

Diploma in Leather Goods & Footwear Technology

IV Semester

TEACHING AND EXAMINATION SCHEME

Sl. No.	Course Code	Course Name	Teaching Scheme					Examination Scheme						
			Instruction periods per week			Total Periods per semester	Credits	Continuous internal evaluation			Semester end examination			
			L	T	P			Mid sem. I	Mid sem. II	Internal evaluation	Max. Marks	Min. Marks	Total marks	Min. marks for passing including internals
1	18FW-401F	Advanced Engineering Mathematics	3	1	0	60	3	20	20	20	40	14	100	35
2	18FW-402C	Advanced Leather goods and Garments Fabrication Technology	3	1	0	60	3	20	20	20	40	14	100	35
3	18FW-403C	Testing and Quality Control	3	1	0	60	3	20	20	20	40	14	100	35
4	18FW-404C	Computer Application in leather products	3	1	0	60	3	20	20	20	40	14	100	35
5	18FW-405C	Advanced Footwear Fabrication Technology	3	1	0	60	3	20	20	20	40	14	100	35
6	18FW-406P	Advanced Leather goods and garments Fabrication Lab practice	1	0	2	45	1.5	20	20	20	40	20	100	50
7	18FW-407P	Footwear fabrication lab Practice	1	0	2	45	1.5	20	20	20	40	20	100	50
8	18FW-408P	Inspection and quality control lab practice	1	0	2	45	1.5	20	20	20	40	20	100	50
9	18FW-409P	Physical Testing of Leather lab practice	1	0	2	45	1.5	20	20	20	40	20	100	50
10	18FW-410P	Advanced Communications and Life skills Lab	1	0	2	45	1.5	20	20	20	40	20	100	50
11		Skill up gradation	0	0	7	105	2.5	0	0	Rubrics				
Total			20	5	17	630	25	200	200	200	400	170	1000	425

Activities: student performance is to be assessed through Rubrics

ADVANCED ENGINEERING MATHEMATICS

Course Title	: Advanced Engineering Mathematics	Course Code	: 18FW-401F
Semester	: IV	Course Group	: Foundation
Teaching Scheme in periods (L : T :P)	: 45 : 15 : 0	Credits	: 3
Methodology	: Lecture + Tutorial	Total Contact Periods	: 60
CIE	: 60 Marks	SEE	: 40 Marks

Pre requisites

This course requires the knowledge of Engg. Mathematics at Diploma first year level and Applied Engg. Mathematics at Diploma 3rd Semester level.

Course Outcomes :

At the end of the course, the student will have the ability to:

CO 1	Solve simple Homogeneous Linear Differential Equations
CO 2	Solve simple Non-Homogeneous Linear Differential Equations
CO 3	Express $f(x)$ as a Fourier series in the given interval
CO 4	Express $f(x)$ as a Fourier Half-Range Cosine series and Sine series
CO 5	Find Laplace transforms of simple functions
CO 6	Find Inverse Laplace transforms of simple functions and solve Linear Differential Equations using Laplace Transformations.

Blue Print of Marks for SEE

Unit No	Unit Name	Periods	Questions to be set for SEE			
			R		U	A
1	Homogeneous Linear Differential equations with constant coefficients	05	Q4	Q1	Q9(a)	Q13(a)
2	Non-Homogeneous Linear Differential equations with constant coefficients	15				
3	Fourier series	10		Q2	Q10(a)	Q14(a)
4	Fourier Half-range series	05				
5	Laplace Transforms	10		Q3	Q5,Q6	Q9(b), Q13(b),

					Q11(a), Q11(b)	Q15(a), Q15(b)
6	Inverse Laplace transforms	15		Q7, Q8	Q10(b), Q12(a), Q12(b)	Q14(b), Q16(a), Q16(b)
Total		60	8		8	8

Course Contents:

Unit – I

Duration: 05 Periods (L:3.0 – T:2.0)

Homogeneous Linear Differential equations with constant coefficients

Homogenous linear differential equations with constant coefficients of order two and higher with emphasis on second order.

Unit – II

Duration: 15 Periods (L:12.0 – T:3.0)

Non-Homogeneous Linear Differential equations with constant coefficients

Non-homogenous linear differential equations with constant coefficients of the form $f(D)y = X$, where X is in the form $k(\text{a constant})$, e^{ax} , $\sin ax$, $\cos ax$, x^n , ($n = 1, 2, 3$) Complimentary Function (CF), Particular Integral (PI) and General Solution (GS).

Unit-III

Duration: 10 Periods (L: 8.0 – T: 2.0)

Fourier series

Orthogonality of trigonometric functions, Representation of a function in Fourier series over the interval $(c, c + 2\pi)$, Euler's formulae, sufficient conditions for existence of Fourier series for a function. Even, Odd functions and Fourier series over the Interval $(0, 2\pi)$ and $(-\pi, \pi)$

Unit – IV

Duration: 05 Periods (L: 3.0 – T: 2.0)

Fourier Half-range series

Representation of a function as Fourier Half-range Sine series and Cosine series over the interval $(0, \pi)$

Unit – V

Duration: 10Periods (L: 7.0 – T:3.0)

Laplace Transformations:

Definition, sufficient conditions for existence of Laplace Transform, Laplace Transform of elementary functions, linearity property, Change of scale property, First shifting theorem ,

multiplication by t^n , division by t , Laplace Transform of derivatives and integrals, unit step function, Laplace Transform of second shifting theorem

Unit – VI

Duration: 15 Periods (L: 12.0 – T: 3.0)

Inverse Laplace transforms:

Inverse Laplace transforms- shifting theorems and change of scale property, multiplication by s^n and division by s –Inverse Laplace Transform using partial fractions – convolution theorem (no proof) – application of Laplace Transformations to solve ordinary differential equations of second order with initial conditions.

Recommended Books:

1. Higher Engineering Mathematics, B.S.Grewal .
2. Laplace Transforms - Murray R. Spiegel .
3. Ordinary Differential Equations – R. S. Aggarwal.
4. Fourier Series – A.R. Vasishtha and Gupta.

Suggested E-Learning references:

1. www.freebookcentre.net/mathematics/introductory-mathematics-books.html
2. E-books:www.mathebook.net

Suggested Learning Outcomes

Unit-I

1.0 Solve Homogeneous linear differential equations with constant coefficients in engineering situations

- 1.1 Solve Differential equations of the type $(aD^2 + bD + c)y = 0$ when the roots of the auxiliary equation are real and different, real and repeated, complex.
- 1.2 Solve the higher order homogeneous Linear differential equations with constant coefficients.

Unit-II

2.0 Solve Non Homogeneous linear differential equations with constant coefficients in engineering situations

- 2.1 Explain the concept of complementary function, particular Integral and general solution of a differential equation.
- 2.2 Solve n^{th} order differential equation of the type $f(D)y = X$ where $f(D)$ is a polynomial of second order and X is a function of the form $k, e^{ax}, \sin ax, \cos ax, x^n$.
- 2.3 Solve simple problems on the above types of 2.2

Unit-III

3.0 Understand the Fourier series expansion of functions

- 3.1 Define the orthogonality of functions in an interval.
- 3.2 Define Fourier series of a function on the interval $(C, C+2\pi)$ and write the Euler's formulae for determining the Fourier coefficients.
- 3.3 Write sufficient conditions for the existence of Fourier series for a function.
- 3.4 Write Fourier series of simple functions in the range $(0, 2\pi)$ and $(-\pi, \pi)$.
- 3.5 Write Fourier series for even and odd functions in the interval $(-\pi, \pi)$
- 3.6 Solve simple problems on even and odd functions in the interval. $(0, 2\pi)$ and $(-\pi, \pi)$

Unit- I

4.0 Understand the Half – Range Fourier series expansion of functions

- 4.1 Write Half – Range Cosine series of a function in the range $(0, \pi)$.
- 4.2 Write Half – Range Sine series of a function in the range $(0, \pi)$.
- 4.3 Solve simple problems on Half – Range Cosine and Sine series over the interval $(0, \pi)$

Unit-V

5.0 Understand Laplace transforms

- 5.1 Write the definition of Laplace Transform and Laplace transform of standard functions.
- 5.2 Explain the sufficient conditions of existence of Laplace Transform.
- 5.3 Write the properties of Laplace Transform – Linearity property, First shifting theorem,

Change of Scale property.

- 5.4 Solve simple problems using the above properties.
- 5.5 Write formulae for Laplace transform of $t^n f(t)$, $\frac{f(t)}{t}$, $f^n(t)$, $\int_0^t f(u)du$ in terms of Laplace transform of $f(t)$
- 5.6 Solve simple problems using the above formulae.
- 5.7 Define unit step function and write the Laplace Transform of unit step function.
- 5.8 Write Second shifting theorem.

Unit-VI

6.0 Use Laplace transforms and Inverse Laplace transforms to solve differential equation in engineering problems

- 6.1 Define inverse Laplace Transform and write inverse Laplace Transforms of standard functions.
- 6.2 Solve simple problems on Inverse Laplace Transforms.
- 6.2 Write Shifting theorems and Change of scale property of inverse Laplace Transform.
- 6.3 Solve simple problems on 6.2
- 6.4 Write inverse Laplace Transforms corresponding to Laplace Transform of the functions $t^n f(t)$, $\frac{f(t)}{t}$, $f^n(t)$, $\int_0^t f(u)du$
- 6.5 Solve simple problems on 6.4
- 6.6 Define convolution of two functions and state convolution theorem.
- 6.7 Solve simple problems on Convolution theorem.
- 6.8 Use Laplace and inverse Laplace Transforms to solve simple differential equations of Second order.

Suggested Student Activities:

- 1. Student visits Library to refer Standard Books on Mathematics and collect related material.

2. Quiz
3. Group discussion
4. Surprise tests
5. Seminars
6. Home Assignments.

CO-PO Mapping Matrix

	Basic knowledge	Discipline Knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & sustainability	Ethics	Individual and Team work	Communication	Lifelong learning	Linked PO
CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	
CO1	3	2	2	1			1			3	1,2,3,4,7,10
CO2	3	2	2	1			1			3	1,2,3,4,7,10
CO3	3	2	2	1			1			3	1,2,3,4,7,10
CO4	3	2	2	1			1			3	1,2,3,4,7,10
CO5	3	2	2	1			1			3	1,2,3,4,7,10
CO6	3	2	2	1			1			3	1,2,3,4,7,10

Internal Evaluation

Test	Units	Marks
Mid Sem 1	1 and 2	20
Mid Sem 2	3 and 4	20
Slip Test 1	1 and 2	5
Slip Test 2	3 and 4	5
Assignments	-	5
Seminars	-	5
	Total	60

QUESTION PAPER PATTERN FOR MID SEMESTER EXAMS

Sl.No	Description	Level	No of Questions	Marks for each question	Choice	Total Marks
01	Part-A	Remembering(R)	4	1	Nil	4 Marks
02	Part-B	Understanding(U)	4	3	2	6 Marks
03	Part-C	Application(A)	4	5	2	10 Marks
Total Marks						20 Marks

MID SEM-I EXAM

S.No	Unit No	R	U	A	Remarks
1	Unit-I	1,2	5(a)	7(a)	
			5(b)	7(b)	
2	Unit-II	3,4	6(a)	8(a)	
			6(b)	8(b)	
Total Questions		4	4	4	

MID SEM-II EXAM

S.No	Unit No	R	U	A	Remarks
1	Unit-III	1,2	5(a)	7(a)	
			5(b)	7(b)	
2	Unit-IV	3,4	6(a)	8(a)	
			6(b)	8(b)	
Total Questions		4	4	4	

The length of answer for each question framed in respect of Part-A, B&C shall not exceed ¼ of a page, 1page and 2 pages respectively

QUESTION PAPER PATTERN FOR SEMESTER END EXAM

Sl.No	Description	Level	No of Questions	Marks for each question	Choice	Total Marks
01	Part-A	Remembering(R)	8	1	Nil	8 Marks
02	Part-B	Understanding(U)	8	3	4	12 Marks
03	Part-C	Application(A)	8	5	4	20 Marks
Total Marks						40 Marks

Unit No	Questions to be set for SEE				
	R		U		A
I	Q4	Q1		Q9(a)	Q13(a)
II					
III		Q2		Q10(a)	Q14(a)
IV					
V		Q3	Q5,Q6	Q9(b), Q11(a), Q11(b)	Q13(b), Q15(a), Q15(b)
VI			Q7,Q8	Q10(b), Q12(a), Q12(b)	Q14(b), Q16(a), Q16(b)
Total Questions	8		8		8

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA
BOARD DIPLOMA EXAMINATIONS
MID SEM –I, MODEL PAPER, IV SEMESTER
ADVANCED ENGINEERING MATHEMATICS

TIME: 1: 00 Hours

Max. Marks: 20

PART-A

Instructions:

1. Answer **ALL** questions

04 X 01 = 04

2 Each question carries **ONE** mark

1. Write the General solution of $(aD^2+bD+c)y = 0$, whose roots of auxiliary equation are real and distinct.
2. Find the roots of auxiliary equation of the differential equation $(D^2 + 2D + 1)y = 0$
3. Find the Particular Integral of $(D^2 - 4D + 1)y = e^{3x}$
4. Find the P.I of $(D^2 - 16)y = \sin 4x$

