Co-curricular/NSS)

a) 30 - State/National Level participation
b) 25 - Participation in two of above activities
c) 15 - Inter-Polytechnic level participation

5.1 Summer Internship–II

Duration and Timing:
Students will undergo a **4 week in-plant training** immediately after appearing in their theory examinations of 4th Semester.

Training Venue
The training will be conducted at one of the following types of footwear/CAD-related industrial facilities:

- Footwear design and manufacturing units
- Footwear CAD/CAM centers
- Export-oriented footwear industries
- Leather footwear prototyping and pattern development labs

Objective
The purpose of this training is to provide students with hands-on experience in digital and manual aspects of footwear production, helping them to:

- Understand the workflow of modern CAD/CAM-based footwear manufacturing
- Gain familiarity with industry-relevant software, hardware, and machinery
- Apply academic knowledge to real-world design, grading, and cutting tasks
- Develop soft skills such as teamwork, discipline, and documentation

Key Training Areas

- CAD software usage for pattern making and grading
- Last design and 2D/3D style development
- Material selection and marker planning
- Digitization, plotting, and cutting processes
- Industrial workflow observation and process mapping

Reporting Requirements

- Students are required to maintain a daily training diary
- A detailed summer internship report must be submitted to the institute upon completion

Evaluation

- A **Viva-Voce** examination will be conducted based on the training report and field experience
- Evaluation will be conducted by concerned faculty members or HODs
- Performance will be assessed on attendance, learning outcomes, reporting quality, and presentation

5.2 OPEN ELECTIVE-III

L	T	P
2	0	0

5.2.1 Artificial Intelligence

Course Content:

Unit 1 – Introduction to Artificial Intelligence
• Artificial Intelligence (AI) definition
• Goals of AI
• History of AI
• Applications of AI

Unit 2 – Agents and Environments
• Agent Terminology, Types of Agents – Simple Reflex Agents, Model Based Reflex Agents, Goal Based Agents
• Nature of Environments, Properties of Environments

Unit 3 – Search Algorithms
Terminology
• Brute Force Search Strategies – Breadth First Search, Depth First Search.
• Heuristic Search Strategies, Local Search Algorithms.

Unit 4 – Fuzzy Logic Systems
Introduction to Fuzzy Logic and Fuzzy systems,
• Membership functions,
• Fuzzification/Defuzzification

Unit 5 – Neural Networks
Basic structure of Neural Networks
• Perceptron
• Back-propagation

Suggested Learning Resources:

1. Artificial Intelligence By Example: Develop machine intelligence from scratch using real artificial intelligence use cases Denis Rothman Packt Publishing ISBN – 978-1788990547

5.2.2 Disaster Management

Course Learning Objectives:

Following are the objectives of this course:

- To learn about various types of natural and man-made disasters.
- To know pre- and post-disaster management for some of the disasters.
- To know about various information and organisations in disaster management in India.
- To get exposed to technological tools and their role in disaster management.

Course Content:

Unit – I: Understanding Disaster

Understanding the Concepts and definitions of Disaster, Hazard, Vulnerability, Risk, Capacity – Disaster and Development, and disaster management.

Unit – II: Types, Trends, Causes, Consequences and Control of Disasters

Geological Disasters (earthquakes, landslides, tsunami, mining); Hydro-Meteorological Disasters
(floods, cyclones, lightning, thunder-storms, hail storms, avalanches, droughts, cold and heat waves) Biological Disasters (epidemics, pest attacks, forest fire);
Technological Disasters (chemical, industrial, radiological, nuclear) and Manmade Disasters (building collapse, rural and urban fire, road and rail accidents, nuclear, radiological, chemicals and biological disasters) Global Disaster Trends – Emerging Risks of Disasters – Climate Change and Urban Disasters.

Unit- III: Disaster Management Cycle and Framework

Disaster Management Cycle – Paradigm Shift in Disaster Management.
Pre-Disaster – Risk Assessment and Analysis, Risk Mapping, zonation and Microzonation, Prevention and Mitigation of Disasters, Early Warning System; Preparedness, Capacity Development; Awareness.
During Disaster – Evacuation – Disaster Communication – Search and Rescue – Emergency Operation Centre – Incident Command System – Relief and Rehabilitation –
Post-disaster – Damage and Needs Assessment, Restoration of Critical Infrastructure – Early Recovery – Reconstruction and Redevelopment; IDNDR, Yokohama Stretegy, Hyogo Framework of Action.

Unit– IV: Disaster Management in India

Disaster Profile of India – Mega Disasters of India and Lessons Learnt.
Disaster Management Act 2005 – Institutional and Financial Mechanism,
National Policy on Disaster Management, National Guidelines and Plans on Disaster Management;
Role of Government (local, state and national),Non-Government and Inter Governmental Agencies

Unit– V: Applications of Science and Technology for Disaster Management

Geo-informatics in Disaster Management (RS, GIS, GPS and RS).
Disaster Communication System (Early Warning and Its Dissemination).
Land Use Planning and Development Regulations, Disaster Safe Designs and Constructions, Structural and Non Structural Mitigation of Disasters
S&T Institutions for Disaster Management in India

References

1. Publications of National Disaster Management Authority (NDMA) on Various Templates and Guidelines for Disaster Management

2. Bhandani, R. K., An overview on natural & man-made disasters and their reduction, CSIR, New Delhi
3. Srivastava, H. N., and Gupta G. D., Management of Natural Disasters in developing countries, Daya Publishers, Delhi
4. Alexander, David, Natural Disasters, Kluwer Academic London
5. Ghosh, G. K., Disaster Management, A P H Publishing Corporation
6. Murthy, D. B. N., Disaster Management: Text & Case Studies, Deep & Deep Pvt. Ltd.

5.3 FOOTWEAR CONSTRUCTION

L	T	P
2	0	8

RATIONALE

The objective of the course is to give focus on the cost accounting, evaluation and application of budget and used in leather footwear industry.

Course Outcomes (COs)

CO No.	Course Outcome
CO1	Explain the principles, methods, machinery, and environmental factors involved in lasting operations for different types of footwear construction.
CO2	Describe the construction processes, sequence of operations, and machinery used in Goodyear welted, stitch-down, cemented, moulded, and sports footwear.
CO3	Perform lasting, sole and heel attachment, trimming, finishing, and packaging operations using appropriate tools, machines, and materials following standard industrial practices.
CO4	Inspect finished footwear, identify manufacturing and finishing defects, and recommend suitable corrective measures to ensure product quality.
CO5	Estimate material consumption, prepare footwear cost sheets, minimize material wastage, and apply suitable packaging techniques for domestic and export markets.

CO–PO Mapping Matrix

Correlation: 3 = Strong, 2 = Moderate, 1 = Low, – = No Correlation

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**3**	**2**	**–**	**2**	**–**	**–**	**–**
CO2	**3**	**2**	**2**	**2**	**–**	**–**	**–**
CO3	**2**	**2**	**3**	**3**	**2**	**2**	**–**
CO4	**2**	**3**	**2**	**3**	**2**	**–**	**2**
CO5	**2**	**2**	**2**	**–**	**3**	**2**	**–**

DETAILED CONTENTS

Unit No.	Content	Periods
1	**LASTING** Principles and methods of lasting for different types of construction – manual and mechanical methods. Effects of temperature, humidity and materials in lasting and making operations. Types of machinery and the principles involved in mechanical operations. Managements of lasting and making department. **Practicals** 1. Preparation of hand tools required in finishing departments. 2. Lasting operation of closed upper 3. Practice in setting and operating heel attaching trimming and finishing	08

	machine	
2	**GOOD YEAR WELTED CONSTRUCTION** Principle of good year welted construction, preparation of uppers, insole – rib attaching, sewing in welt sole attaching- variation in the welted methods. Finishing and machinery. **Practicals** 1. Practice in heel attachments by hand and machine. 2. Practice in trimming sole and heel by hand and machine	08
3	**STITCH-DOWN AND OTHER CONSTRUCTION** Principle and methodology of stitch down construction ,upper preparation – the machine and sewing method ,Modern methods of footwear construction including direct moulded, injection moulding and cemented shoe construction ,merits of the various methods of footwear construction . Importance of conditioning, damping, mulling, heat setting and drying. Detailed study of cemented shoe construction. Adhesives and machines used in cemented construction. **Practicals** 1. Practice in heel scouring, heel front buffing, edge setting, heel coloring. 2. Practice of waxing and setting by hand and machine, bottom buffing, bottom finishing. 3. Cleaning and Dressing, fitting of socks, shoe lacing, checking and boxing. 4. Exercise in rectifying finishing defects.	09
4	**SPORTS & MOULDED FOOTWEAR CONSTRUCTION** Construction of sports footwear ,materials used in upper preparation of sports footwear and different methods used in sports footwear construction sequence of operation ,sponge rubber , moulded on slippers, application of vulcanized rubber as sole, use of thermoplastic materials, injection moulding process. **Practicals** 1. Preparation of colors shades for various types of leathers. 2. Practice on different types of fancy finishing.	08
5	**FINISHING AND PACKAGING OF FOOTWEAR** Material used for packing, individual packing. Trend packing for Export , use of fungicides for export packing. Defect removing methods- such as wrinkles on lining ,twisted back strap, High and low quarters, Soft toe and back, soft stiffener etc. common faults in finishing. Inspection recognition and elimination of faults. **Practicals** 1. Exercise on calculation of material consumption, reduction of wastage. 2. Preparing cost sheet for finished footwear. 3. Practice for packaging of final product.	09

INSTRUCTIONAL STATREGY

The teacher should give emphasis on understanding of concept and various terms used in the subject. Practical exercises will reinforce various concepts.

MEANS OF ASSESSMENT

- Class Test
- Home Assignment – Attendance
- Sessional Test

RECOMMENDED BOOKS

1. Theory & practice of Leather manufacture by K.T. Sarkar , The Author Publication.
2. Fundamentals of Leather manufacture by Heidmann, Ad. Tata McGraw Hill Publishers, New Delhi.
3. Analytical Chemistry of Leather Manufacture – P.K.Sarkar, I.L.T.A., Calcutta,
4. The Chemistry & Technology of Leather, Vol. – IV – F.O' Flahorty, W.T.Roddy & R.M.Lollar, original edition, Krieger Publishing

SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Periods)	Marks Allotted (%)
1	8	15
2	8	15
3	9	25
4	8	20
5	9	25
Total	**42**	**100**

5.4 LEATHER GOODS MANUFACTURING

L	T	P
0	0	7

RATIONALE

The objective of the course is to impart basic knowledge and skills regarding leather goods & garment manufacture.

Course Outcomes (Cos)

After successful completion of this course outcome, the student will be able to:

CO1: Explain the types and basic terms of leather goods.
CO2: Identify and apply quality parameters in leather goods.
CO3: Prepare basic leather products (key cases, wallets, mobile covers, gloves).
CO4: Design and make leather accessories (bags, belts, jewelry boxes).
CO5: Application of safety, handling, and finishing techniques in leather manufacture.

CO–PO Mapping

(Scale:3 = Strong correlation,2 = Moderate correlation,1 = Low correlation)

COs \ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	N/A	N/A	N/A	N/A	N/A
CO2	2	3	1	2	1	N/A	N/A
CO3	1	2	3	2	N/A	N/A	N/A
CO4	1	2	3	2	1	N/A	N/A
CO5	1	2	1	2	3	N/A	N/A

	Content	
	LIST OF PRACTICALS 1. Making of key case. 2. Making of mobile phone cover 3. Making of cigarette case. 4. Making of document case. 5. Making of passport case 6. Making of jewel box 7. Making of leather jewellery, watch straps, leather belting, 8. Making of football. 9. Making of volleyball. 10. Making sports gloves and industrial gloves. 11. Making of coin purse, card case ,wallet, 12. Making of cross body bag, totes and satchels, ladies purse 13. Making of laptop bag , and tool carry bag 14. Designing of gloves, tie and cap/hat. 15. Making of slings and clutches	

INSTRUCTIONAL STRATEGY

The teacher should give emphasis on understanding of concept and various terms used in the subject. Practical exercises will reinforce various concepts.

MEANS OF ASSESSMENT

- Class Test
- Home Assignment- Attendance
- Sessional Test

RECOMMENDED BOOKS

1. Theory & practice of Leather manufacture by K.T. Sarkar , The Author Publication.
2. Fundamentals of Leather manufacture by Heidmann, Ad. Tata McGraw Hill Publishers, New Delhi.
3. Analytical Chemistry of Leather Manufacture – P.K.Sarkar, I.L.T.A., Calcutta,
4. The Chemistry & Technology of Leather, Vol. – IV – F.O' Flahorty, W.T.Roddy & R.M.Lollar, original edition, Krieger Publishing

5.5 FINANCIAL COSTING AND ACCOUNTING

L	T	P
3	0	0

RATIONALE

The objective of the course is to give focus on the cost accounting, evaluation and application of budget and used in leather footwear industry.

Course Outcomes (Cos)

After successful completion of this course outcome, the student will be able to:

CO1: Explain cost elements and accounting principles in the leather and footwear industry.

CO2: Application of costing methods, CVP, break-even, and variance analysis for products.

CO3: Prepare and interpret budgets, cost estimates, and financial statements.

CO4: Explain economic importance, trade factors, and policies affecting the industry.

CO5: Develop marketing and export strategies for leather and footwear products.

CO–PO MAPPING

(Scale: High (H), Medium (M), Low (L).

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	N/A	N/A	1	N/A	N/A
CO2	2	3	N/A	N/A	N/A	N/A	N/A
CO3	2	2	N/A	N/A	N/A	N/A	N/A
CO4	2	1	N/A	N/A	3	N/A	N/A
CO5	2	2	2	N/A	3	N/A	N/A

DETAILED CONTENTS

Unit No.	Content	Periods
1	Cost accounting, elements of cost, classification of cost elements-examples from leather footwear industry, method of costing, accounting principles-basic records, depreciation, depreciation methods-preparation & interpretation of profit & loss statement-balance sheet, fixed assets-current assets.	08
2	Cost profit volume analysis, breakeven analysis, standard costing, analysis of variance, costing of leather & leather product-material, labor, power, overhear expenses, current assets & liability decision, estimation of working capital requirements, managements of accounting receivable-inventory-cash-inventory valuation methods.	08
3	Budget. types of budgets, budgeting& control in tanneries & leather product	09

	industry, cost estimates & demand forecasting for leather & leather products, different sources of finance, budget preparation, annual cost, variable cost & allocation of cost, semi & variable cost, capital budgeting, payback & present value method, foreign exchange, exchange rates, risk strategies.	
4	leather products, india's share at the global level, india competitors & their strength, international prices , indian government policies in the leather sector, economic importance of leather, present & past condition of indigenous leather industry & leather product industry of india, market constraints (quality, image, brand name & merchandising method).	08
5	Marketing & export concept, strategies, product planning & development, decision making, sales promotion, export golden rules for successful exporting, necessary steps for documents.	09

INSTRUCTIONAL STATREGY

The teacher should give emphasis on understanding of concept and various terms used in the subject. Practical exercises will reinforce various concepts.

MEANS OF ASSESSMENT

- Class Test
- Home Assignment – Attendance
- Sessional Test

RECOMMENDED BOOKS

1. S.N. Maheswaran,Management Accounting and Financial Control, Sultan Chand,1992
2. Thukaram rao me, cost accounting and financial management new age international Bangalore 2004

WEBSITES FOR REFERENCE:

SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Periods)	Marks Allotted (%)
1	8	15
2	8	15
3	9	25
4	8	20
5	9	25
Total	**42**	**100**

5.6 FOOTWEAR MATERIAL TESTING

L	T	P
0	0	7

RATIONALE

The objective of the course is to impart basic knowledge and skills regarding listing techniques to maintain quality control.

Course Outcomes (COs)

CO No.	Course Outcome
CO1	Explain the principles and standard methods used for testing footwear materials.
CO2	Perform standard physical and mechanical tests on footwear materials using appropriate testing equipment.
CO3	Analyze test results to evaluate the quality and suitability of footwear materials.
CO4	Identify material defects and recommend suitable footwear materials based on test outcomes.
CO5	Prepare laboratory reports by following standard testing procedures and safe laboratory practices.

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	–	2	–	–	–
CO2	2	2	–	3	2	2	–
CO3	2	3	2	3	2	–	2
CO4	2	3	2	2	2	–	2
CO5	2	2	–	3	2	3	2

LIST OF PRACTICALS

1. Measurement and thickness of the leather sample. :V.T. LEATHER
2. Measurement and thickness of the leather sample :C.T.LEATHER
3. Determination of the apparent density of the cylindrical leather sample.
4. Find out the percentage of water absorption in V.T. sole leather.
5. Find out the tensile strength of leather sample by tensile M/C
6. Find out the stitch tear resistance of leather sample .
7. Determination of the abrasion resistance of the sole leather.
8. Find out the shrinkage temperature of leather
9. Find out the tongue tear strength
10. Find out the grains crankiness .
11. Flexing resistance by Flexometer.
12. Wet and dry rub fastness testing of leather
13. Buckle tear strength.

INSTRUCTIONAL STRATEGY

The teacher should give emphasis on understanding of concept and various terms used in the subject. Practical exercises will reinforce various concepts.