PART-B

Instructions:

1. Answer any **TWO** questions

02 X 03 = 06

2. Each question carries **THREE** marks

5 a) Solve: $(D^2 + 3D - 54)y = 0$

Or

5 b) Solve : $(D^2 + 16)y = 0$

6 a) Solve : $(D^2 + 4D + 4)y = e^{2x}$

Or

6 b) Find P.I of $(D^3 + D)y = \sin 2x$

PART C

Instructions:

1. Answer **ALL** questions

02 X 05 = 10

2. Each question carries **FIVE** marks

7 a) Solve : $(D^3 - 2D^2 - 4D + 8)y = 0$

Or

7 b) Solve : $(D^3 - D^2 - D + 1)y = 0$

8 a) Solve : $(D^2 + 36)y = \sin^2 x$

Or

8 b). Solve : $(D^2 + 3D + 2)y = x^2$

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Code: 18FW-401F

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA
BOARD DIPLOMA EXAMINATIONS

MID SEM –II, MODEL PAPER, IV SEMESTER
ADVANCED ENGINEERING MATHEMATICS

TIME: 1: 00 Hours

Max. Marks: 20

PART-A

Instructions:

1. Answer **ALL** questions

04 X 01 = 04

2 Each question carries **ONE** mark

1. Define periodic function and give one example
2. Define Fourier series of the function $f(x)$ in the interval $(0, 2\pi)$
3. Write Half-range sine series of $f(x)$ in the interval $(0, \pi)$
4. Find a_0 for $f(x) = e^x$ in $0 < x < \pi$

PART-B

Instructions:

1. Answer any **TWO** questions

02 X 03 = 06

2. Each question carries **THREE** marks

5 a). If $f(x) = x^2$ in $(0, 2\pi)$, then find the value of a_n in Fourier series of $f(x)$

Or

5 b) If $f(x) = |x|$ in $(-\pi, \pi)$, then find the value of a_1 in Fourier series of $f(x)$

6 a). Find the value of a_n in half-range Cosine series for the function $f(x) = e^x$ in $(0, \pi)$

Or

6 b). Obtain the Fourier Half – Range Sine series for $f(x) = (\pi - x)$ in the interval $(0, \pi)$

PART C

Instructions:

1. Answer any **TWO** questions

02 X 05 = 10

2. Each question carries **FIVE** marks

7 a). Obtain the Fourier series for $f(x) = x$ in the interval $0 < x < 2\pi$

Or

7 b). Find the Fourier series for $f(x) = (x - x^2)$ in the interval $(-\pi, \pi)$. Hence show that

$$\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \dots + \frac{\pi^2}{12}$$

8 a) Express $f(x) = \pi x - x^2$ as a half-range Sine series in $(0, \pi)$

Or

8 b). Find the half –range cosine series for the function $f(x) = x^2$ in the interval $(0, \pi)$

18FW-401F

BOARD DIPLOMA EXAMINATION, (C-18)
SEMESTER END EXAM MODEL PAPER
IV SEMESTER EXAMINATION
ADVANCED ENGINEERING MATHEMATICS

Time: 2 hours

[Total Marks: 40]

PART-A

Instructions:

1. Answer **ALL** questions

08 X 01 = 08

2 Each question carries **ONE** mark

1. Find the roots of auxiliary equation of the differential equation $(D^2 + 4D)y = 0$.
2. Define Fourier Series for the function $f(x)$ in the interval $(c, c+2\pi)$
3. Find the Particular Integral of $(D^2 - 4D + 1)y = e^x$
4. Find $L(e^{2t} + \cos 3t)$
5. Find $L(t + 5\cosh t)$
6. State the First Shifting theorem of Laplace Transforms.
7. Find $L^{-1}\left(\frac{1}{s-3} + \frac{s}{s^2+4}\right)$
8. Find $L^{-1}\left(\frac{1}{2s+5}\right)$

PART-B

Instructions:

1. Answer any **FOUR** questions

04 X 03 = 12

2. Each question carries **THREE** marks

9. a) Solve: $(D^2 + D + 1)y = 4e^{3x}$

Or

- 9 b) Find $L(t\cos 3t)$

- 10 a) Find Half Range Sine Series of $f(x) = x$ in $(0, \pi)$

Or

10 b) Find $L^{-1}\left(\frac{s+1}{s^2+6s-7}\right)$

11 a) If $L\{f(t)\} = \frac{20-4s}{s^2-4s+20}$, find $L\{f(3t)\}$

Or

11 b) Find $\int_0^\infty t \cdot e^{-2t} \sin 3t dt$ using Laplace Transform Technique

12 a) Show that $L^{-1}\left(\frac{1}{s(s^2+a^2)}\right) = \frac{1-\cos at}{a^2}$

12 b) Find $L^{-1}\left(\frac{s}{(s+2)^2+4}\right)$

PART C

Instructions: 1. Answer any **FOUR** questions

04 X 05 = 20

2. Each question carries **FIVE** marks

13. a) Solve : Solve: $(D^2 + D - 2) y = x + \sin x$

Or

13 b) Find $L[te^t \sin 3t]$

14 a) Expand $f(x) = x^2$ as a Fourier series in the interval $(-\pi, \pi)$

Or

14 b) Find $L^{-1}\left(\frac{s}{(s+1)^2(s^2+1)}\right)$

15 a) Find $L\left(\frac{\sin 3t \cdot \cos t}{t}\right)$

Or

15 b) Evaluate $L\left\{\int_0^t \frac{\sin t}{t} dt\right\}$

16 a) Find $L^{-1}\left(\frac{1}{(s+1)(s+2)}\right)$ using Convolution theorem .

Or

16 b). Solve the differential equation $y'' - 2y' - 8y = \sin t$, when $y(0) = 3$, $y'(0) = 6$ by

Laplace Transform method.

ADVANCED LEATHER GOODS AND GARMENTS FABRICATION TECHNOLOGY

Course Title :	ADVANCED LEATHER GOODS AND GARMENTS FABRICATION TECHNOLOGY	Course Code	18FW-402C
Semester	IV	Course Group	Core
Teaching Scheme in Periods(L:T:P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours :	60Pds
CIE	60 Marks	SEE	40 Marks

Rationale:

The objective of this course is to provide student knowledge of designing, patterns, materials used, fabrication procedure of ladies bags, Solid leather goods, industrial leather goods, leather Garments.

Pre requisites

Basic knowledge of patterns, fabrication procedure of Leather goods.

Course Outcomes

CO1	Design, develop the patterns, explain the fabrication procedure of Ladies bags.
CO2	Design, develop the patterns, and explain the fabrication procedure of Travel ware.
CO3	Design, develop the patterns, and explain the fabrication procedure of Industrial Leather goods.
CO4	Design, develop the patterns, and explain the fabrication procedure of Sports leather goods.
CO5	Calculate production cost, Selling price of an Article.
CO6	Explain the materials used, fabrication procedure of Leather garments.

COURSE CONTENT

UNIT 1

1. Fabrication of Ladies bags.

selection of material for making Ladies bags, reinforcement materials, manufacturing of Three piece flap over bag, bucket bag, circular bag.

UNIT 2

2. **Fabrication of Travel ware.**

selection of material for making travel ware, reinforcement materials, manufacturing of brief case, suit case, attaché case, holdalls, zip folio case,

UNIT 3

3. **Fabrication of Industrial leather goods.**

Properties required for leathers, Industrial belt, fabrication of Industrial safety belt, properties required for glove leathers, fabrication process of gloves.

UNIT 4

4. **Fabrication of Sports leather goods.**

Different sports leather goods, properties for sports goods leather, volley ball

Cover properties, manufacturing, Football cover patterns, manufacturing, properties required, flow chart for Foot ball, Volley ball covers.

UNIT 5

5 **Materials consumption calculations**

Calculation of material consumption, over head cost, Production cost, profit, selling price of an article. Reducing Material wastages, Time wastage, human resource wastage, Steps to be taken to achieve the quality in Leather goods manufacturing.

UNIT 6

6. **Fabrication of leather garments.**

Selection of leather for leather garment production, properties for leathers to be used in garment production, dummy, basic block, measurements on dummy, basic sleeve block construction, different type of collars, mandarin collar construction

Specific Learning Outcomes

Upon completion of the course the student should be able to

1. **Fabrication of Ladies bags.**

1.1 Describe the Patterns of Three piece flap over bag, bucket bag, circular bag.

1.2 List the materials used in manufacturing of three piece flap over bag, bucket bag, circular bag,.

- 1.3 Explain the manufacturing of three piece flap over bag, bucket bag, circular bag,
2. **Fabrication of Travel ware.**
 - 2.1 List different materials used in making travel ware.
 - 2.2 Describe the Patterns of brief case.
 - 2.3 List the materials used in manufacturing of brief case.
 - 2.4 Explain the manufacturing process of brief case.
 - 2.5 Describe the Patterns of suit case.
 - 2.6 List the materials used in fabrication of suit case.
 - 2.7 Explain the manufacturing process of suit case.
 - 2.8 List different sizes of suit case.
 - 2.9 List different sizes of attaché case.
 - 2.10 List different sizes of Trunk case.
 - 2.11 Describe the Patterns of holdalls.
 - 2.12 List different sizes of Holdal.
 - 2.13 List the materials used in manufacturing of holdalls.
 - 2.14 Explain the manufacturing of holdalls.
 - 2.15 Describe the Patterns of zip folio case.
 - 2.16 List the materials used in manufacturing of zip folio case.
 - 2.17 Explain the manufacturing of zip folio case.
 - 2.18 Describe the Patterns of Doctors bag.
 - 2.19 List the materials used in manufacturing of Doctors bag.
 - 2.20 Explain the manufacturing process of Doctors bag.
3. **Fabrication of Industrial leather goods.**
 - 3.1 List different properties required for leathers to be used in Industrial leather goods fabrication.
 - 3.2 State the uses of Industrial belt.
 - 3.3 Describe the patterns of Industrial safety belt.
 - 3.4 List the materials used in fabrication of Industrial safety belt.
 - 3.5 Explain the fabrication process of industrial safety belt.
 - 3.6 List the properties required for leathers used in glove manufacturing.
 - 3.7 Describe the pattern making procedure for gloves.
 - 3.8 Explain the fabrication process of gloves.
4. **Fabrication of Sports leather goods.**
 - 4.1 List different sports leather goods like.
 - 4.2 List the properties required for sports goods leather.
 - 4.3 Write the specifications required for volley ball covers.
 - 4.4 Describe the patterns for volley ball covers.
 - 4.5 Explain the manufacture of volleyball covers.
 - 4.6 Write the specifications required for football covers.
 - 4.7 Explain the patterns of football covers.
 - 4.8 Explain the manufacture of football.
 - 4.9 Draw the flow chart for football cover fabrication.
 - 4.10 Draw the flow chart for Volley ball Cover fabrication.

5. **Material consumption calculations, estimation of material consumption.**
 - 5.1 Calculate material consumption.
 - 5.2 Calculate production cost of the article.
 - 5.3 Define over heads.
 - 5.4 Calculate over heads.
 - 5.5 Calculate profit of an article.
 - 5.6 Calculate selling price of an article.
 - 5.7 Explain different precautions to be taken to reduce the material wastage.
 - 5.8 Explain different precautions to be taken to reduce the Wastage of Time.
 - 5.9 Explain different precautions to be taken to reduce the Wastage of Man power.
 - 5.10 Explain different steps to be taken to optimise human, machine resources.
 - 5.11 Explain different steps to be taken to achieve the quality in leather goods manufacturing.
6. **Fabrication of leather garments.**
 - 6.1. Name different type of leathers used in Garment manufacturing.
 - 6.2. Classify the Garment leathers.
 - 6.3. Explain the properties required for the Garment leathers.
 - 6.4. Write the flow chart for Garment manufacturing.
 - 6.5. Distinguish dummy and basic block.
 - 6.6. Define Grading.
 - 6.7. Locate following lines on dummy.
 - a. Centre front line.
 - b. Centre back line.
 - c. Neck line.
 - d. Waist line.
 - e. Hip line.
 - f. Bust line.
 - g. Shoulder line and side seam line.
 - h. Cross back line
 - i. Cross front line
 - j. Arm measurement
 - 6.8. Take measurements on dummy.
 - 6.9. Take body measurements.
 - 6.10. Explain how to develop basic sleeve block.
 - 6.11. Describe different type of collars.
 - 6.12. Define following terms used in Collar construction.
 - a. Neck line.
 - b. Style line.
 - c. Roll line.
 - d. Stand.
 - e. Fall.
 - f. Break point.
 - g. Break line.
 - h. Rever.
 - i. Center front line.
 - 6.13. Explain Mandarin collar construction.

Each student should do any one of the following type activity or any other similar activity related to the course and before conducting , get it approved from concerned Teacher and HOD.

ACTIVITIES

1. Fabricate ladies bags with paper to check the accuracy of the patterns.
2. Fabricate Travel ware with the paper to check the accuracy of the patterns.
3. Calculate production cost of the articles available with them.