MEANS OF ASSESSMENT

- Class Test
- Home Assignment – --
  Attendance-
- Sessional Test-

RECOMMENDED BOOKS

- Theory & practice of Leather manufacture by K.T. Sarkar , The Author Publication.
- Fundamentals of Leather manufacture by Heidmann, Ad. Tata McGraw Hill Publishers, New Delhi.
- Analytical Chemistry of Leather Manufacture – P.K.Sarkar, I.L.T.A., Calcutta,
- The Chemistry & Technology of Leather, Vol. – IV – F.O' Flahorty, W.T.Roddy & R.M.Lollar, original edition, Krieger Publishing

5.7 INDIAN CONSITUTION

L T P
2 0 0

COURSE LEARNING OBJECTIVES:

1. Understand the history, principles, and key interpretations of the Indian Constitution.
2. Understand the structure and key roles of the Indian Union Government, including the President, Prime Minister, and Council of Ministers.
3. Understand the composition, powers, and functions of the Lok Sabha, Rajya Sabha, and the Supreme Court.
4. Understand the roles and powers of the Governor, Chief Minister, Council of Ministers, and the State Secretariat.
5. Understand the structure and functions of local administration, including District, Municipal, and Zila Panchayat levels.
6. Understand the structure, role, and functions of the Election Commission of India.

LEARNING OUTCOMES:

Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:

1. The historical process of the Indian Constitution's creation.
2. The structure and roles of the President, Prime Minister, and Council of Ministers.
3. The composition, powers, and functions of the Lok Sabha, Rajya Sabha, and Supreme Court.
4. The roles and powers of the Governor, Chief Minister, Council of Ministers, and State Secretariat.
5. The structure and functions of local administration, including District Administration, Municipal Corporations, and Zila Panchayats.
6. The structure, role, and functions of the Election Commission of India.

COURSE CONTENT

Unit 1 – The Constitution – Introduction (06 Periods)

• The History of the Making of the Indian Constitution
• Preamble and the Basic Structure, and its interpretation
• Fundamental Rights and Duties and their interpretation

Unit 2 – Union Government (06 Periods

• Structure of the Indian Union Government
• President – Election, Role and Power
• Prime Minister and Council of Ministers

Unit 3- Indian Legislature & Judiciary (06 Periods)

- Composition of Lok Sabha and Rajya Sabha
- Powers & Functions of Lok Sabha and Rajya Sabha
- Structure of Supreme Court including Appointment of Judges
- Powers & Functions of Supreme Court

Unit 4 – State Government (03 Periods)

• Governor – Role and Power
• Chief Minister and Council of Ministers
• State Secretariat

Unit 5 – Local Administration (04 Periods)

• District Administration
• Municipal Corporation
• Zila Panchayat

Unit 6 – Election Commission **(03 Periods)**

- Structure of Election Commission of India
- Role and Function of Election Commission

Suggested Books

1. Ethics and Politics of the Indian Constitution Rajeev Bhargava Oxford University Press, New Delhi, 2008
2. The Constitution of India B.L. Fadia Sahitya Bhawan; New edition (2017)
3. Introduction to the Constitution of India DD Basu Lexis Nexis; Twenty-Third 2018 edition
4. Our Constitution Subhash Chand Kashyap NBT New Delhi.

Suggested Software/Learning Websites:

a. https://www.constitution.org/cons/india/const.html
b. http://www.legislative.gov.in/constitution-of-india
c. https://www.sci.gov.in/constitution
d. https://www.toppr.com/guides/civics/the-indian-constitution/the-constitution-of-india/
e. https://ncert.nic.in/textbook.php

SUGGESTED DISTRIBUTION OF MARKS

SR No	Topic Time Allotted (periods)	Marks Allotted
1	6	20
2	6	20
3	6	20
4	3	12
5	4	16
6	3	12
TOTAL	**28**	**100**

6.1 PROJECT WORK

L	T	P
0	0	24

RATIONALE

Project Work aims at developing innovative skills in the students whereby they apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. In addition, the project work is intended to place students for project oriented practical training in actual work situation for the stipulated period.

LEARNING OUTCOMES

After undergoing the project work, the students will be able to:

- Apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project.
- Develop understanding regarding the size and scale of operations and nature of field-work in which students are going to play their role after completing the courses of study
- Develop understanding of subject based knowledge given in the classroom in the context of its application at work places.
- Develop firsthand experience and confidence amongst the students to enable them to use and apply polytechnic/institute based knowledge and skills to solve practical problems related to the world of work.
- Develop abilities like interpersonal skills, communication skills, positive attitudes and values etc.
- Assemble/fabricate and test an electronics gadget.

General Guidelines

The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. The activity of problem identification should begin well in advance (say at the end of second year). Students should be allotted a problem of interest to him/her as a major project work. It is also essential that the faculty of the respective department may have a brainstorming session to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 3 students if the project work is given to a group. The project work identified in collaboration with industry should be preferred.

This practical training cum project work **should not be considered** as merely conventional industrial training in which students are sent at work places with either minimal or no supervision. This experience is required to be planned in advance and supervised on regular basis by the polytechnic faculty. For the fulfillment of above objectives, polytechnics may establish close linkage with 8-10 relevant organization for providing such an experience to students. It is necessary that each organization is visited well in advance and activities to be performed by students are well defined. The chosen activities should be such that it matches with the curricular interest to students and of professional value to industrial/ field organizations. Each teacher is expected to supervise and guide 5-6 students.

The project assignments may consist of:

1. Preparation of a project for setting up factory having capacity of production of thousand pairs shoe per day.

2. Preparation of a project for setting up factory having capacity of production of 200 article per day. (sports goods , leather goods)
3. Work study in footwear industry and suggesting measures for increasing productivity.
4. Problems connected with the development and marketing of footwear.
5. Problems related to raw material its availability, cost and wastage.
6. Study and outlining the process of making of oxford shoe.
7. Study and outlining the process of making of derby shoe.
8. Study and outlining the process of making of safety shoe.
9. Study and outlining the process of making of sports shoe.
10. Study and outlining the process of making of open footwear.
11. Evolve designs and make product range for footwear/leather goods.

NOTE:

The list is only the guideline for selecting a project; however a student is at liberty to select any other related project of his choice independently under guidance of his teacher.

A suggestive criterion for assessing student performance by the external (person from industry) and internal (teacher) examiner is given in table below:

Sr. No.	Performance Criteria	Max.** Marks	Rating Scale				
			Excellent	Very Good	Good	Fair	Poor
1.	Selection of project assignment	10%	10	8	6	4	2
2.	Planning and execution of Considerations	10%	10	8	6	4	2
3.	Quality of performance	20%	20	16	12	8	4
4.	Providing solution of the problems or production of final Product	20%	20	16	12	8	4
5.	Sense of responsibility	10%	10	8	6	4	2
6.	Self expression/ communication Skills	5%	5	4	3	2	1
7.	Interpersonal skills/human Relations	5%	5	4	3	2	1
8.	Report writing skills	10%	10	8	6	4	2
9	Viva voce	10%	10	8	6	4	2

Total marks	100	100	80	60	40	20

General Guidelines

The overall grading of the practical training shall be made as per following table.

1. In order to qualify for the diploma, students must get "Overall Good grade" failing which the students may be given one more chance to improve and re-evaluate before being disqualified and declared "not eligible to receive diploma". It is also important to note that the students must get more than six "goods" or above "good" grade in different performance criteria items in order to get "Overall Good" grade.

	Range of maximum marks	**Overall grade**
i)	More than 80	Excellent
ii)	79 <> 65	Very good
iii)	64 <> 50	Good
iv)	49 <> 40	Fair
v)	Less than 40	Poor

Important Notes

2. These criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.

3. The criteria for evaluation of the students have been worked out for 200 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.

4. The external examiner, preferably, a person from industry/organization, who has been associated with the project-oriented professional training of the students, should evaluate the students performance as per the above criteria.

5. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific nearby industries are approached for instituting such awards.

The teachers are free to evolve other criteria of assessment, depending upon the type of project work.

It is proposed that the institute may organize an annual exhibition of the project work done by the students and invite leading Industrial organizations in such an exhibition.

6.2 ENTREPRENEURSHIP AND START UPS

L T P
2 0 0

COURSE LEARNING OBJECTIVES:

1. Acquiring Entrepreneurial spirit and resourcefulness.
2. Familiarization with various uses of human resource for earning dignified means of living.
3. Understanding the concept and process of entrepreneurship - its contribution and role in the growth and development of individual and the nation.
4. Acquiring entrepreneurial quality, competency, and motivation.
5. Learning the process and skills of creation and management of entrepreneurial venture.

LEARNING OUTCOME:

Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:

1. Understanding the dynamic role of entrepreneurship and small businesses
2. Organizing and Managing a Small Business
3. Financial Planning and Control
4. Forms of Ownership for Small Business
5. Strategic Marketing Planning
6. New Product or Service Development
7. Business Plan Creation

COURSE CONTENT:

Unit 1 - Introduction to Entrepreneurship and Start – Ups

- Definitions, Classification of Entrepreneur
- Traits of an Entrepreneur, Intrapreneurship, Motivation
- Types of Business Structures- On the Basis of size and On the basis of ownership
- Similarities/differences between entrepreneurs and managers

Unit 2 – Business Ideas and their implementation

- Discovering ideas and visualizing the business
- Activity map
- Business Plan (Case Study)

Unit 3 – Ideas to Start-up

- Marketing and Accounting- Definition and Importance.
- Market Analysis – STP (Segmentation, Targeting, Positioning)
- Competition evaluation and Strategy Development – Vision, Mission, Goal, Objectives.
- Risk analysis- SWOT Analysis.

Unit 4 – Management

- Definition Concept and Functions of Management
- Company's Organization Structure- Concept and Classification
- Recruitment and Selection- Definition,
- Training and Development- Importance.

Unit 5 - Financing and Protection of Ideas

- Financing methods available for Entrepreneurship/ Startups in India (Government Scheme, Banking, NBFCs, SHG and Micro Financing).
- Intellectual Property Rights- Overview of - Copyrights, Trademark, Geographical Indicators, Patenting and Licenses
- Communication of Ideas to potential investors – Investor Pitch.

Unit 6: Succession, Dissolution and Harvesting strategy

- Ways of succession
- Types of Dissolution

SUGGESTED LEARNING RESOURCES:

S. No.	Title of Book	Author	Publication
1.	The Startup Owner's Manual: The Step-by-Step Guide for Building a GreatCompany	Steve Blank and Bob Dorf	K & S Ranch ISBN – 978-0984999392
2.	Entrepreneurship Development (A new Venture creation)	Vasant Desai	Himalya Publication
3.	Entrepreneurship Development	Khanka S.S.	S Chand & Company Limited New Delhi
4.	Entrepreneurship Development	Gupta and Srinivsan	S Chand & Company Limited New Delhi
5	Demand: Creating What People LoveBefore They Know They Want It	Adrian J. Slywotzkywith Karl Weber	Headline Book Publishing ISBN – 978-0755388974
6	The Lean Startup: How Today's Entre- preneurs Use Continuous Innovation toCreate Radically Successful Businesses	Eric Ries	Penguin UK ISBN – 978-0670921607
7	The Innovator's Dilemma: The Revolu-tionary Book That Will Change the WayYou Do Business	Clayton M. Christensen	Harvard businessISBN: 978-142219602

SUGGESTED SOFTWARE/LEARNING WEBSITES:

- https://www.fundable.com/learn/resources/guides/startup
- https://corporatefinanceinstitute.com/resources/knowledge/finance/corporate-structure/
- https://www.finder.com/small-business-finance-tips
- https://www.profitbooks.net/funding-options-to-raise-startup-capital-for-your-business/
- NPTEL Course on Entrepreneurship https://onlinecourses.nptel.ac.in/noc23_mg74/preview
- National Geographic Channel you tube Video on "GI Tag Crafts of Bharat"

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	05	17
2	04	14
3	05	20
4	06	17
5	06	21
6	02	11
Total	**28**	**100**

6.3 POLLUTION CONTROL AND INDUSTRIAL SAFETY

L T P
3 0 0

RATIONALE

A Leather Technology Footwear(CASD) technician must have the knowledge of different types of pollution caused due to industrialization so that he may help in balancing the eco-system and control the pollution by means of control devices. The technician must know various types of accidents which occur in chemical plants and how to safeguard them to avoid injury to men and material. Hence this subject.

Course Outcomes (Cos)

After successful completion of this course outcome, the student will be able to:

CO1: Explain the types of industrial pollution and their effects on human health and the environment.

CO2: Analyze and apply methods for controlling air, water, and noise pollution.

CO3: Identify industrial hazards and apply safety measures using HIRA techniques.

CO4: Application of occupational health and safety practices, including first aid and PPE usage.

CO5: Evaluate sustainable practices, green technologies, CSR, and future trends in industrial safety and pollution control.

CO–PO Mapping

(scale: 3 = High, 2 = Medium, 1 = Low)

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	2	N/A	N/A	2	N/A	N/A
CO2	2	3	2	2	3	N/A	N/A
CO3	2	3	2	2	2	N/A	N/A
CO4	2	2	N/A	1	2	N/A	N/A
CO5	2	2	2	N/A	3	N/A	N/A

DETAILED CONTENTS

Unit No.	Content	Periods
1	**Introduction to Industrial Pollution** 1. Types: Air, water, soil, noise, thermal, radioactive. 2. Sources: Industries (chemical, textile, leather, etc.). 3. Effects on health and environment. 4. Laws: Environment Protection Act (1986), Air Act (1981), Water Act (1974).	08

	5. Environmental Management Systems (ISO 14001).	
2	**Pollution Control Methods** 1. Air pollution devices: Filters, scrubbers, ESP. 2. Water treatment: Primary, secondary, tertiary. 3. Noise control methods. 4. **Case Studies**: Successful industrial pollution control practices.	08
3	**Industrial Safety and Hazard Management** 1. **Need for Industrial Safety**: Importance and benefits. 2. **Common Industrial Hazards**: Mechanical, electrical, chemical, fire, and explosion hazards. 3. **Safety Devices**: Fire extinguishers, emergency alarms, personal protective equipment (PPE). 4. **Workplace Safety Measures**: Safe operating procedures (SOPs), signage, and safety audits. **Hazard Identification and Risk Assessment (HIRA)**: Basics and importance	09
4	**Occupational Health and Safety Management** 1. **Occupational Hazards**: Dust, noise, toxic chemicals, poor ergonomics. 2. **Health Measures**: First aid rooms, PPE, medical check-ups. 3. **First Aid**: CPR, bleeding control, burn treatment, electrical shock, cuts, etc. 4. **Welfare Measures**: Canteens, rest rooms, sanitation. 5. **OSHA Basics**: Workplace health and safety standards.	08
5	**Sustainability and New Trends** 1. **Sustainable Practices**: (3R)Reduce-reuse-recycle, cleaner production. 2. **Green Technologies**: Solar, rainwater harvesting, green belts in industries, eco-friendly materials. 3. **Corporate Social Responsibility (CSR)**: Environmental responsibility by industries. 4. I**ntroduction to Life Cycle Assessment (LCA)**. 5. **Future Trends**: Smart sensors, AI in safety monitoring, zero-emission industries	09

INSTRUCTIONAL STATREGY

1. Case Study of any disaster should be undertaken. Study should be data based.
2. Field visit to the industries should be planned.
3. Student should encourage to undertake project work related to environmental problems

MEANS OF ASSESSMENT

- Class Test
- Home Assignment
- Sessional Test

RECOMMENDED BOOKS

1. Safety in Process Plant Design by Wells
2. Safety and Accident Prevention in Chemical Operation by H. H, Tanacatte and W. S. Wood
3. Engineering Chemistry by P.C. Jain

SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Periods)	Marks Allotted (%)
1	8	15
2	8	15
3	9	25
4	8	20
5	9	25
Total	**42**	**100**

6.4 LEATHER PRODUCT MERCHANDISING

L	T	P
3	-	-

RATIONALE

This course provides a comprehensive understanding of leather and product merchandising, focusing on the leather industry's supply chain, product development, marketing, and retail strategies. It covers leather raw materials, production processes, merchandising principles, and consumer trends in the luxury goods and fashion sectors.
The syllabus is divided into five units, each addressing key aspects of leather merchandising.

Course Outcomes (Cos)

After successful completion of this course outcome, the student will be able to:

CO1: Explain the basics of leather merchandising, including roles, processes, and communication.

CO2: Identify leather types, product categories, quality standards, and sustainability practices.

CO3: Application of merchandising principles in leather goods and footwear development and trend analysis.

CO4: Analyze costing, pricing, and global sourcing strategies for leather products.

CO5: Explain the marketing strategies, export procedures, and international trade in leather products.