Reference Books

1. Lectures notes on Leather goods and garments –IqbalHussain
2. Lecturer notes of Leather goods and garments –CLRI.
3. Manual of shoe making - Clarks.
4. Text book of Footwear manufacture - H.J.Thronton.
5. Introduction to the modern Footwear Technology - B. Venkatappaiah.

Suggested E-Learning references

1. [http://icanmakeshoes.com>shoemaking.](http://icanmakeshoes.com>shoemaking)
2. www.simpleshoemaking.com
3. <http://shoemakingcoursesonline.com>

CO PO Mapping Matrix

Course outcomes	CL	Linked PO	Teaching periods
CO1 Design, develop the patterns, explain the fabrication procedure of Ladies bags.	R/U/A	2,4,10	8
CO2 Design, develop the patterns, and explain the fabrication procedure of Travel ware.	R/U/A	2,4,10	8
CO3 Design, develop the patterns, and explain the fabrication procedure of Industrial Leather goods.	R/U/A	2,4	10
CO4 Design, develop the patterns, and explain the fabrication procedure of Sports leather goods.	R/U/A	2,4,10	10
CO5 Calculate production cost, Selling price of an Article.	R/U/A	1,2	10
C06 Explain the materials used, fabrication procedure of Leather garments.	R/U/A	2,4,10	14

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
					11(b)	15(b)	
6	VI			7,8	10(b)	14(b)	
		12(a)			16(a)		
		12(b)			16(b)		
Total Questions		8		8	8		

	Remembering (R)	1 Mark
	Understanding (U)	3 Marks

Legend:	Application (A)	5 Marks
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BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-I
FOURTH SEMESTER EXAMINATION

Subject Name : ADVANCED LEATHER GOODS AND GARMENTS
FABRICATION TECHNOLOGY

Subject Code : 18FW-402 C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1= 4 marks

1. Write the properties required for the leather to be used in the fabrication of Travel ware.
2. Draw the Sketch of the Bucket bag?
3. What is Holdal?
4. Write generally used Attache case sizes.

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

5. a) Explain how to develop the Patterns for Bucket bag.
(OR)
b) Explain the Fabrication Procedure of Bucket bag.
6. a) Explain how to develop the Patterns for Zip folio case.
(OR)
b) Explain the Fabrication Procedure of Zip folio case.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5= 10 marks

7. a) Explain how to develop Patterns, Fabrication procedure of Ladies Hand bag which should have Three Pieces.

(OR)

- b) Explain how to develop Patterns, Fabrication procedure of Ladies Hand bag which is completely hand made.
8. a) Explain how to develop the patterns for Brief case.

(OR)

- b) Explain the Fabrication procedure of Brief case.

BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-II
FOURTH SEMESTER EXAMINATION

Subject Name : **ADVANCED LEATHER GOODS AND GARMENTS**
FABRICATION TECHNOLOGY

Subject Code : 18FW-402 C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1= 4 marks

1. What is Holster?
2. Explain the Use of Hooks in Industrial Safety Belt.
3. Name different Sports Leather Goods.
4. Name different Balls which will not be made with Leather.

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

5. a) Write the flow chart for Football cover fabrication.

(OR)

- b) Write the properties required for the Leather to be used in Fabrication of Sports Leather Goods.

6. a) Draw the neat sketch of Industrial Safety Belt.

(OR)

b) Explain different materials used in the fabrication of Industrial Safety belt.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5= 10 marks

7. a) Explain how to develop Patterns for Foot ball covers.

(OR)

b) Explain the properties required, fabrication procedure of Football covers.

8. a) Explain how to develop the patterns for Hand Gloves.

(OR)

b) Explain the Fabrication procedure of Hand Gloves.

BOARD DIPLOMA EXAMINATION, (C-18)

Diploma in Leather Goods & Footwear Technology IV SEMESTER EXAMINATION

**ADVANCED LEATHER GOODS AND GARMENTS FABRICATION
TECHNOLOGY**

Time : 2 Hours]

[Total Marks: 40

PART-A

08X01=08

Instructions : 1. Answer **ALL** questions.

2. Each question carries **ONE** mark.

1. Write generally used Attache case sizes.
2. What is Holster?
3. With suitable example explain overhead expenses.
4. Draw the neat sketch of Ladies circular bag.
5. What is Value Analysis?
6. Explain how to reduce the Wastage of Time in Leather Products Manufacturing.
7. What is Grading?
8. Draw the neat sketch of Shirt collar with Separate Collar band.

PART-B

04X03=12

Instructions : 1. Answer any **FOUR** questions.

2. Each question carries **THREE** marks.

9. (a) Explain how to develop Patterns for Three Piece Flap Over bag.

(or)

9. (b) Explain different steps to be taken to reduce the Wastage of Manpower in Leather Goods and Garments manufacturing.

10. (a) Explain how to develop Patterns for Gloves.

(or)

10. (b) Explain the basic terms used in Collar Construction.

11. (a) Explain difference between avoidable and Un avoidable Wastages.

(or)

11. (b) Explain different steps to be taken to reduce the Wastage of Material in Leather Goods and Garments manufacturing.

12. (a) Explain how to Locate following Neck line, Waist line, Hip line on Dummy.

(or)

12. (b) Distinguish Dummy, Basic block.

PART-C

04X5=20

Instructions :

1. Answer any **FOUR** questions.
2. Each question carries **FIVE** marks.

13. (a) Explain how to develop the patterns, fabrication procedure of hand bag which is having Bucket shape

(or)

13. (b) Explain how to calculate Material cost of an Article.

14. (a) Explain how to develop Patterns for Football covers.

(or)

14. (b) Explain how you will develop Mandarin Collar for your body measurements.

15. (a) Explain different steps to be taken to achieve the quality in Leather goods and Garments manufacturing.

(or)

15. (b) Explain how to calculate Selling price of an Article.

16. (a) Explain how you will develop Basic sleeve block for your body measurements.

(or)

16. (b) Explain the properties required for the leather to be used in the fabrication of Leather Garments.

Testing and Quality Control

Course Title :	Testing and Quality Control	Course Code	18FW- 403C
Semester	IV	Course Group	Core
Teaching Scheme in Periods(L:T:P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours :	60Pds
CIE	60 Marks	SEE	40 Marks

Rationale:

The objective of this course is to make student to learn how to perform different tests on leather and other Footwear materials and to evaluate the quality of the shoe.

Pre requisites

Basic knowledge of leather processing, Strength calculations.

Course Outcomes

CO1	Explain different types of Sampling inspections
CO2	Explain Implementation Procedure of Quality systems.
CO3	Explain different Strength tests to be done on leather to evaluate its quality.
CO4	Explain different tests to be done on leather, leather finish to evaluate its quality.
CO5	Explain different tests to be done on Footwear materials to evaluate its quality.
CO6	Explain different quality points to be inspected at different stages of Footwear manufacturing.

COURSE CONTENT

UNIT 1

1. Quality control, Sampling

Quality control , need , different quality costs, chance causes and assignable causes, Inspection, type of inspections, Normal distribution curve, Process capability, Machine capability, Sampling inspection, classification, Single, double, Multiple sampling plan procedure.

UNIT 2

2. Quality system, functions of quality Control Agencies,

Need for ISO 9000 certification, Benefits of ISO 9000 certification, Define quality control, Quality policy, Quality system, Installation Procedure of ISO 9000 quality system.

UNIT 3

3. Testing of Physical properties of leather.

Condition the test specimen for physical testing, Locating the sampling position for physical testing and Chemical analysis. Tensile strength test, Tear strength test, stitch tear strength test , Tongue tear strength test, Lastometer test.

UNIT 4

4. Testing of Leather, Leather finish.

Following tests on given leather to evaluate its quality.

- a. Flexural endurance test.
- b. Grain crack index
- c. Compressibility test.
- d. Real and apparent density
- e. Shrinkage Temperature test.
- f. Dynamic water proofness test on upper leather.
- g. Dynamic water proofness test on Sole leather.
- h. Air and water vapour permeability test.
- i. Wet & Dry rub fastness test.
- j. Lastometer test.
- k. Tests on Quality of finish
- l. Abrasion resistance

UNIT 5

5. Testing of Materials

Peel strength, Shear strength of adhesive bond, Various types of adhesive failures and reasons for adhesive failures, Sole bond strength, Different tests to be done on Threads to evaluate their quality, Different tests to be done on Zips to evaluate their quality, Different tests to be done on laces to evaluate their quality.

UNIT 6

6. Inspection

Quality points to be inspected after clicking, Pre fitting operation, Upper making, Lasting, Sole attaching, Final inspection.

Specific Learning Outcomes

Upon completion of the course the student should be able to

1.0 Quality Control, Sampling

- 1.1 State the need of quality control
- 1.2 Explain the effect of quality on consumer satisfaction
- 1.3 Explain the relationship between quality of the product and the growth of organisation.
- 1.4 List different quality costs.
- 1.5 Distinguish chance causes and assignable causes.
- 1.6 Define quality control.
- 1.7 Define inspection.
- 1.8 Distinguish quality control and inspection.
- 1.9 Distinguish following type of inspections
 - a. Roving inspection.
 - b. Fixed inspection.
 - c. Key inspection.
 - d. Final inspection.
- 1.10 Explain the characteristics of normal distribution curve.
- 1.11 Explain process capability.
- 1.12 Explain machine capability.
- 1.13 Explain Tolerance.
- 1.14 Relation between process capability, Machine capability, Tolerance.
- 1.15 Explain the applicability of Vital few, Trivial many concept to quality.
- 1.16 Define Sampling inspection.
- 1.17 List the advantages of Sampling inspection over 100% inspections.
- 1.18 Explain the need of Sampling Inspection.
- 1.19 Classify sampling inspection.
- 1.20 Explain single sampling plan procedure.
- 1.21 Explain double sampling plan procedure.
- 1.22 Explain multiple sampling plan procedure.
- 1.23 Draw the flow chart for double sampling plan procedure.
- 1.24 Draw the flow chart for multiple sampling plan procedure.
- 1.25 Explain sequential sampling plan procedure.

2.0 Quality system, functions of quality Control Agencies,

- 2.1 Explain the need for ISO 9000 certification.
- 2.2 Explain the benefits of ISO 9000 certification.
- 2.3 Define quality, Quality control.
- 2.4 Define quality policy.
- 2.5 Define quality system.
- 2.6 Explain installation procedure of ISO 9000 quality system.

3.0 Testing of Strength properties of leather

- 3.1 Explain how to condition the test specimen for physical testing.
- 3.2 Explain why we have to condition the test specimen before physical testing.
- 3.3 locate the sampling position for physical testing and Chemical analysis.
- 3.4 Explain how to perform Tensile strength test on the leather.
- 3.5 Explain how to perform Tear strength test on the leather.
- 3.6 Explain how to perform Stitch tear strength test on the leather.
- 3.7 Explain how to perform Tongue tear strength test on the given leather.
- 3.8 Explain how to perform Lastometer tests on given leather.

4.0 Testing of Leather, Leather finish.

- 4.1 Explain how to perform following tests on given leather to evaluate its quality.
 - a. Flexural endurance test.
 - b. Compressibility test.
 - c. Real and apparent density
 - d. Shrinkage Temperature test.
 - e. Dynamic water proof ness test on upper leather.
 - f. Dynamic water proofness test on Sole leather.
 - g. Air and water vapour permeability test.
 - h. Wet & Dry rub fastness test.
 - i. Lastometer test.
 - j. Tests on Quality of finish
 - k. Abrasion resistance
- 4.2 explain how above properties influence footwear manufacturing and wear.
- 4.3 Write ISI standards for above properties of the leather.

5.0 Testing of Materials

- 5.1 Determine the peel strength of adhesive bond by using the tensile tester.
- 5.2 Determine the shear strength of adhesive bond by using the tensile tester.
- 5.3 Identify following type of adhesive failures.
 - a. Upper material break down.
 - b. Poor coalescence of adhesive film.
 - c. Cohesive failure of adhesive film.
 - d. Adhesive peeling from the upper.
 - e. Adhesive peeling from the sole.
 - f. Sole material break down.

- 5.4 Explain the reasons for following type of adhesive failures.
 - a. Upper material break down.
 - b. Poor coalescence of adhesive film.
 - c. Cohesive failure of adhesive film.
 - d. Adhesive peeling from the upper.
 - e. Adhesive peeling from the sole.
 - f. Sole material break down.
- 5.5 Define the green strength of adhesive bond.
- 5.6 Determine sole bond strength from SATRA sole adhesion tester STD -185, European CEN standard.
- 5.7 List the properties required for threads.
- 5.8 Determine tensile strength of the thread by using tensile tester.
- 5.9 Determine abrasion resistance of threads by Drum abrasion test, Thread to Thread abrasion resistance test.
- 5.10 Determine the strength of the interlaced teeth of zip.
- 5.11 Determine top stop attachment strength of zip.
- 5.12 Determine bottom stop attachment strength of zips.
- 5.13 Determine strength of shoe laces.
- 5.14 Determine abrasion resistance of shoe laces.
- 5.15 Determine shoe lace tags attachment strength by tensile tester.
- 5.16 Determine Durability of the sole material by Wear trail.
- 5.17 Determine Durability of the sole material by measuring the properties.
- 5.18 Determine the durability of sole material by Martindale abrasion test.
- 5.19 Determine flex crack performance of the soles by Ross flex test.
- 5.20 Determine flex crack performance of the sole by PFI flex test.