CO–PO Mapping

(scale: 3 = High, 2 = Medium, 1 = Low)

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	N/A	N/A	N/A	N/A	N/A
CO2	3	2	N/A	N/A	2	N/A	N/A
CO3	2	2	3	N/A	N/A	N/A	N/A
CO4	2	3	2	N/A	2	N/A	N/A
CO5	2	2	N/A	N/A	3	N/A	N/A

DETAILED CONTENTS

Unit No.	Content	Periods
1	**Fundamentals of Merchandising :** 1. Definition and Concept of Merchandising 2. Role and Responsibilities of a Merchandiser 3. Types of Merchandising: Retail, Export, Online 4. Merchandising Vs Marketing 5. Basic Terminologies: SKU, MOQ, Lead Time, T&A (Time and Action Plan) 6. Importance of Communication in Merchandising 7. Product Development Cycle Overview	08
2	**Leather as a Product Material :** 1. Overview of the types of Leather (Grain, Split, Suede, Nubuck, Patent, Vegetable Tanned, Chrome Tanned) and usage 2. Overview of product categories: a. Footwear (styles, size ranges, specifications) b. Goods (Bags, Wallets, Belts, fashion accessories) c. Garments (Jackets etc) d. Upholstery and Automotive leather product standards. 3. Key Global leather hubs and trade centres: (Italy, China, India, Brazil, Vietnam, Bangladesh etc.) 4. Selection Criteria, Leather Grading and Quality Standards for Leather 5. Environmental and Sustainability Issues 6. Introduction to leather certification systems	08
3	**Merchandising for Leather Goods and Footwear** 1. Leather Goods Merchandising : handbags, belts, wallets, briefcases, small leather goods (SLG) 2. Footwear Merchandising : formal, casual, safety shoes, sports shoes, Key Components, Material etc 3. Process Flow of a Merchandised Product a- Inquiry receipt → Material sourcing → Sampling → Order finalization → Production → Shipping 4. Product Development Stages a- Proto sample → Fit sample → Sealed sample → Production sample 5. Sampling Techniques 6. Fashion Trend Analysis and Market Study 7. Challenges in Leather Product Merchandising: Handling production issues, delays, rejection management.	09
4	**Costing and Pricing in Leather Products** 1. Detailed Cost Sheet Preparation: Material cost (leather + accessories), Labour cost, Overheads (electricity, rent, compliance cost), Profit margin	08

	2. Leather Cutting Yield Calculation: How different leathers impact yield and waste, Optimizing patterns to reduce material loss 3. Costing of Footwear Components and Assembly: Direct vs Indirect costs, Sample development costing vs. bulk costing 4. Pricing Models: FOB (Free on Board), CIF (Cost, Insurance, Freight), Ex-Works, Mark-up vs Margin calculations 5. Global Sourcing and Cost Impact: Cost implications of sourcing leather or components from different countries 6. Currency Fluctuation Management: Basics of dealing with USD, EUR, GBP fluctuations.	
5	**Market Strategies and Export Documentation** 1. Fundamentals of marketing leather goods: 4Ps (Product, Price, Place, Promotion) 2. Influencer marketing for leather products 3. Concept of "Fast Leather Fashion" vs. "Slow Fashion" 4. Trade Fairs and Exhibitions (e.g., Lineapelle, APLF, MIPEL) 5. E-commerce and Digital Merchandising in Leather 6. Basics of leather exports and imports: Registration, IEC code, EPC membership (like CLE in India) 7. Understanding Free Trade Agreements (FTA) and their impact on leather exports 8. Commercial documents: Invoice, Packing List, Certificate of Origin, Inspection Certificate. 9. Export documentation: LC (Letter of Credit), Bill of Lading, Airway Bill, Shipping Bill.	09

INSTRUCTIONAL STATREGY

The teacher should give emphasis on understanding of concept and various terms used in the subject. Practical exercises will reinforce various concepts

MEANS OF ASSESSMENT

- Class Test
- Home Assignment – Attendance
- Sessional Test

RECOMMENDED BOOKS

1- The Indian Leather Industry-Secretariat For Industrial Assistance, Govt. Of India
2- Kothari's Desk Book Series- The Leather Industry
3- Economic Of Leather Industry-B.R.Rau, Calcutta University Press(1920)
4- Apparel Product Design & Merchandising Strategies By Cynthia L. Regan Publisher Prentice Hall

SUGGESTED DISTRIBUTION OF MARKS

Topic	Time Allotted (Periods)	Marks Allotted (%)
1	8	15
2	8	15
3	9	25
4	8	20
5	9	25
Total	**42**	**100**

RESOURCE REQUIREMENT

10.1 PHYSICAL RESOURCES

(A) Space requirement

Norms and standards laid down by All India Council for Technical Education (AICTE) are to be followed to work out space requirement in respect of class rooms, tutorial rooms, drawing halls, laboratories, space required for faculty, student amenities and residential area for staff and students.

(B) Equipment requirement:

Following Laboratories are required for diploma programme in Leather Technology Footwear (CASD):

- Communication Laboratory
- Applied Physics Laboratory
- Applied Chemistry Laboratory
- Engineering Mechanics
- Engineering Graphics/Drawing
- Electrical and Electronic Laboratory
- Basics of IT/Computer lab
- Engg. Mechanics Lab
- Footwear Workshop
- Leather Goods Workshop
- Testing and Quality Control Lab
-
- Footwear Clicking
- Elements of Leather Technology
- Shoe Design Lab
- Footwear Closing Lab
- CAD/CAM Lab For Footwear
- Footwear Machinery
- Footwear Construction Lab
- Leather Goods Manufacturing Lab
- Footwear Material Testing Lab
- Tannery Workshop

EQUIPMENT REQUIRED FOR LEATHER TECHNOLOGY FOOTWEAR (CASD)

Sr. No.	Description	Qty	Total Price (Rs)
COMMUNICATION LABORATORY			
1.	Stools	40	10,000
2.	Display Board/Screen	2	6,000
3.	Sound recording and playing system	1	6,000
4.	Audio cassettes	60	2,000
5.	Overhead Projector	1	5,000
6.	Transparencies slides	100	500
7.	TV, VCR and camera for video recording	1 each	20,000
8.	English spoken course	1	2,000
9.	A Quiz room equipped with two way audio system, back projection system and slide projector	1	30,000
10.	Miscellaneous	LS	1,500
APPLIED PHYSICS LABORATORY			
1.	Vernier calipers Working length 160 mm, Internal and external dia with locking arrangement	12	2,000
2.	Screw Gauges Working length 15 mm, pitch 0.5 mm, least count .005 Mm	12	2,000
3.	Spherometers Distance between legs 2.5 mm, pitch 0.5 mm, least count .005 mm.	12	2,000
4.	Mirrors (convex, concave)	5 Each	1,500
5.	Pendulum Setup	02	4,000
6.	Gravesand's Apparatus	02	3,000

7.	Inclined Plane Setup	02	2,000
8.	Flywheel Setup	02	4,000
9.	Prism	05	1,500
10.	Spectrometer	02	25,000
11.	DC Ammeters Moving coil weston-type ammeter with ebonite stand	10	3,500
12.	DC Miliammeters	2	1,000
13.	DC Microammeters	2	700
14.	DC voltmeters	10	700
15.	DC Millivoltmeters	10	2,000
16.	Sensitivity Galvanometer	2	800
17	Student Galvanometers	10	4,000
18.	Demonstration type DC Ammeters Range; 0 to 1 Amp.	2	1,000
19.	D type DC Voltmeter Range : 0 to 1 Volt	2	1,000
20.	D type Galvanometers Sensitivity : 20 microamperes per scale division,	8	8,000
21.	Resistance boxes (dial type) assorted	8	8,000
22.	Rheostats	10	4.000
23.	Miscellaneous items (Spring, Pan, Glycerine, Optic fi-bre, Ferromagnetic material)	LS	2,000
24.	Fortin's Barometer (Wall type)	2	20,000
25.	Stoke's Apparatus	2	10,000
26.	Gumther's Apparatus	2	16,000
27.	Resonance Tube Apparatus with accessories and Tuning fork set	2	14,000
28.	Sodium Lamp setup with Biprism	2	10,000

29.	Ohmic resistance coil	10	5,00
30.	Slide wire bridge	2	8,000
31.	PN Junction diode Apparatus	2	10,000
32.	Laser (as per requirement)	1	1,00,000
33.	Numerical aperture setup	1	25,000
34.	Miscellaneous	LS	3,000
APPLIED CHEMISTRY LABORATORY			
1.	Digital Balance	1	80,000
2.	Burette 50ml	30	3,000
3.	Pipette 25ml	60	4,000
4.	Beakers 100ml	60	4,000
5.	Burette stand	30	30,000
6.	Glazed tile	30	1,000
7.	Conical flask 50ml (Titration flask)	60	4,000
8.	Standard (Measuring) flask (to prepare standard solution) 250ml/100ml	30	6,000
9.	Able's Flash Point apparatus	2	10,000
10.	(1/10)°C thermometer	06	6,000
11.	Candles	20	100
12.	Crucible with lid	06	2,000
13.	Muffle furnace	1	18,000
14.	Decicators	06	8,000
15.	Pair of tongue (small and big)	24 (small) 2 (big)	2,000
16.	Chemicals		
	- EDTA-1 kg - Eriochrome Black-T(solochrome black T)-		

	200g - Buffer solution (NH_3 - 2.5 ltr, NH_4Cl – 1 kg) - Zinc sulphate- 500g - H_2SO_4- 2.5 ltr - Phenolphthalein indicator (as per requirement) - Methyl orange indicator (as per requirement) - Charcoal (as per requirement) - Kerosene- 1 ltr	LS		20,000
17.	Miscellaneous	LS		2,000
ENGINEERING DRAWING				
1.	Drawing Boards (700 x 500mm)	60		25,000
2.	Draughtsman Tables	60		1,80,000
3.	Draughtsman Stools	60		40,000
4.	Computer Aided Drawing (CAD) Software	30 User		5,00,000
5.	Model of different wooder joints	1		1,000
6.	Model of different screw threads	1		1,000
7.	Model of various locking devices	1		1,000
8.	Model of various joints	1		1,000
9.	Cut section Model of various couplings	1		3,000
10.	Miscellaneous	LS		5,000
ELECTRICAL AND ELECTRONICS ENGINEERING LABORTORY				
1.	Voltmeter	5		7,500
2.	Ammeter	5		10,000
3.	CRO	1		15,000
4.	Wattmeter	5		10,000
5.	Multimeter	1		4,000
6.	Resistive load	1		4,000
7.	Regulated supply	1		8,000
8.	Signal generator	1		5,000

9.	Rheostat	2	2,500
10.	Lead acid battery	1	4,000
11.	Cables, Coils, Lamp (as per requirements)	LS	1,500
12.	Resistance, Inductor, Capacitor (as per requirements)	LS	1,500
13.	Miscellaneous/Electronics Components	LS	2,500
BASICS OF IT /COMPUTER LAB			
1.	Computer System with latest configuration	60	48,00,000
2.	Printer (MFP)	05	250,000
3.	Printer (Laser)	05	250,000
4.	Antivirus Software	LS	60,000
5.	Internet Facility on Computers	LS	2,00,000
6.	LCD Projector	01	35,000
7.	On line UPS	05	500,000
8.	Miscellaneous	LS	5,000
CARPENTRY SHOP			
1	Work benches fitted with carpenter vices	5	20,000
2.	Circular saw grinder	1	6,000
3.	Wood cutting band saw-vertical	1	10,000
4.	Bench grinder	1	5,000
5.	Drilling machine	1	8,000
6.	Wood turning lathe	1	40,000
7.	Wood Planner	1	20,000
8.	Tool accessories measuring and marking Instruments	25	25,000
9.	Band saw blade brazing unit	1	10,000
10.	Miscellaneous	LS	1,500

Sr. No.	Description	Qty	Total Price (Rs)
PAINTING AND POLISHING SHOP			
1.	Spray gun with hose pipe	1	1,000
2.	Paint brushes	20	2,000
3.	Paint/Varnish	LS	2,000
4.	Air Compressor with 2 hp motor	1 set	10,000
5.	Miscellaneous	LS	2,000
ELECTRICAL SHOP			
1.	Tool kit (Plier, Screw driver, Knife, Steel rule, hammer, scriber, pincer steel tape etc.)	20	20,000
2.	Fuses, Switches, Plugs, Sockets, Ceiling rose, Wires, cleats, Clamps, Test lamp, Tester.(as per requirement)		8,000
3.	Electric Iron	1	1,500
4.	Electric kettle	1	1,500
5.	Ceiling fan/table fan	1	2,500
6.	Desert cooler	1	5,000
7.	Lead acid battery	2	8,000
8.	Battery Charger	1	6,000
9.	Miscellaneous		3,000
WELDING SHOP			
1.	Electrical welding transformer set with accessories	3	30,000
2.	Gas Cutting Unit	1	3,000
3.	Work benches with vices	3	5,000
4.	Welding generator set	1	10,000
5.	Oxy acetylene welding set with accessories	1	7,000
6.	Acetylene generating set	1	6,000
7.	Electric welder tool kit	10	10,000
8.	Projection welding machine	1	15,000
9.	Brazing equipment with accessories	1	10,000

10.	Soldering irons	3	1,000
11.	Pedestal grinder	1	10,000
12.	Metal spraying gun	1	10,000
13.	Spot welder	1	25,000
14.	TIG welding set	1	1,00,000
15.	MIG welding set	1	1,00,000
16.	Welding Partition Screen	5	2,500
17.	Miscellaneous	LS	3,000

FITTING AND PLUMBING SHOP

1.	Work benches with vices (4 vices on each bench)	5	30,000
2.	Marking tables with scribers	4	24,000
3.	Surface plates	5	20,000
4.	Accessories like calipers, V blocks, height, gauges steel rules and scribers	25	50,000
5.	Tool kits – taps, dies, drills	25	40,000
6.	Tool kits – chiesels, hammers, files, hacksaw	25	25,000
7.	Drilling machine	2	12,000
8.	Pipe vice	4	1,000
9.	Chain wrenches	5	1,250
10.	Ring spanner set	5	600
11.	Pipe die set 2”	2 set	1,000
12.	Pipe bending device	1	5,000
13.	Various plumbing fittings	LS	2,000
14.	Miscellaneous	LS	1,500

SHEET METAL SHOP

1.	Hammers	8	3,000

2.	Mallets (Hard & Soft)	5	2,000
3.	Sheet and wire Ganges	LS	8,00
4.	Shearing Machine	1	20,000
5.	Bar folding Machine	1	20,000
6.	Burring machine	1	10,000
7.	Various sheet (black plain, galvanized iron, corrugated, Aluminum)	1 Each	1,000
8.	Hand Shears/Snippers	4	2,000
9.	Nuts, Bolts, Rivets, Screw	LS	5,00
10.	Miscellaneous	LS	1,000
MASON SHOP			
1.	Mason Trowel	10	1,000
2.	Concrete Finishing Trowel	10	1,000
3.	Gauging Trowel	10	1,000
4.	Margin Trowel	10	1,000
5.	Pointing Trowel	10	1,000
6.	Round Trowel	10	1,000
7.	Mason/Brick Hammer	10	3,000
8.	Comb hammer	10	3,000
9.	Blocking chisel	10	1,000
10.	Plumb bob	10	500
11.	Spirit level	10	1,000
12.	Straight Edge	10	1,000
13.	Jointer	10	1,000
14.	Masonry Pan	10	1,500
15.	Steel Measuring Tape	10	500
16.	Miscellaneous (Bricks, Blocks, Stones, Sand, Cement)	10	3,000
MACHINE SHOP			
1.	Centre lathes	10	6,00,000
2.	Grinder	1	10,000

3.	Universal milling machine	1	1,25,000
4.	Shaper	2	1,20,000
5.	Plainer	2	1,20,000
6.	Work bench	3	10,000
7.	Precision instruments	1	10,000
8.	Hand tools and accessories	2	8,000
9.	CNC trainer lathe	1	4,00,000
10.	Miscellaneous	LS	5,000

TESTING LAB

Sr no.	Name of Equipment	QTY	Amount (in Lakhs)
1	**Universal Tensile Tester Machine (Computerised)**	**1**	**24**
2	**Proctor Extractor**	**1**	**1.0**
3	**Water Vapour Permeability Tester**	**1**	**1.2**
4	**Water absorption (Dynamic tester)**	**1**	**1**
5	**Lasto meter**	**1**	**0.9**
6	**Soxhlet apparatus**	**1**	**0.72**
7	**Muffle furnace**	**2**	**3.0**
8	**Desiccator**	**1**	**0.08**
9	**Weighing balance**	**1**	**0.96**
10	**Hot plate**	**1**	**0.18**
11	**Magnetic stirrer**	**1**	**1**

12	**Heating mantle**	**1**	**0.5**
13	**Bally flexing tester**	**1**	**1.8**
14	**Veslic Rub fastness**	**1**	**1.5**
15	**Circular rub fastness**	**1**	**1.3**
16	**Flexometer**	**1**	**1.5**
17	**Hot air oven**	**1**	**1.0**
18	**Steam Distillation Unit**	**1**	**2.0**
19	**Fume hood**	**1**	**.9**
20	**Chemical storage cabinet**	**1**	**0.12**
21	**Glassware and Chemicals**	**LS**	**1.2**
22	**Kubelka Apparatus**	**1**	**0.12**
23	**Fibber board flexing machine**	**1**	**1.3**
24	**Hardness Tester for rubber sole**	**1**	**2.25**
25	**Sole adhesion tester**	**1**	**2.0**
26	**Shrinkage temperature tester**	**1**	**.3**
27	**Thickness measuring gauge**	**2**	**.10**
28	**Fuming Cupboard**	**1**	**.20**
29	**pH meter**	**5**	**.05**
30	**Crucible**	**2**	**.03**