6.0 Inspection:

- 6.1 Explain various quality points to be inspected after clicking.
- 6.2 Explain various quality points to be inspected after pre fitting operations.
- 6.3 Explain various quality points to be inspected after upper making
- 6.4 Explain various quality points to be inspected after lasting
- 6.5 Explain various quality points to be inspected after sole attaching
- 6.6 Explain various quality points to be inspected in final inspection

Suggested Student Activities

Each student should do any one of the following type activity or any other similar activity related to the course and before conducting , get it approved from concerned Teacher and HOD.

ACTIVITIES

4. Inspect the quality of finished shoe and prepare the quality report.
5. Inspect the quality of the Footwear uppers and prepare the quality report.
6. Visiting shops and malls and inspecting the Footwear.
7. Checking the quality of the finish film by Adhesive tape method.

Reference Books

1. Work manual for Testing of Footwear - SATRA,U.K.
 2. Work manual for Quality Checking Points in shoe manufacturing - Bally International & CLE Publications.
 3. Physical Testing of Leather - S.S. Datta
 4. ISI Standard book on Leather Testing
- Lecturer Notes - IqbalHussain, APGILT

Suggested E-Learning references

1. <http://icanmakeshoes.com>shoemaking>.
2. www.simpleshoemaking.com
3. <http://shoemakingcoursesonline.com>

CO PO Mapping Matrix

Course outcomes		CL	Linked PO	Teaching periods
CO1	Explain different types of Sampling inspections	R/U	2,3	8
CO2	Explain Implementation Procedure of Quality systems.	R/U	1,2	8
CO3	Explain different Strength tests to be done on leather to evaluate its quality.	R/U	2,3,4	10
CO4	Explain different tests to be done on leather, leather finish to evaluate its quality.	R/U	2,3,4	14
CO5	Explain different tests to be done on Footwear materials to evaluate its	R/U/A	2,3,4	10

	quality.			
C06	Explain different quality points to be inspected at different stages of Footwear manufacturing.	R/U/A	3,8,9,10	10

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1	9(a)	13(a)		
2	II						
3	III		2	10(a)	14(a)		
4	IV						
5	V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
					11(b)	15(b)	
6	VI			7,8	10(b)	14(b)	
		12(a)			16(a)		
		12(b)			16(b)		

Total Questions	8	8	8	
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Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-I ,
FOURTH SEMESTER EXAMINATION

Subject Name : TESTING AND QUALITY CONTROL

Subject Code : 18FW-403C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1= 4 marks

9. What is process capability?
10. Explain the difference between chance causes and assignable causes.
11. Define quality.
12. Define Quality policy?

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

13. a) Explain different Quality costs.

(OR)

- b) Explain Roving Inspection.

14. a) Define Quality system.

(OR)

- b) Define Quality control.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5 = 10 marks

15. a) Explain how you will apply Vital few and Trivial many concept to the quality.

(OR)

b) By writing the flow chart explain how you will perform Multiple sampling plan procedure..

16. a) Explain the Implementation procedure of ISO 9000 quality system.

(OR)

b) Explain the benefits of ISO 9000 certification.

**BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-II ,
FOURTH SEMESTER EXAMINATION**

Subject Name : TESTING AND QUALITY CONTROL

Subject Code : 18FW-403C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1 = 4 marks

1. Explain why and how to condition the leather Test specimen for Physical testing and chemical analysis.
2. Draw the neat sketch of Test specimen of Tongue tear strength test.
3. What are Grey scales?
4. What is the difference between Real density and Apparent density of the leather.

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

5. a) Explain how to determine Tensile strength of the given leather using tensile tester.

(OR)

- b) Explain how to determine % of elongation at break of given leather using tensile tester.
6. a) Explain how to determine amount of water absorbed by the given leather using Kubelka apparatus.

(OR)

- b) Explain how to determine abrasion resistance of the given leather by chisel scuff test.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5= 10 marks

7. a) Suggest a test and explain how you will perform that test to check the suitability of the leather for lasting operation.

(OR)

- b) Explain why leather requires good stitch tear strength and explain the test procedure to determine the stitch tear strength of the given leather.
8. a) Explain how you will determine the Water Vapour permeability of the given leather.

(OR)

- b) Explain how will you determine quality of the finish film by Rub fastness test.

Leather Goods & Footwear Technology – IV SEMESTER EXAMINATION
Testing and Quality control

Time : 2 Hours]

[Total Marks: 40

PART-A

08X01=08

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. What is Quality system?
2. What is Glass Transition Temperature?
3. What is Green strength of an Adhesive bond.
4. What is Shrinkage Temperature of leather?
5. Draw the sketch showing Adhesive peeling from the upper type of Adhesive failures.
6. Draw the sketch showing Poor coalescence type of Adhesive failures.
7. Explain different quality points to be inspected after Splitting operation.
8. Explain different quality points to be inspected after Skiving operation.

PART-B

04X03=12

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

9. (a) What is Roving Inspection?

(or)

9. (b) Explain how to determine the Peel strength of an Adhesive bond.

10. (a) Explain how to determine abrasion resistance of the given leather by Martindale abrasion test.

(or)

10. (b) What is Orange Peel effect on Finish?

11. (a) Explain how to determine Shear strength of Adhesive bond.
(or)
11. (b) Explain how to determine Abrasion resistance of Threads by Drum Abrasion test.
12. (a) Explain different Symmetrical points to be Inspected after lasting operation.
(or)
12. (b) Apart from Symmetrical points explain other points to be inspected after lasting operation.

PART-C

04X5=20

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **FIVE** marks.

13. (a) By writing the flow chart explain how you will perform Multiple sampling plan.
(or)
13. (b) Explain different tests to be done on Laces to evaluate their quality.
14. (a) Explain how to determine Tensile strength, % of elongation of given leather by using Tensile tester.
(or)
14. (b) Explain different Quality points to be inspected after completion of Footwear Uppers.
15. (a) Explain how to determine Sole Bond strength by using SATRA sole adhesion tester STD -185
(or)
15. (b) Explain how you will evaluate quality of Zip stops .
16. (a) Explain different quality points you will inspect to evaluate the quality of Moccasin style in the Final Inspection.
(or)
16. (b) Explain different quality points you will inspect to evaluate the quality of Derby brogue style in the Final Inspection.

COMPUTER APPLICATION IN LEATHER PRODUCTS

Course Title :	COMPUTER APPLICATION IN LEATHER PRODUCTS	Course Code	18FW-404C
Semester	IV	Course Group	Core
Teaching Scheme in Periods(L:T:P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours :	60Pds
CIE	60 Marks	SEE	40 Marks

Rationale:

The objective of this course is to make student to design and develop patterns , Grade the patterns by using the Footwear designing Software.

Pre requisites

Basic knowledge of Last, Mean forme, developing shells, patterns manually.

Course Outcomes

CO1	Explain the operating principle of Laser beam cutting, Computer Aided stitching.
CO2	Explain the working principles of Hardware in CAD workstations.
CO3	Explain the Functions of operating system..
CO4	Digitize the shell using Digitizer of CAD system.
CO5	Develop and Grade the style using the Footwear designing software.
CO6	Draw basic geometry using Auto CAD.

COURSE CONTENTS:

1.0 Principles and scope of CAD, Introduction of CAM

Definition of CAD, CAM, Historical development, Scope CAD and CAM in footwear, leather, leather product industry, Advantages of CAD and CAM., Laser beam cutting, Water jet cutting, Computer aided stitching, Computer aided Lasting, Computer aided roughing.

2.0 Hardware in CAD.

Central work station Cathode ray tube, Graphic terminals, Input devices-digitizer, Cursor control devices, Output devices-plotters, Hard copy units, electro static plotters, Computer output to micro film units, Central processing unit, LAN, WAN,

3.0 Software in CAD

Various type of operating systems, Machine, Assembly, High level languages, Compilers, Assemblers.

4.0 Digitization.

Digitizer, description of the Digitizer, 2D Co-ordinate extraction, Preparing the digitizing lay out , Digitizing procedure, Evaluating, Editing the digitized file.

5.0 Pattern generation, grading and assessment.

Options in FDS main menu, Sub menu, Defining Normal, Scored, Mirrored pieces, Defining the Die break, applying the Die break, Enter the grade specifications, Initiating the grading, Staking the graded pieces, Measure the grade increment, Pattern Assessment procedure.

6.0 2D Design & Drafting.

Introduction to Auto CAD, Opening the existing drawing, Saving the existing drawing, Creating the new drawing , Drawing the lines, Poly lines, Circles, Arcs. Generating the plot and cut file, Cut the graded components by using WILD TA cutter.

Specific Learning Outcomes

Upon completion of the course the student should be able to

1.0 Principle and Scope of CAD, Introduction of CAM

- 1.1 Define CAD-CAM
- 1.2 Define Computer Monitoring and Control.
- 1.3 List manufacturing support applications of CAM.
- 1.4 Explain historical developments of CAD-CAM.
- 1.5 Explain design related tasks that are performed by a CAD system.
- 1.6 Distinguish 2D,3D CAD systems.
- 1.7 Identify scope of CAD, CAM particularly in Leather Product, Footwear industry.
- 1.8 List advantage of CAD-CAM.
- 1.9 Define LASER.
- 1.10 Describe the principle involved in generation of Laser beam.
- 1.11 List the applications of Laser beam cutting in footwear and leather goods industry.
- 1.12 Explain the principle of water jet cutting.
- 1.13 List the application of water jet cutting in leather goods and footwear industry.
- 1.14 Describe the principles of computer aided stitching.
- 1.15 List the advantages of Computer aided stitching over conventional stitching.
- 1.16 Give examples of seams, stitches for which computer aided stitching is most suitable.
- 1.17 Explain the Working of Computer Aided lasting machine.
- 1.18 Explain the Working of Computer Aided Roughing machine.

2.0 Hardware in CAD

- 2.1 Define CAD work station.
- 2.2 List different functions the work station has to accomplish.
- 2.3 List the hardware components of work station.
- 2.4 Describe the working principle of Cathode Ray tube.

- 2.5 Explain the following techniques used in Computer graphic terminals for generating the image on CRT screen.
 - a. Stroke Writing.
 - b. Raster Scan.
- 2.6 Categories operator input devices.
- 2.7 List different type of cursor control devices.
- 2.8 Describe following cursor control devices.
 - a. Thumb wheels.
 - b. Directional keys on key board terminal.
 - c. Joy stick.
 - d. Tracker ball.
 - e. Light pen.
 - f. Electronic tablet/pen.
- 2.9 Define digitizer.
- 2.10 Explain the functions of the digitizer.
- 2.11 List different output devices.
- 2.12 List different type of pen plotters.
- 2.13 Describe the working of drum plotters.
- 2.14 Describe the working of Horizontal flat bed plotters.
- 2.15 Describe the working of Vertical flat bed plotter.
- 2.16 Describe the working principle of hard copy units.
- 2.17 Describe the working of electrostatic plotter.
- 2.18 Describe the working of Computer output to Micro film units.
- 2.19 Explain the functions of CPU.
- 2.20 Explain the function of Control unit.
- 2.21 Illustrate the functioning of Arithmetic logic unit.
- 2.22 Explain the meaning of LAN and WAN and its application.

3.0 Software in CAD

- 3.1 Define operating system.
- 3.2 Name different type of operating system.
- 3.3 Explain following type of operating systems.
 - a. Batch processing.
 - b. Multi programs and multi tasking.
 - c. Time sharing.
 - d. Real time /on line operating system.
 - e. Single user system.
 - f. Distributed data processing and networking.
 - g. Multi user systems.
 - h. Multi-processor operating system.
- 3.4 Explain different functions of operating system.
- 3.5 Define machine language.
- 3.6 Define assembly language.
- 3.7 Define Procedure oriented high level language.
- 3.8 Explain the function of assembler.
- 3.9 Explain the function of compiler.

4.0 Digitization

- 4.1 Draw the sketch of F.D.S. digitizer and identify various parts.
- 4.2 List the uses of the digitizer.

- 4.3 Distinguish following digitizing points that will be used while digitizing a shell.
 - a. Curve point.
 - b. Turning point.
 - c. Drill point.
 - d. Stencil point.
 - e. New line point.
- 4.4 Prepare a digitizing layout in F.D.S.
- 4.5 Explain how to digitize a shell in F.D.S.
- 4.6 Explain how to define Data reference axis.
- 4.7 Explain how to define Zero grade axis.
- 4.8 Explain how to define grade allowance points.
- 4.9 Explain how to digitize style lines.
- 4.10 Explain how to end the digitization procedure.
- 4.11 Explain how to evaluate a digitized file.
- 4.12 Explain how to edit a digitized file.
- 4.13 Explain how to define Key pad menu area of the digitizer.