CAD LAB

Sr no.	Name of Equipment	QTY	Amount (in Lakhs)
1	Cad software with license	10	7.2
2	Computer with latest configuration	30	1.2
3	Pattern cutter /cutting m/c /PLOTTER	1	10.8
4	2D Digitizer	1	3
5	Printer (MFM)	1	2.4
6	Air Conditioner- 2Ton	2	1
7	Computer Table	30	0.096
8	Chair	30	0.072
9	Foot Scanner	1	18
10	Last Scanner	1	21.6
11	3D Printer	1	2.4
12	Digital Tablet	4	1.08
13	Colour Scanner dpi	1	1.2

FOOTWEAR DESIGN LAB

Sr no.	Name of Equipment	QTY	Amount (in Lakhs)
1	**PATTERN BINDING MACHINE**	**1**	**1.8**
2	**SHOE LAST**	**45 Pair**	**0.024**
3	**BOOT LAST**	**12 Pair**	**0.024**
4	**DESIGNING TOOLS**	**30 Sets**	**0.0815**

5	**DESIGNING TABLE**	**30**	**0.12**

LEATHER GOODS WORKSHOP

Sr no.	Name of Equipment	QTY	Amount (in Lakhs)
1	FOOTBAL PANEL CUTTING MACHINE	**1**	4.8
2	FOOTBAL SHAPING MACHINE	**1**	6
3	BELT SPLITING MACHINE	**1**	1.2
4	BELT EDGE SKIVING MACHINE	**1**	1.2
5	BELT ADHESIVE MACHINE	**1**	1.2
6	BELT PRESSING MACHINE	**1**	1.2
7	BELT SIDE DECORATING MACHINE	**1**	1.2
8	BELT PUNCHING MACHINE (mannual)	**1**	0.36
9	BELT COLOURING MACHINE	**1**	0.96
10	BELT EYELET FIXING MACHINE	**1**	1.08
11	BELT FINISHING MACHINE	**1**	1.2
12	BELT CREASING MACHINE	**1**	1.44
13	BELT EDGE MAKING MACHINE)	**1**	1.2
14	LEATHER ROUND BELT MAKING MACHINE	**1**	1.2

15	BELT PUNCHING AND FIXING MACHINE	**1**	1.8
16	SKIVING MACHINE	**4**	1.2
17	EDGE FOLDING MACHINE	**1**	1.2
18	EDGE TRIMMING MACHINE	**1**	1.5
19	PUNCHING MACHINE	**1**	1.08
20	FLAT BED SEWING MACHINE (HEAVY DUTY)	**1**	3.6
21	POST BED SEWING MACHINE (HEAVY DUTY)	**1**	6.48
22	CYLINDAR ARM SWING MACHINE (HEAVY DUTY)	**1**	1.92
23	BUTTON FIXING MACHINE	**1**	0.84
24	FINISHING MACHINE	**1**	1.08
25	TOOL SET	**LS**	LS

FOOTWEAR WORKSHOP

Sr no.	Name of Equipment	QTY	Amount (in Lakhs)
1	FLAT BED SEWING MACHINE	10	0.9
2	ZIG-ZAG SEWING MACHINE	1	1.44
3	POST BED SEWING MACHINE DOUBLE NEEDLE	6	2.16
4	CYLENDER ARM SEWING MACHINE (HEAVY DUTY)	1	0.96

5	SKIVING MACHINE	3	1.28
6	STROBLE MACHINE	1	8.67
7	ROUGHING MACHINE	1	2.4
8	TOOL BOXES	50	0.09
9	THICKNESS MEAUSRING GAUGE	2	0.05
10	TAPE AND SEEM RUBBING MACHINE	1	2.4
11	EYELETING MACHINE	1	4.2
12	COMPRESSER FOR PNENUT MATIC MACHINE (01 NO.)	1	4.8
13	MULLING MACHINE	1	1.68
14	TOE MOLDING MACHINE	1	9.867
15	SOLE PRESSING MACHINE	1	9.867
16	POLISHING MACHINE	1	2.04
17	BINDING MACHINE	1	1.92
18	CHILLER MACHINE	1	8.4
19	HEAT ACTIVATOR	1	7.2
20	HYDRULIC CLICKING PRESS	1	4
21	STRAP CUTTING	1	0.75
22	STAMPING MACHINE	1	0.5
23	POUNDING MACHINE	1	2
24	EDGE TRIMMING MACHINE(FOR LINING)	2	1.75
25	EDGE TRIMMING MACHINE(FOR SOLE)	2	1.5

26	HEEL TRIMMING	2	2.25
27	IRONING MACHINE	2	1.25
28	WORKING TABLE WITH STOOL	60	0.2
29	DECORATIVE PUNCHING MACHINE	2	0.7
30	DIES, MOULDS, LAST, ETC	LS	LS
31	TOOL BOXES	LS	LS
32	PATERN BINDING	1	0.1
33	BACK PART MOULDING	1	8
34	MOCCASIN PERFORMING	1	8
35	FORE PART LASTING	1	12
36	DELASTING MACHINE	1	2
37	SPRAY BOOTH	1	1.5
38	PUNCHING MACHINE	1	0.8

Tannery Machineries

Sr no.	Name of Equipment	QTY	Amount (in Lakhs)
1	Sammying Machine	1	9.6
2	Spliting Machine	1	9.6
3	Shaving Machine	1	12
4	Setting Machine	1	9.6
5	Fleshing Machine	1	3

6	Toggle with drying chamber	1	6
7	Staking (Vibration)	1	12
8	Auto spray	1	18
9	Roller Coater	1	7.2
10	Hydraulic press	1	9.6
11	Finiflex	1	12
12	Milling drum- Steel	1	7.2
13	Area Measuring Machine (01 no.)	1	3.6
14	Milling Drum-wooden	1	2.40
15	Buffing Machine	1	6
16	Boiler	1	3.6
17	Desalting Drum	1	2.5
18	Experimental Steel Drum	2	3.8
19	Electronic balance	1	.5
20	Compressor	1	1.5
21	Seasoning table	1	1.0
22	Spray Gun	2	.10
23	Thickness measuring gause	5	.10

TANNERY WORKSHOP (Experimental Tannery/Leather Trade Engg.)		
Sr.	Particulars	Unit
1-	Wooden paddle	01
2-	Small experimental stainless steel drum	02

3-	Wooden horses	02
4-	Fleshing and scudding Knives	02
5-	Fleshing and scudding beams	02
6-	Misc tools	LS- 10
7-	Sammying Machine	01
8-	Splitting Machine	01
9-	Shaving Machine	01
10-	Setting Machine	01
11-	Fleshing Machine	01
12-	Toggle with drying chamber	01
13-	Staking Machine (Vibration)	01
14-	Auto Spray 4-6 guns	01
15-	Roller Coater	01
16-	Hydraulic Press	01
17-	Finiflex	01
18-	Milling Drum (Steel)	01
19-	Area Measuring Machine	01
20-	Milling Drum (Wooden)	01
21-	Buffing Machine	01
22-	Boiler	01
23-	Desalting Drum	01
24-	Electronic Balance	01
25-	Compressor	01
	Seasoning Table	01
	Spray Gun	02
	Thichness Measuring Gauge	05
	Spray Booth with exhaust Fan	01

NOTE:

In addition to the above, laboratories in respect of physics, chemistry, Computer Centre, etc will be required for effective implementation of the course. Provision for photocopiers, PC facilities along with LCD Projection System etc. has also to be made.

(C) Furniture Requirement

Norms and standards laid down by AICTE be followed for working out furniture requirement for this course.

10.2 Human Resources Development:

Weekly work schedule, annual work schedule, student teacher ratio for various group and class size, staffing pattern, work load norms, qualifications, experience and job description of teaching staff workshop staff and other administrative and supporting staff be worked out as per norms and standards laid down by the AICTE.

11. EVALUATION STRATEGY

11.1 INTRODUCTION

Evaluation plays an important role in the teaching-learning process. The major objective of any teaching-learning endeavor is to ensure the quality of the product which can be assessed through learner's evaluation.

The purpose of student evaluation is to determine the extent to which the general and the specific objectives of curriculum have been achieved. Student evaluation is also important from the point of view of ascertaining the quality of instructional processes and to get feedback for curriculum improvement. It helps the teachers in determining the level of appropriateness of teaching experiences provided to learners to meet their individual and professional needs. Evaluation also helps in diagnosing learning difficulties of the students. Evaluation is of two types: Formative and Summative (Internal and External Evaluation)

Formative Evaluation

It is an on-going evaluation process. Its purpose is to provide continuous and comprehensive feedback to students and teachers concerning teaching-learning process. It provides corrective steps to be taken to account for curricular as well as co-curricular aspects.