5.0 Pattern generation, grading and assessment.

- 5.1 List the options in F.D.S main menu.
- 5.2 List the options in following F.D.S main menu.
 - a. VIEW UTILITY.
 - b. UTILITY.
 - c. STYLE.
 - d. PIECE.
 - e. LINE.
 - f. GRADE.
 - g. PIECE/2000
 - h. NEWLINE/2000
 - i. MODLINE/2000
 - j. STITCH.
- 5.3 Distinguish following type of pieces.
 - a. Normal piece.
 - b. Mirrored piece.
 - c. Scoured piece.
- 5.4 Explain how to define a normal piece from shell
- 5.5 Explain how to define scored piece from the shell.
- 5.6 Explain how to define mirrored piece from the shell.
- 5.7 Explain the contents of the Standard Grade file.
- 5.8 Explain how to enter the grade specifications.
- 5.9 List the uses of die break.
- 5.10 Explain how to define a die break while grading a style.
- 5.11 Explain how to apply a die break while grading a style.
- 5.12 Explain how to initiate the grading.
- 5.13 Explain how to stack the graded pieces for measuring the grade increment
- 5.14 Explain how to measure the grade increments
- 5.15 Explain the procedure of Pattern assessment.

6.0 2D Designs & Drafting

- 4.1 List the commands used to open existing drawing in AutoCAD.

- 4.2 Open the existing drawing in AutoCAD.
- 4.3 List the commands used to save a drawing in AutoCAD.
- 4.4 Save a drawing in AutoCAD.
- 4.5 List the commands used to create new drawing in AutoCAD.
- 4.6 Explain different methods of Generate a line in AutoCAD.
- 4.7 Explain how to generate poly line in AutoCAD.
- 4.8 Explain different methods of generating a CIRCLE in AutoCAD.
- 4.9 Explain different methods of generating ARCS in AutoCAD.
- 4.10 Explain how to generate plot/Cut file in F.D.S.
- 4.11 Explain how to cut the generated components by using Wild TA cutter.

Suggested Student Activities

Each student should do any one of the following type activity or any other similar activity related to the course and before conducting , get it approved from concerned Teacher and HOD.

ACTIVITIES

8. Prepare the Digitizing layout for the shells.
9. Study the Videos of other footwear designing software in net.
10. Study the videos shoeing Laser beam cutting of leather and other Footwear materials.

Reference Books

Hand Book – Micro Dynamics

6. Hand book- Micro Dynamics.
7. Lecturer notes on CAD – CLR1
8. Lectures notes on Footwear Designing –Iqbal Hussain

Suggested E-Learning references

2. www.simpleshoemaking.com
3. <http://shoemakingcoursesonline.com>

CO PO Mapping Matrix

Course outcomes	CL	Linked PO	Teaching periods
CO1 Explain the operating principle of Laser beam cutting, Computer Aided stitching.	R/U	2,3,4	8
CO2 Explain the working principles of Hardware in CAD workstations.	R/U	2,3,	8
CO3 Explain the Functions of operating system..	R/U	1,2	8
CO4 Digitize the shell using Digitizer of CAD system.	R/U/A	2,3,10	10
CO5 Develop and Grade the style using the Footwear designing software.	U/A	2,3,10	18

C06	Draw basic geometry using Auto CAD.	U/A	2,3	8
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R: Remembering U: Understanding A: Applying

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
					11(b)	15(b)	
6	VI			7,8	10(b)	14(b)	
		12(a)			16(a)		
		12(b)			16(b)		
Total Questions		8		8	8		

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-I
FOURTH SEMESTER EXAMINATION

Subject Name : Computer Application in Leather Products

Subject Code : 18FW-404C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1= 4 marks

1. Name different Footwear Designing Software packages available in the market.
2. List different manufacturing Support applications of CAM.
3. What is Stroke writing technique of generating the image on the CRT screen.
4. What is LAN, WAN ?

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

5. a) Explain the difference between 2D, 3D Footwear CAD systems.

(OR)

- b) Explain the operating principle of Water Jet Cutting and its applications in Footwear Industry.

6. a) Explain the Working principle of Flat bed Plotters.

(OR)

- b) Explain the Working principle of Drum Plotters.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5= 10 marks

7. a) Explain how productivity in designing department will increase due to Computer Aided designing.

(OR)

- b) Explain the application of Laser beam cutting in Leather Products Industry.
8. a) Suggest different functions a Digitizer has to perform in Footwear CAD system.

(OR)

- b) Explain different Cursor control devices used in Footwear CAD systems.

BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-II
FOURTH SEMESTER EXAMINATION

Subject Name : Computer Application in Leather Products

Subject Code : 18FW-404C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1= 4 marks

1. Distinguish Machine Language, Assembly language.
2. What is Compiler?
3. Explain which points to be considered as New line points (NL) while digitizing a shell.
4. What is the Function of RO (Rub off) in the cursor of the digitizer?

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

5. a) Explain Time sharing type of Operating system.
(OR)
b) Explain Multi processor type of operating system.
6. a) Explain how to check the digitized file for invalid entries.
(OR)
b) Explain how to define the key pad menu area of the digitizer.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5= 10 marks

7. a) Explain how an operating system perform job scheduling function.
(OR)
b) Explain how an operating system perform Time sharing function.
8. a) Develop the Derby shell and explain how you will digitize the shell in FDS.
(OR)
b) a) Develop the Oxford shell and explain how you will digitize the shell in FDS.

BOARD DIPLOMA EXAMINATION, (C-18)
Leather Goods & Footwear Technology –IV SEMESTER EXAMINATION

Computer Application in Leather Products

Time : 2 Hours]

[Total Marks: 40

PART-A

08X01=08

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. Name different Footwear Designing Software packages available in the market.
2. Explain which points to be considered as New line points (NL) while digitizing a shell.
3. List the options available in FDS main menu.
4. What is Assembler?
5. With suitable example explain which pieces to be considered as Normal Pieces while defining the pieces in FDS.
6. What is Pattern Assessment?
7. Explain how to open an existing drawing in Auto CAD.
8. Explain how to Save a drawing in Auto CAD.

PART-B

04X03=12

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.
9. (a) Briefly explain operating principle of Computer Aided Stitching.
(or)
9. (b) What is Standard Grade File?
 10. (a) Explain how to check the digitized file for invalid entries.

- (or)
10. (b) Explain how to cut the components by using Wild TA series cutter.
11. (a) Explain how to enter the Grade Specification while Grading a shell in FDS.
(or)
11. (b) Explain how to Initiate the Grade Specification while Grading a shell in FDS.
12. (a) Explain how to draw a line Using Auto CAD.
(or)
12. (b) Explain how to draw a Poly line Using Auto CAD.

PART-C

04X5=20

Instructions :

1. Answer any **FOUR** questions.
2. Each question carries **FIVE** marks.

13. (a) Explain various factors that will influence improvement in the Productivity due to implementation of CAD. (or)
13. (b) Explain how to define the Scored piece while defining the pieces in FDS.
14. (a) Suggest different type of output devices for different type of CAD systems.
(or)
14. (b) Explain how you will design a simple stool in Auto CAD.
15. (a) Develop a Footwear design and Identify where it requires Die break
(or)
15. (b) Explain how to define the Die break and apply the Die break.
16. (a) If you know center and radius explain how you will create a circle in Auto CAD.
(or)
- (b) If you know three points explain how you will create circle in Auto CAD.

ADVANCED FOOTWEAR FABRICATION TECHNOLOGY

Course Title :	ADVANCED FOOTWEAR FABRICATION TECHNOLOGY	Course Code	18FW-405C
Semester	IV	Course Group	Core
Teaching Scheme in Periods(L:T:P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours :	60Pds
CIE	60 Marks	SEE	40 Marks

Legend: R; Remember, U: Understand

A: Application An: Analyze

Rationale:

The objective of this course is to make student to learn sequence of operations of different designs of Boot.

Pre requisites

Basic knowledge of developing upper patterns, Footwear fabrication.

Course Outcomes

CO1	Explain injection Moulding construction method of Footwear manufacturing.
CO2	Explain Welted construction method of Footwear manufacturing.
CO3	Explain Californian slip lasting construction method of Footwear manufacturing.
CO4	Explain Upper and bottom finishing operations.
CO5	Explain the sequence of operations of Boots.
CO6	Explain the packing procedure of different types of Footwear.

COURSE CONTENT

UNIT 1

1.0 Moulded construction method of Footwear manufacturing.

Natural rubber, properties, Vulcanization process, Vulcanized rubber, properties, upper and bottom preparation for Vulcanization, Vulcanization construction method, Injection moulding P.V.C construction method, advantages, bottom preparation, Injection Moulding P.V.C construction process, Injection moulding P.U construction process, advantages.

2.0 Veldtschoen, Welted construction method of Footwear manufacturing.

Veldtschoen construction process, Lasting, Runner stitching, Bottoming operations, finishing operations, Machine welted construction, Advantages, disadvantages, Insole preparation, lasting, bottoming and finishing operations.

3.0 Californian slip lasting, string lasting construction method of Footwear manufacturing.

Californian slip lasting construction, upper, Force lasting, Bottoming operations, String lasting construction, upper, lasting, bottoming operations, flow chart, primeknit technology, 3D printing.

4.0 Construction of ankle, miners safety boot

Sequence of operations of ankle boot, miners safety boot., Upper flow chart.

5.0 Construction of boots.

Sequence of operations involved in fabrication of following type of boots.

- a. Chelsea boot.
- b. Jodhpur boot.
- c. Motor cycling boot.
- d. Football boot.
- e. Men's balmoral boot.
- f. Boxing boot.
- g. Hiking boot.
- h. Ankle boot with Zip.
- i. Ladies high heel boot.

6.0 Packing

Preparation of shoe packing boxes, labels, sizes, bar-coding, packing method for different type of shoes, packing for export, local market, precautions to be taken while packing the footwear.

Specific Learning Outcomes

Upon completion of the course the student should be able to

OBJECTIVE:

On completion of the study of the subject, the student should be able to

1.0 Moulded construction method of Footwear manufacturing.

- 1.1 Write the chemical structure of Poly isoprene.
- 1.2 Define polymerization.
- 1.3 List the drawbacks of natural rubber.
- 1.4 Define vulcanization process.
- 1.5 Draw the structure of vulcanized rubber.
- 1.6 Identify the cross linking in vulcanized rubber.
- 1.7 List the properties of vulcanized rubber.
- 1.8 Explain the advantages of vulcanized rubber over unvulcanized rubber.
- 1.9 Explain how to condition the upper for lasting.
- 1.10 Describe forepart, side and seat lasting operations.
- 1.11 Name the adhesives used in lasting for vulcanised construction.
- 1.12 Explain how to prepare upper for vulcanizing construction.
- 1.13 Name the adhesives used in vulcanizing construction.
- 1.14 Draw the block diagram of vulcanizing construction.
- 1.15 Explain the vulcanizing construction method.
- 1.16 Draw the flow chart for vulcanizing construction method.
- 1.17 List the advantages of Injection moulding PVC construction method.
- 1.18 Explain the upper preparation for PVC injection moulding.
- 1.19 Name the adhesives used for injection moulding PVC construction.
- 1.20 Draw the block diagram of Injection moulding PVC construction.
- 1.21 Explain the Injection moulding PVC construction method of footwear manufacturing..
- 1.22 Describe Top seal, Side seal method of moulding.
- 1.23 Draw the flow chart for Injection moulding PVC construction.
- 1.24 Draw the chemical structure of Poly Urethane.
- 1.25 List the advantages of Injection moulding P.U. Construction.
- 1.26 List the disadvantages of Injection moulding P.U. Construction.
- 1.27 Explain the bottom preparation for Injection moulding P.U. Construction.
- 1.28 Explain Injection moulding P.U. Construction method of footwear manufacturing.
- 1.29 Draw the block diagram of Injection Moulding P.U construction.
- 1.30 Draw the flow chart for Injection moulding P.U. Construction.
- 1.31 State the temperature, pressure, other parameters requirements in Direct vulcanization,, Injection moulding of PVC , Injection moulding of PU construction methods.

2. Veldtschoen, Welted construction method of Footwear manufacturing.

- 2.1 Explain how to perform Seat Flanging operation.

- 2.2 Explain how to perform Lasting in Veldtschoen construction.
- 2.3 Explain how to stitch Runner to the Upper.
- 2.4 Explain how to attach Sole and Heel.
- 2.5 Explain how to perform Rough Rounding operation.
- 2.6 Explain how to perform following finishing operations.
 - a. Edge paring.
 - b. Edge inking.
- 2.7 Draw the block diagram of Veldtschoen construction.
- 2.8 Write the flow chart for Veldtschoen construction.
- 2.9 Write the advantages, Disadvantages of Welted construction.
- 2.10 Explain how to prepare Leather insole for Welted construction.
- 2.11 Explain how to prepare Ribbed insole for Welted construction.
- 2.12 Explain Traditional Method of Lasting in Welted construction.
- 2.13 Explain Cement Lasting method for Welted construction.
- 2.14 Explain how to perform bottoming operations in welted construction.
- 2.15 Explain how to perform finishing operations in welted construction.
- 2.16 Draw the block diagram of Welted construction.
- 2.17 Write the flow chart for welted construction.
- 3. Californian slip lasting, string lasting construction method of Footwear manufacturing.**
 - 3.1 Explain how to prepare Upper in Californian slip lasting construction.
 - 3.2 Explain how to do force lasting in Californian slip lasting construction.
 - 3.3 Explain how to perform bottoming operations in Californian slip lasting construction.
 - 3.4 Draw the block diagram of Californian slip lasting construction.
 - 3.5 Write the flow chart for Californian slip lasting construction.
 - 3.6 Explain how to prepare Upper in String lasting construction.
 - 3.7 Explain the lasting procedure in String lasting construction.
 - 3.8 Explain how to perform bottoming operations including moulding operations in String lasting construction.
 - 3.9 Draw the block diagram of String lasting construction.
 - 3.10 Write the flow chart for String lasting construction.
 - 3.11 Explain new Technology Knitted uppers.
 - 3.12 Explain Primeknit Technology Uppers.
 - 3.13 Explain how prime knit technology uppers create zero wastages.
 - 3.14 Comparison of 3D printing and shoe knitting.