Summative Evaluation

It is carried out at the end of a unit of instruction like topic, subject, semester or year. The main purpose of summative evaluation is to measure achievement for assigning course grades, certification of students and ascertaining accountability of instructional process. The student evaluation has to be done in a comprehensive and systematic manner since any mistake or lacuna is likely to affect the future of students.

In the present educational scenario in India, where summative evaluation plays an important role in educational process, there is a need to improve the standard of summative evaluation with a view to bring validity and reliability in the end-term examination system for achieving objectivity and efficiency in evaluation.

11.2 STUDENTS' EVALUATION AREAS

The student evaluation is carried out for the following areas:

- Theory
- Practical Work (Laboratory, Workshop, Field Exercises)
- Project Work
- Professional Industrial Training

A. Theory

Evaluation in theory aims at assessing students' understanding of concepts, principles and procedures related to a course/subject, and their ability to apply learnt principles and solve

problems. The formative evaluation for theory subjects may be caused through sessional /class-tests, home-assignments, tutorial-work, seminars, and group discussions etc. For end-term evaluation of theory, the question paper may comprise of three sections.

Section-I

It should contain objective type items e.g. multiple choice, matching and completion type. Total weightage to Section-1 should be of the order of 20 percent of the total marks and no choice should be given in this section. The objective type items should be used to evaluate students' performance in knowledge, comprehension and at the most application domains only.

Section-II

It should contain short answer/completion items. The weightage to this section should be of the order of 40 percent of the total marks. Again, no choice should be given in section-II

Section-III

It may contain two to three essay type questions. Total weightage to this section should be of the order of 40 percent of the total marks. Some built-in, internal choice of about 50 percent of the questions set, can be given in this section

Table II : Suggested Weightage to be given to different ability levels

Abilities	**Weightage to be assigned**
Knowledge	10-30 percent
Comprehension	40-60 percent
Application	20-30 percent
Higher than application i.e. Analy-sis, Synthesis and Evaluation	Upto 10 percent

B. Practical Work

Evaluation of students performance in practical work (Laboratory experiments, Workshop practicals/field exercises) aims at assessing students ability to apply or practice learnt concepts, principles and procedures, manipulative skills, ability to observe and record, ability to interpret and draw conclusions and work related attitudes. Formative and summative evaluation may comprise of weightages to performance on task, quality of product, general behaviour and it should be followed by viva-voce.

C. Project Work

The purpose of evaluation of project work is to assess student's ability to apply, in an integrated manner, learnt knowledge and skills in solving real life problems, manipulative skills, ability to observe, record, creativity and communication skills. The formative and summative evaluation may comprise of weightage to nature of project, quality of product, quality of report and quality of presentation followed by viva-voce.

D. Professional Industrial Training

Evaluation of professional industrial training report and viva-voce/ presentation aims at assessing students' understanding of materials, industrial processes, practices in the industry/field and their ability to engage

In activities related to problem-solving in industrial setting as well as understanding of application of learnt knowledge and skills in real life situation. The formative and summative evaluation may comprise of weightages to performance in testing, general behaviour, quality of report and presentation during viva-voce.

12. RECOMMENDATIONS FOR EFFECTIVE CURRICULUM IMPLEMENTATION

This curriculum document is a Plan of Action and has been prepared based on exhaustive exercise of curriculum planning and design. The representative sample comprising selected senior personnel (lecturers and HODs) from various institutions and experts from industry/field have been involved in curriculum design process.

The document so prepared is now ready for its implementation. It is the faculty of polytechnics who have to play a vital role in planning instructional experiences for the courses in four different environments viz. class-room, laboratory, library and field and execute them in right perspective. It is emphasized that a proper mix of different teaching methods in all these places of instruction only can bring the changes in stipulated students behaviour as in the curriculum document. It is important for the teachers to understand curriculum document holistically and further be aware of intricacies of teaching-learning process (T-L) for achieving curriculum objectives. Given below are certain suggestions which may help the teachers in planning and designing learning experiences effectively. These are indicative in nature and teachers using their creativity can further develop/refine them. The designers of the programme suggest every teacher to read them carefully, comprehend and start using them.

(A) Broad Suggestions:

1. Curriculum implementation takes place at programme, course and class-room level

   Respectively and synchronization among them is required for its success. The first step towards achieving synchronization is to read curriculum document holistically and understand its rationale and philosophy.

2. An academic plan needs to be prepared and made available to all polytechnics well in advance. The Principals have a great role to play in its dissemination and, percolation upto grass-root level. Polytechnics, in turn are supposed to prepare institutional academic plan.

3. HOD of every Programme Department along with HODs and incharges of other departments are required to prepare academic plan at department level referring to institutional academic plan.

4. All lecturers/Senior lecturers are required to prepare course level and class level lesson plans referring departmental academic plan.

(B) Course Level Suggestions

Teachers are educational managers at class room level and their success in achieving course level objectives lies in using course plan and their judicious execution which is very important for the success of programme by achieving its objectives.Polytechnic teachers are required to plan various instructional experiences viz. theory lecture, expert lectures, lab/workshop practicals, guided library exercises, field visits, study tours, camps etc. In addition, they have to carry out progressive assessment of theory, assignments, library, practicals and field experiences. Teachers are also required to do all these activities within a stipulated period of time. It is essential for them to use the given time judiciously by planning all above activities properly and ensure execution of the plan effectively.

Following is the gist of suggestions for subject teachers to carry out T-L process effectively:

1. Teachers are required to prepare a course plan, taking into account departmental academic plan, number of weeks available and courses to be taught.

2. Teachers are required to prepare lesson plan for every theory class. This plan may comprise of contents to be covered, learning material for execution of a lesson plan. They may follow steps for preparing lesson plan e.g. drawing attention, state instructional objectives, help in recalling pre-requisite knowledge, deliver planned subject content, check desired learning outcomes and reinforce learning etc.

3. Teachers are required to plan for expert lectures from field/industry. Necessary steps are to plan in advance, identify field experts, make correspondence to invite them, take necessary budgetary approval etc.

4. Teachers are required to plan for guided library exercises by identification of course specific experience requirement, setting time, assessment, etc. The assignments and seminars can be thought of as terminal outcome of library experiences.

5. Concept and content based field visits may be planned and executed for such content of course which is abstract in nature and no other requisite resources are readily available in institute to impart them effectively.

6. There is a dire need for planning practical experiences in right perspective. These slots in a course are the avenues to use problem based learning/activity learning/ experiential learning approach effectively. The development of lab instruction sheets for the course is a good beginning to provide lab experiences effectively.

7. Planning of progressive assessment encompasses periodical assessment in a semester, preparation of proper quality question paper, assessment of answer sheets immediately and giving constructive feed back to every student.

8. The student centred activities may be used to develop generic skills like task Management, problem solving, managing self, collaborating with others etc.

9. Where ever possible, it is essential to use activity based learning rather than relying on delivery based conventional teaching all the time.

10. Teachers may take initiative in establishing liaison with industries and field organizations for imparting field experiences to their students.

11. Students be made aware about issues related to ecology and environment, safety, concern for wastage of energy and other resources etc.

12. Students may be given relevant and well thought out project assignments, which are purposeful and develop practical skills. This will help students in developing creativity and confidence for their gainful employment.

13. A Project bank may be developed by the concerned department of the polytechnics in consultation with related Industry, research institutes and other relevant field organizations in the state.

LIST OF EXPERETS

The following experts participated in workshop for Developing the Curricula Structure and Contents of Diploma Programme in LEATHER TECHNOLOGY FOOTWEAR (CASD) **on dated 09-04-2025 and 24-04-205 to 26—04-2025 for UP State at IRDT, Kanpur:**

1- Sh. Jitender Kumar , Head of Department , Government Leather Institute , Agra
2- Sh. Satender Singh, Lecturer, Government Leather Institute , Kanpur
3- Sh. D.N. Swami, Lecturer, Government Leather Institute , Agra
4- Sh. Naresh Kumar, Lecturer Shoe Design, Government Leather Institute , Kanpur
5- Sh. Vipin Kumar Sankhvar, Lecturer (Quality Control,Leather), Government Leather Institute , Agra
6- Sh. Gaurav Kishor Kanaujiya, Assistant Professor/ Course Co-ordinator, IRDT U.P. Kanpur.

Annexure: 1

Proposed Courses by TATA Technology (Advance Skill Certification)

S. No.	Course Name
1	Fundamentals of Innovation and Design Thinking
2	Product Design and Development
3	Product Verification and Analysis
4	Advanced Automobile
5	Electric Vehicle
6	Internet of Things
7	Advanced Manufacturing
8	Advanced Welding & Painting using Simulator
9	Industrial Automation and MES
10	Industrial Robotics
11	Inspection and Quality Control
12	Advanced Plumbing
13	AI and ML