4.0 Construction of ankle, miners safety boot

- 4.1 Draw the sketch of ankle boot and identify the parts.
- 4.2 Draw the flow chart showing the sequence of operations of ankle boot upper fabrication.
- 4.3 Describe the sequence of operation of ankle boot upper fabrication.
- 4.4 Explain the sequence of operations of bottoming operations.
- 4.5 Explain the purpose, tools machinery used, how to perform following bottoming operations.
 - 4.5.1 Heel paring.
 - 4.5.2 Rough heel scouring.
 - 4.5.3 Edge paring.
 - 4.5.4 Edge filling.
 - 4.5.6 Edge setting.
 - 4.5.7 Edge inking.
 - 4.5.8 Edge drying.
 - 4.5.9 Edge setting.
 - 4.5.10 Super fine heel scouring.
 - 4.5.11 Heel inking.
 - 4.5.12 Heel burnishing.
 - 4.5.13 Sole buffing.
 - 4.5.14 Sole staining.
 - 4.5.15 Sole spraying.
 - 4.5.16 Sole finishing.
- 4.6 Explain the purpose, tools, machinery used, how to perform following Upper finishing operations.
 - 4.6.1 Upper cleaning.
 - 4.6.2 Upper conditioning.
 - 4.6.3 Filler application.
 - 4.6.4 Shoe dressings.
- 4.7 Draw the sketch of Safety rubber canvas boot for miners and identify the parts.
- 4.8 Explain the sequence of operations of Safety rubber canvas boot for miner's upper fabrication.
- 4.9 Write the material, thickness requirement of upper, bottom components of Safety rubber canvas boot for miner's.
- 4.10 Draw the flow chart for Safety rubber canvas boot for miner's upper fabrication.

5.0 Construction of boots.

- 5.1 Draw the sketches of following boots and identify the parts.
 - 5.1.1 Chelsea boot.
 - 5.1.2 Jodhpur boot.
 - 5.1.3 Motor cycling boot.

- 5.1.4 Balmoral boot.
- 5.1.5 Football boot.
- 5.1.6 Boxing boot.
- 5.1.7 Hiking boot.
- 5.1.8 Ankle boot with zip.
- 5.1.9 Ladies high heel boot.
- 5.2 Explain the sequence of operations involved in fabrication of following type of boots.
 - 5.2.1 Chelsea boot.
 - 5.2.2 Jodhpur boot.
 - 5.2.3 Motor cycling boot.
 - 5.2.4 Balmoral boot.
 - 5.2.5 Football boot.
 - 5.2.6 Boxing boot.
 - 5.2.7 Hiking boot.
 - 5.2.8 Ankle boot with zip.
 - 5.2.9 Ladies high heel boot.
- 5.2 Draw the flow chart for upper fabrication of above boots

6 Packing

- 6.1 Draw the sketches of packing boxes.
- 6.2 Explain how to make packing boxes from flat boards.
- 6.3 List the details to be labelled on packing boxes.
- 6.4 Explain the advantage of using the Barcodes.
- 6.5 Write the packing box sizes for different footwear sizes.
- 6.6 Explain how to pack different type of shoes.
- 6.7 Explain how to interlock the shoe in packing box for optimum utilization of space in the packing box.
- 6.8 Explain the despatching procedure for local market.
- 6.9 Explain the despatching procedure for export market.
- 6.10 List different precautions to be taken in packing.

Suggested Student Activities

Each student should do any one of the following type activity or any other similar activity related to the course and before conducting , get it approved from concerned Teacher and HOD.

ACTIVITIES

- 11. Survey of Fashion magazines for new footwear styles.
- 12. Survey of new footwear styles in Net.
- 13. Preparing charts showing sequence of operations of new styles.

Reference Books

1. Text book of footwear manufacture – J.H. Thronton.
2. Manual of shoe making –Clarks.
3. Introduction to the modern Footwear Technology - B. Venkatappaiah.

Suggested E-Learning references

<http://icanmakeshoes.com>shoemaking>.

2. www.simpleshoemaking.com

3. <http://shoemakingcoursesonline.com>

CO PO Mapping Matrix

Course outcomes		CL	Linked PO	Teaching periods
CO1	Explain injection Moulding construction method of Footwear manufacturing.	U	1,2	8
CO2	Explain Welted construction method of Footwear manufacturing.	U/A	1,2	8
CO3	Explain Californian slip lasting construction method of Footwear manufacturing.	U/A	1,2	10
CO4	Explain Upper and bottom finishing operations.	U/A	1,2	10
CO5	Explain the sequence of operations of Boots.	U/A	2,4	14
CO6	Explain the packing procedure of different types of Footwear.	A	1,2,10	10

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
		11(b)		15(b)			
6	VI		7,8	10(b)	14(b)		
				12(a)	16(a)		
				12(b)	16(b)		
Total Questions		8		8	8		

	Remembering (R)	1 Mark
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Legend:	Understanding (U)	3 Marks
	Application (A)	5 Marks

BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-I
FOURTH SEMESTER EXAMINATION

Subject Name : Advanced Footwear Fabrication Technology

Subject Code : 18FW-405C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1= 4 marks

1. What is Vulcanisation of Rubber?
2. Explain what type of Adhesive to be used in Direct Vulcanising construction method of Footwear Manufacturing.
3. What is the objective of Seat Flanging operation?
4. Explain how to perform Seat Flanging operation.

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

5. a) Write the flow chart for Direct Vulcanizing construction method of Footwear manufacturing.
(OR)
b) Write the flow chart for Injection Moulding PVC construction method of Footwear Manufacturing.
6. a) Explain how to perform lasting in Veldtschoen construction method of Footwear manufacturing.
(OR)
b) Explain how to stitch upper and Runner in Veldtschoen construction method of Footwear manufacturing.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5= 10 marks

7. a) Explain how to fabricate footwear by injection moulding process with P.V.C as Sole material.
(OR)

- b) Explain how to fabricate footwear by Injection moulding process with Sole material having high abrasion resistance.
8. a) Explain how to make footwear with Ribbed insole by Welted construction method of Footwear manufacturing.
- (OR)
- b) Explain how you will finish the Footwear Made by Veldtschoen construction method of Footwear Manufacturing.

BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-II
FOURTH SEMESTER EXAMINATION

Subject Name : Advanced Footwear Fabrication Technology

Subject Code : 18FW-405C

[Time Duration : 1 Hour]

[Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks

4 x 1= 4 marks

1. What is Force lasting?
2. How much lasting allowance we have to give for Uppers of Californian Slip lasting construction method of Footwear manufacturing.
3. Explain why we have to clean the uppers before upper finishing.
4. Name different type of Cleaners used in Footwear Upper cleaning.

PART-B

Answer any TWO Questions s and each question carries 03 marks

2 x 3 = 6 marks

5. a) Write the flow chart for Californian slip lasting construction method of Footwear manufacturing.
(OR)
b) Write the flow chart for String Lasting construction method of Footwear Manufacturing.
6. a) What are shoe Dressings?
(OR)
b) Write the Flow chart for sequence of Operations of Ankle boot upper fabrication.

PART-C

Answer any TWO Questions and each question carries 05 marks

2 x 5= 10 marks

7. a) Explain how to fabricate Footwear by String Lasting.
(OR)
b) Explain how to prepare upper in String Lasting construction method of Footwear Manufacturing.

8. a) Explain different Sole and Heel finishing operations you have to perform to finish leather sole and heels.

(OR)

- b) Explain how you will fabricate Footwear with canvas as upper material to be used in mining operations.

BOARD DIPLOMA EXAMINATION, (C-18)
Leather Goods & Footwear Technology BRANCH – IV SEMESTER
EXAMINATION

ADVANCED FOOTWEAR FABRICATION TECHNOLOGY

Time : 2 Hours]

[Total Marks: 40

PART-A

08X01=08

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. What is Vulcanization of Rubber?
2. What are Ribbed insoles?
3. Draw the neat sketch of Chelsea boot?
4. Explain the Advantages of Vulcanized rubber compare to Un Vulcanized rubber.
5. Draw the neat sketch of Uppers of Jodhpur Boot.
6. What is the difference between Ankle Boot and Jodhpur Boot.
7. What is Bar coding?
8. Explain the Advantages of Bar coding Compare to manual method.

PART-B

04X03=12

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

9. (a) Write the flow chart for Injection Moulding PVC construction method of Footwear manufacturing.
(or)
9. (b) Write the flow chart for Motor cycling Boot Upper fabrication.
10. (a) Explain how to perform lasting in Californian slip lasting construction method of Footwear manufacturing.
(or)

10. (b) What are Shoe Bags?

11. (a) Write the flow chart for sequence of Operations of Men's Balmoral boot Upper fabrication.

(or)

11. (b) Write the flow chart for sequence of Operations of Jodhpur boot Upper fabrication.

12. (a) Explain how to prepare Shoe Packing Boxes.

(or)

12. (b) Explain how to interlock shoe in shoe packing boxes for optimum utilization of Space in shoe packing boxes.

PART-C

04X5=20

Instructions :

1. Answer any **FOUR** questions.
2. Each question carries **FIVE** marks.

13. (a) Explain how to fabricate footwear by moulding process with Vulcanized Rubber as Sole material.

(or)

13. (b) Explain how you will fabricate the boot to be used in Boxing.

14. (a) Explain how to last the upper on the Runner and fabricate the Footwear .

(or)

14. (b) Explain different precautions to be taken while packing the footwear.

15. (a) Explain the sequence of Operations of Football boot fabrication.

(or)

15. (b) Explain the sequence of Operations of Ladies High heel boot upper fabrication.

16. (a) Explain how will you pack and dispatch the footwear for the shoe room which is in your town.

(or)

(b) Explain how will you pack and dispatch the Footwear for the shoe rooms which are in different towns and for export of shoes to other countries.

ADVANCED LEATHER GOODS AND GARMENTS FABRICATION LAB PRACTICE

Course Title :	ADVANCED LEATHER GOODS AND GARMENTS FABRICATION LAB PRACTICE	Course Code	18FW-406P
Semester	IV	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Hours :	:45Pds
CIE	60 Marks	SEE	40 Marks

Pre requisites

This course requires the Basic Knowledge of Leather goods fabrication.

Rationale:

The course is designed to make student to fabricate leather goods with the given material.

Course outcomes

On successful completion of the course, the students will be able to attain below Course Outcome

Course Outcome		Linked Exercises	CL	Linked PO	Teaching Hours
CO1	Fabricate bucket bag with the given material.	2	R/U/A	2,4,7,10	6
CO2	Fabricate brief case with the given material.	3	R/U/A	2,4,7,10	6
CO3	Fabricate zip folio case with the given material.	4	R/U/A	2,4,7	9

CO4	Fabricate Football covers with the given material.	6	R/U/A	2,4,8	6
CO5	Develop basic sleeve block.	7	R/U/A	2,4,7	6
CO6	Develop Mandarin Collar.	8	R/U/A	2,4,7	3

Course Contents (Exercises)

1. Fabrication of Three piece flap over bag.
2. Fabrication of Bucket bag.
3. Fabrication of Brief case.
4. Fabrication of Zip folio case.
5. Fabrication of gloves.
6. Fabrication of football covers.
7. Development of Basic sleeve block.
8. Development of Mandarin collar

Specific Learning Outcomes

- 1.0 .Fabrication of Three piece flap over bag.**
 - 1.1 Develop patterns for three piece flap over bag.
 - 1.2 Fabricate three piece flap over bag with the given material.
- 2.0 Fabrication of bucket bag.**
 - 2.1 Develop patterns for bucket bag.
 - 2.2 Fabricate Bucket bag with the given material.
- 3.0 Fabrication of Brief case**
 - 3.1 Develop patterns for Brief case.
 - 3.2 Fabricate Brief case with the given material.
- 4.0 Fabrication of Zip folio case.**
 - 4.1 Develop patterns for Zip folio case.
 - 4.2 Fabricate Zip folio case with given material.
- 5.0 Fabrication of gloves.**
 - 5.1 Develop patterns for gloves.
 - 5.2 Fabricate gloves with the given material.
- 6.0 Fabrication of Football covers.**
 - 6.1 Develop patterns for football covers.
 - 6.2 Fabricate football covers with the given material.

7.0 Development of Basic sleeve block.

7.1 Take measurements on dummy/body.

7.2 Develop basic sleeve block from the measurements.

8.0 Development of Mandarin collar

8.1 Develop mandarin collar from the measurements.

Suggested Student Activities

1. Decorate the Articles made with ornamentation.
2. Survey of new designs in showrooms, shopping malls, Net, magazines.

REFERENCES

- 1) The complete hand book of Leather crafting Jame Co. Gamed. Robert E.Krieges Publishing company, Malabar, Floride.
- 2) Leather Craft by chris. H Groneman, Head Mechanical College of Teases Chas A Bermett Co Inc. Peoria, Illimois.
- 3) How to sew Leather suede by G.Phillips. W.Sehwilke, Macmillan, Newyork – 1979.

E Learning Resources

1. <http://icanmakeshoes.com>shoemaking>.
2. www.simpleshoemaking.com
3. <http://shoemakingcoursesonline.com>

Scheme of Valuation of SEE		
S.No	Particulars	Marks
1.	Identification of tools/machine	02
2.	Writing procedure	08
3.	Conducting of experiment and performing the given task	20
4.	Results	05
5.	Viva-voce	05
	Total	40

State Board of Technical Education and Training, Telangana

Semester End Examination Model Question paper

DFWT IV Semester Practical Examination

Corse Code: 18FW-406P

Duration: 3 hours

**Course Name: ADVANCED LEATHER GOODS AND GARMENTS FABRICATION LAB
PRACTICE**

Max.Marks:40

Instructions to the Candidates:

(i)Answer any One of the following Questions.

1. Develop the patterns and fabricate Three piece flap over bag with the given material.
2. Develop the patterns and fabricate Bucket bag with the given material.
3. Develop the patterns and fabricate Brief case with the given material.
4. Develop the patterns and fabricate Zip folio case with the given material.
5. Develop the patterns and fabricate gloves with the given material.
6. Develop the patterns and fabricate Football covers folio case with the given material.
7. Develop basic sleeve block for your body measurements.

8. Develop Mandarin collar for your body measurements.

FOOTWEAR FABRICATION LAB PRACTICE

Course Title :	FOOTWEAR FABRICATION LAB PRACTICE	Course Code	18FW407P
Semester	IV	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	1:0:2 15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Periods :	:45Pds
CIE	60 Marks	SEE	40 Marks

Pre requisites

This course requires the Basic Knowledge of Leather products Fabrication, Footwear upper fabrication

Rationale:

The course is designed to help the student in understanding method of calculating material consumption for fabrication of shoe upper, how to perform edge treatment operation involved in fabrication of shoe upper, method of practicing stitching operation manually and by using machines, understanding Sequence of operations involved in fabrication of different style shoe uppers and different difficulties occur during fabrication of uppers .

Course outcomes

On successful completion of the course, the students will be able to attain below Course Outcomes

Course Outcome		Linked Exercises	CL	Linked PO	Teaching Periods
CO1	Estimate upper leather consumption by Russ and small 0°, 180° method	1,2	R/U/A	1,2,3,7	09

CO2	Stitch the footwear upper components by hand using stitching awl and on sewing machine	3,4	R/U/A	1,2,3,4,7	18
CO3	Perform edge treatments on the edges of footwear components	5	U/A	1,2,3,4,6	03
CO4	Perform punching and eye letting operation on shoe upper component	6	U/A	1,2,3,4,6	03
CO5	Fabricate oxford, derby, Court ,Toecap derby style Shoe uppers	7,8,9,10	U/A	1,2,3,4,6,10	12

Course Contents (Exercises)

1.	Estimation of upper material consumption by Russ & Small 0° method
2.	Estimation of upper material consumption by Russ & Small 180° method
3.	Stitching practice (by hand)
4.	Machine stitching practice
5.	Practice of edge treatments
6.	Eyeleting operation practice
7.	Fabrication of Derby shoe upper
8.	Fabrication of Oxford shoe upper
9.	Fabrication of Toe cap Derby shoe upper
10	Fabrication of Court shoe upper

Suggested Student Activities

1. Collection of stitching on leather with different stitch lengths.
2. Stitching of synthetic and innovative materials.
3. Preparing the sequence of operations for different footwear styles.
4. Material consumption calculations by Russ and small method.

E Learning Resources

1. <http://icanmakeshoes.com>shoemaking>.
2. www.simpleshoemaking.com
3. <http://shoemakingcoursesonline.com>

Scheme of Valuation of SEE		
S.No	Particulars	Marks
1.	Identification of tools/machine	02
2.	Writing procedure	08
3.	Conducting of experiment and performing the given task	20
4.	Results	05
5.	Viva-voce	05
	Total	40

State Board of Technical Education and Training, Telangana

Semester End Examination Model Question paper

DFW IV Semester Practical Examination

Corse Code: 18FW407P

Duration: 3 hours

Course Name: 18FW407P— FOOTWEAR FABRICATION LAB PRACTICE

Max.Marks:40

Instructions to the Candidates:

(i)Answer any One of the following Questions.

1. Estimate upper material consumption of gents Derby Shoe upper size 8 (adults) by Russ & Small 0° method
2. Estimate upper material consumption of gents Oxford Shoe upper size 8 (adults) by Russ & Small 180° method

3. Stitch the given shoe upper components as per marking by hand Stitching awl.
4. Stitch the given shoe upper components as open seam and closed seam on Flat bed sewing machine.
5. Perform Raw edge and folded edge treatments along the edges of given components.
6. Perform punching and eyeleting operation on the given shoe upper component as per the marking.
7. Fabricate Derby shoe upper of given size from the given material.
8. Fabricate Oxford shoe upper of given size from the given material.
9. Fabricate Court shoe upper of given size from the given material.
10. Fabricate Toe cap Derby shoe upper of given size from the given material.

18FW-408P — INSPECTION AND QUALITY CONTROL LAB PRACTICE

Course Title :	INSPECTION AND QUALITY CONTROL LAB PRACTICE	Course Code	18FW-408P
Semester	IV	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Hours :	:45Pds
CIE	60 Marks	SEE	40 Marks

Pre requisites

This course requires the Basic Knowledge of Footwear fabrication.

Rationale:

The course is designed to make student to inspect quality of the Footwear at different stages of Footwear fabrication and also in final inspection of Footwear manufacturing.

Course outcomes

Course Outcome		Linked Exercises	CL	Linked PO	Teaching Hours
CO1	Inspection of Cut components.	1	U/A	3,4,9,10	6
CO2	Inspection after splitting and skiving	2	U/A	3,4,9,10	6

CO3	Inspection of uppers.	3	U/A	3,4,9,10	9
CO4	Inspection of lasted uppers.	4	U/A	3,4,9,10	6
CO5	Inspection after sole attaching.	5	U/A	3,4,9,10	6
CO6	Final inspection.	6	U/A	3,4,9,10	12

On successful completion of the course, the students will be able to attain below Course Outcome

Course Contents (Exercises)

9. Inspection of cut components..
10. Inspection after splitting and skiving
11. Inspection of Uppers.
12. Inspection of Lasted Uppers.
13. Inspection after sole attaching.
14. Final Inspection.

Suggested Learning Outcomes

- 1.0 **Inspection of Cut components.**
 - 1.1 Perform quality inspection on upper components after cutting and identify defects.
 - 1.2 Perform quality inspection on lining components after cutting and identify defects.
- 2.0 **Inspection after Splitting and skiving.**
 - 2.1 perform quality inspection on components after Splitting and skiving and identify the defects
- 3.0 **Inspection of uppers.**
 - 3.1 perform quality inspection on uppers and identify the defects on given uppers.
- 4.0 **Inspection of lasted uppers.**

- 4.1 Perform quality inspection on lasted upper and identify the defects.
- 5.0 Inspection after sole attaching.**
- 5.1 Perform quality inspection after sole attaching and identify the defects.
- 6.0 Final inspection.**
- 6.1 Perform final inspection of finished shoe and identify the defects.

REFERENCES

5. Work manual for Testing of Footwear - SATRA, U.K.
6. Work manual for Quality Checking Points in shoe manufacturing - Bally International & CLE Publications.
7. Physical Testing of Leather - S.S. Datta
8. ISI Standard book on Leather Testing
9. Lecturer Notes - Iqbal Hussain, APGILT

Suggested Student Activities

1. Collecting the upper components with different defects.
2. Inspection of Full shoes of friends and peer group and Identifying the defects.

E Learning Resources

1. <http://icanmakeshoes.com>shoemaking>.
2. www.simpleshoemaking.com
3. <http://shoemakingcoursesonline.com>

Scheme of Valuation of SEE		
S.No	Particulars	Marks
1.	Identification of tools/machine	02
2.	Writing procedure	08
3.	Conducting of experiment and performing the given task	20
4.	Results	05
5.	Viva-voce	05
	Total	40

State Board of Technical Education and Training, Telangana

Semester End Examination Model Question paper

DFWT IV Semester Practical Examination

Corse Code: 18FW-408P

Duration: 3 hours

Course Name: INSPECTION AND QUALITY CONTROL LAB PRACTICE

Max.Marks:40

Instructions to the Candidates:

(i) Answer any One of the following Questions.

11. Inspect the cut components and prepare quality report.
12. Inspect the shoe uppers and prepare the quality report.
13. Inspect the Lasted uppers and prepare the quality report.
14. Inspect the shoe after sole attaching operation and prepare the quality report.
15. Perform the Final Inspection of Full shoe and prepare the quality report.

PHYSICAL TESTING OF LEATHER LAB PRACTICE

Course Title :	PHYSICAL TESTING OF LEATHER LAB PRACTICE	Course Code	18FW- 409P
Semester	IV	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Hours :	:45Pds
CIE	60 Marks	SEE	40 Marks

Pre requisites

This course requires the Basic Knowledge of Physical properties of the Leather.

Rationale:

The course is designed to make student to perform various physical tests of leather to evaluate its quality.

Course outcomes

Course Outcome		Linked Exercises	CL	Linked PO	Teaching Hours
CO1	Determine the Tensile strength of the leather by Performing Tensile strength test on leather.	2	U/A	3,4,9,10	6

CO2	Determine the Stitch tear strength of the of the leather by Performing Stitch tear strength test on leather.	3	U/A	3,4,9,10	6
CO3	Determine the Tongue tear strength of the leather by Performing Tongue tear strength test on leather.	4	U/A	3,4,9,10	6
CO4	Perform Lastometer test on the leather.	5	U/A	3,4,9,10	6
CO5	Determine the flex performance of the leather by Performing Flexural endurance test on the leather.	7	U/A	3,4,9,10	6
C06	Determine the quality of the leather finish by performing Dry rub and wet rub fastness test on the leather.	8.9	U/A	3,4,9,10	9

On successful completion of the course, the students will be able to attain below Course Outcome

Course Contents (Exercises)

15. Location of Sampling Position on given leather.
16. Tensile strength of leathers,
17. Stitch tear strength of the leather.
18. Tongue tear strength of the leather .
19. Lastometer test.
20. Dynamic water proofness test on upper leather.
21. Flexural endurance test on leather.
22. Dry rub fastness test on leather.
23. Wet rub fastness test on leather..

Specific Learning Outcomes

1. Location of Sampling position on given leather.
 - 1.1 Locater the sampling position for Physical testing on given leather.
 - 1.2 Locater the sampling position for Chemical analysis on given leather.
2. Tensile strength of leathers,
 - 2.1 Determine the Tensile strength of the leather by performing the test using Tensile tester.

- 2.2 Determine the % of elongation at break of given leather by performing the test using Tensile tester.
3. Stitch tear strength of the leather.
 - 3.1 Determine the Stitch tear strength of the leather by performing the test using Tensile tester.
4. Tongues tear strength of the leather.
 - 4.1 Determine the Tongue tear strength of leather by performing the test using Tensile tester.
5. Lastometer test.
 - 5.1 Determine the following of given leather by performing the test using the lastometer.
 - a. Grain crack strength.
 - b. Distension at grain crack.
 - c. Grain bursting strength.
 - d. Distension at grain bursting.
6. Dynamic water proofness test on upper leather.
 - 6.1 Able to determine the following of given leather by performing dynamic water proofness test.
 - a. Penetration time.
 - b. Amount of water absorbed by the given leather.
 - c. Amount of water Transmitted by the Leather
7. Flexural endurance test on leather.
 - 7.1 Able to perform Flexural endurance test on the given leather to evaluate the flex crack performance of the given leather.
8. Dry rub fastness test on leather.
 - 8.1 Able to perform Dry rub fastness test on given leather to evaluate its quality.
9. Wet rub fastness test on leather..
 - 9.1 Able to perform Wet rub fastness test on given leather to evaluate the quality.

Suggested Student Activities

1. Performing Tensile strength test on synthetic material.
2. Performing Stitch tear strength test on synthetic material.

3.Performing Tongue tear strength test on given material.

REFERENCES

10. Work manual for Testing of Footwear - SATRA,U.K.
11. Work manual for Quality Checking Points in shoe manufacturing - Bally International & CLE Publications.
12. Physical Testing of Leather - S.S.Datta
13. ISI Standard book on Leather Testing
14. Lecturer Notes – S.Iqbal Hussain, APGILT

E Learning Resources

1. <http://icanmakeshoes.com>shoemaking>.
2. www.simpleshoemaking.com
3. <http://shoemakingcoursesonline.com>

Scheme of Valuation of SEE		
S.No	Particulars	Marks
1.	Identification of tools/machine	02
2.	Writing procedure	08
3.	Conducting of experiment and performing the given task	20
4.	Results	05
5.	Viva-voce	05
	Total	40

State Board of Technical Education and Training, Telangana

Semester End Examination Model Question paper

DFWT IV Semester Practical Examination

Corse Code: 18FW- 409P

Duration: 3 hours

Course Name: PHYSICAL TESTING OF LEATHER LAB PRACTICE

Max.Marks:40

Instructions to the Candidates:

(i)Answer any One of the following Questions.

- 2.0 Determine the Tensile strength of the leather by performing the test using Tensile tester.
- 3.0 Determine the Stitch tear strength of the leather by performing the test using Tensile tester.
- 4.0 Determine the Tongue tear strength of leather by performing the test using Tensile tester.
- 5.0 Determine the following of given leather by performing the test using the lastometer.
 - a. Grain crack strength.
 - b. Distension at grain crack.
 - c. Grain bursting strength.

- d. Distension at grain bursting.
- 6.0 Determine the the following of given leather by performing dynamic water proofness test.
 - e. Penetration time.
 - f. Amount of water absorbed by the given leather.
 - g. Amount of water Transmitted by the Leather
- 7.0 Evaluate the flex crack performance of the given leather by conducting the flexural endurance test.
- 8.0 Evaluate the quality of the finish film by performing dry rub fastness test on given leather.
- 9.0 Evaluate the quality of the finish film by performing wet rub fastness test on given leather.

Advanced Communication Skills and Life Skills

Course Title	Advanced Communication Skills and Life Skills	Course Code	18 FW- 410 P
Semester	IV	Course Group	Foundation
Teaching Scheme in Periods- L:T:P	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Hours	45 Periods (3 Periods per Week)
CIE	60 Marks	SEE	40 Marks

Rationale:

This course is designed to impart writing skills and employability skills to the students of diploma which will help them in obtaining and maintaining the employment.

Prerequisites:

This course requires the basic knowledge of vocabulary, grammar and four language learning skills, viz. Listening, Speaking, Reading and Writing.

Course Outcomes:

Modules	At the end of the course the students will have the ability to:
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Presentation Skills	Prepare a presentation. Use presentation aids effectively. Develop public speaking skills. Learn to make PowerPoint Presentations effectively. Present a Paper using appropriate body language.
Writing Reports	Learn kinds of reports. Learn the format of a report. Organise ideas. Develop essential vocabulary useful to write scientific and technical reports.
Interview Skills	Learn the techniques to face an interview. Learn the etiquette to communicate with employers. Learn the dos and don'ts of an interview. Learn the frequently asked questions in interviews. Use appropriate body language. Learn to face interviews telephonically. Gain the confidence to face an interview by attending mock interview.
Group Discussion	Learn the dos and don'ts of a Group Discussion. Participate in a Group Discussion in a healthy manner. Use effective non-verbal communication. Use appropriate phrases and expressions useful in a group discussion.

Workplace Awareness	Learn workplace etiquette. Identify the knowledge, skills and attributes useful at workplace. Build strong workplace relationships. Learn professional ethics. Understand gender equality at the workplace Develop a sense of responsibility towards the society.
Writing Skills Useful at Workplace	Learn various writing formats useful at workplace. Develop an ability to apply technical information in documentation. Revise and edit written documents effectively. Develop corresponding skills - learn the kinds of business letters - the format of a business letter. Learn effective e-mail writing skills. Learn Business Memos. Learn Notes and Narratives. Learn Forms and Applications. Prepare templates for different purposes. Prepare an agenda of a meeting. Prepare the minutes of a meeting. Prepare Notices / Circulars for various purposes. Prepare Press release.

CO-PO Matrix

	Course Outcome		Linked PO
CO 1	Making effective presentations	R/U/A	1, 2, 3,4, 5,6,7,8,9,10
CO 2	Writing scientific and technical reports	R/U/A	1,2,3,4, 5,6,7,8,9,10
CO 3	Learn to face oral and telephonic interviews	R/U/A	1,2,3,4, 7,9,

CO 4	Learn to face group discussion	R/U/A	1,2,3,7,8,9
CO 5	Learn to write various formats useful at workplace	R/U/A	1,2,3,5,7,8,9,10
CO6	Learn workplace etiquette and ethics	R/U/A	1,2,3,7,8,9,10

Course Contents:

I. Presentation Skills	Duration: 6 periods
II. Writing Reports	Duration: 9 periods
III. Interview Skills	Duration: 9 periods
IV. Group Discussion	Duration: 6 periods
V. Workplace Awareness	Duration: 6 periods
VI. Writing Skills Useful at Workplace	Duration: 9 periods

Suggested Student Activities:

- Paper Presentations
- Seminars
- Mock Interviews
- Telephonic Interviews
- Group Discussions
- Role Plays
- Creating advertisements
- Five-minute activities
- Creating a model of workplace

Evaluation Pattern:

I. Continuous Internal Examination:	60 Marks
a. Mid Sem - I Syllabus: i. Presentation Skills ii. Writing Reports	20 marks
b. Mid – II:	20 Marks

Syllabus:

- i. Interview Skills
- ii. Group Discussion
- c. **Internal assessment:** 20 marks
 - i. Seminars: 10 marks
 - ii. Assignments: 5 marks
 - iii. Lab record submission: 5 marks

II. Semester End Examination : 40
Marks

- a. Write an essay on a given topic or participate in an activity: 15 Marks
- b. Interview or Group Discussion: 15 Marks
- c. *Viva Voce* 10 marks

References:

- Adair, John. *Effective Communication*. London: Pan Macmillan Ltd., 2003.
- Ajmani, J. C. *Good English: Getting it Right*. New Delhi: Rupa Publications, 2012.
- Amos, Julie-Ann. *Handling Tough Job Interviews*. Mumbai: Jaico Publishing, 2004.
- Collins, Patrick. *Speak with Power and Confidence*. New York: Sterling, 2009.
- Fensterheim, Herbert and Jean Baer. *Don't Say Yes When You Want To Say No*. New York: D
- Raman, Meenakshi & Sangeeta Sharma. *Technical Communication: Principles and Practice*. Second Edition. New Delhi: Oxford University Press, 2011

E-Learning Resources:

- <http://www.dailywritingtips.com/>
- <http://www.englishdaily626.com/c-errors.php>
- <http://www.owl.net.rice.edu/~cainproj/>
- <http://www.thehumorsource.com/>
- <http://www.indiabix.com/group-discussion/topics-with-answers/>

<http://networketiquette.net/>

<https://public.wsu.edu/~brians/errors>

<http://www.bbc.co.uk/worldservice/learningenglish/radio/specials/15>

BOARD DIPLOMA EXAMINATION (C-18)

FOURTH SEMESTER 18FW-410P

ADVANCED COMMUNICATION SKILLS AND LIFE SKILLS

MID SEM - I

Time : 1 Hour

Total Marks: 20 Marks

Part – A

10 marks

Instruction: Answer any one of the following questions.

1. Write the guidelines for preparing a PowerPoint presentation.
2. How do you prepare yourself for presenting a technical paper?
3. Mention a few presentation aids and how do you use them effectively?

Part – B

10 marks

Instruction: Answer any one of the following questions.

4. Write the format of a report and describe it.
5. Write a report on the accident you have seen recently.

6. Give the outline of a project report and describe it.

BOARD DIPLOMA EXAMINATION (C-18)

FOURTH SEMESTER 18FW-410P

ADVANCED COMMUNICATION SKILLS AND LIFE SKILLS

MID SEM - II

Time : 1 Hour

Total Marks: 20 Marks

Part – A

10 marks

Instruction: Answer any one of the following questions.

1. What are the dos and don'ts for a formal interview?
2. What at least ten frequently asked questions in a formal interview?
3. How do you prepare for a telephonic interview?

Part – B

10 marks

Instruction: Answer any one of the following questions.

4. What are the dos and don'ts of a group discussion?
5. Mention some phrases and expressions commonly used in a group discussion.

6. Write a short paragraph on the steps you take while participating in a group discussion.

BOARD DIPLOMA EXAMINATION (C-18)
FOURTH SEMESTER 18 FW-410P
ADVANCED COMMUNICATION SKILLS AND LIFE SKILLS
SEMESTER END EXAM

Time : 3 Hours

Total Marks: 40 Marks

Part – A

10 marks

Instruction: Pick any one question from the given lot.

1. Prepare the outline of a project report and describe it.
2. Write the guidelines for preparing the slides of a PowerPoint presentation.
3. Write the minutes of the meeting conducted at the Principal's chamber to conduct the annual day celebrations. Prepare the agenda of the annual day celebrations.
4. Describe the workplace etiquette.
5. Prepare a press note for the '*Job Mela*' which is going to be conducted at your institute.

Part – B

15 marks

6. Interview / Group Discussion

Part – C

15 marks

7. *Viva Voce*

**Diploma in Leather goods & Footwear Technology – Fourth SEMESTER – Skill
Upgradation – Student Activities**

1. Collecting different types of soles and identifying their properties. P2
2. Collecting different type of bottoming materials. P2
3. Watch injection Moulded methods videos and prepare a report. P10
4. Collect various finished leather samples and prepare a chart with characteristics of each finished leather. P2,P10
5. Repair and polish the footwear.P4
6. Fabricate ladies bags with paper to check the accuracy of the patterns. P4
7. Fabricate Travel ware with the paper to check the accuracy of the patterns. P4
8. Calculate production cost of the articles available with them. P2
9. Inspect the quality of finished shoe and prepare the quality report. P3
10. Inspect the quality of the Footwear uppers and prepare the quality report. P3
11. Visiting shops and malls and inspecting the Footwear. P10
12. Checking the quality of the finish film by Adhesive tape method. P3
13. Prepare the Digitizing layout for the shells. P4
14. Study the Videos of other footwear designing software in net. P10

15. Study the videos showing Laser beam cutting of leather and other Footwear materials.P10

CATEGORY	4	3	2	1
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16. Prepare a chart for the various Formulae used. P2

17. Quiz P2, P10

18. A visit to nearby Footwear/ Leather goods manufacturing unit to identify various hand tools and machines. P2,P3

19. Decorate the Articles made with ornamentation. P8, P9

20. Survey of new designs in showrooms, shopping malls, Net, magazines. P2, P10

21. Collection of stitching on leather with different stitch lengths. P2

22. Stitching of synthetic and innovative materials. P3

23. Preparing the sequence of operations for different footwear styles. P3

24. Material consumption calculations by Russ and small method. P3

25. Collecting the upper components with different defects. P3

26. Inspection of Full shoes of friends and peer group and identifying the defects. P3,P9

27. Performing Tensile strength test on synthetic material. P3

28. Performing Stitch tear strength test on synthetic material. P3

29. Performing Tongue tear strength test on given material. P3

RUBRICS TO EVALUATE DEBATE, SIMILAR ACTIVITIES

se of Facts/Statistics	Every major point was well supported with several relevant facts, statistics and/or examples.	Every major point was adequately supported with relevant facts, statistics and/or examples.	Every major point was supported with facts, statistics and/or examples, but the relevance of some was questionable.	Every point was not supported.
Information	All information presented in the debate was clear, accurate and thorough.	Most information presented in the debate was clear, accurate and thorough.	Most information presented in the debate was clear and accurate, but was not usually thorough.	Information had several inaccuracies OR was usually not clear.
Rebuttal	All counter-arguments were accurate, relevant and strong.	Most counter-arguments were accurate, relevant, and strong.	Most counter-arguments were accurate and relevant, but several were weak.	Counter-arguments were not accurate and/or relevant
Presentation Style	Team consistently used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	Team usually used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	Team sometimes used gestures, eye contact, tone of voice and a level of enthusiasm in a way that kept the attention of the audience.	One or more members of the team had a presentation style that did not keep the attention of the audience.
Understanding of Topic	The team clearly understood the topic in-depth and presented their information forcefully and convincingly.	The team clearly understood the topic in-depth and presented their information with ease.	The team seemed to understand the main points of the topic and presented those with ease.	The team did not show an adequate understanding of the topic.
Respect for Other Team	All statements, body language, and responses were respectful and were in appropriate	Statements and responses were respectful and used appropriate language, but once	Most statements and responses were respectful and in appropriate language, but	Statements, responses and/or body language were consistently not respectful.

	language.	or twice body language was not.	there was one sarcastic remark.	
RUBRICS TO EVALUATE PAPER PRESENTATION, SIMILAR ACTIVITIES				
Organization	All arguments were	Most arguments	All arguments were	Arguments were not
CATEGORY	4	3	2	1
Use of Class Time	idea (premise) and organized in a tight, logical fashion during each class period. Focused on getting the project done. Never distracted others.	an idea (premise) and organized in a tight, logical fashion during each class period. Usually focused on getting the project done and never distracted others.	idea (premise) but the organization was sometimes not clear or logical. There was some focus on getting the project done but occasionally distracted others.	(premise) Did not use class time to focus on the project OR often distracted others.
Graphics -Clarity	Graphics are all in focus and the content easily viewed and identified from 6 ft. away.	Most graphics are in focus and the content easily viewed and identified from 6 ft. away.	Most graphics are in focus and the content is easily viewed and identified from 4 ft. away.	Many graphics are not clear or are too small.
Graphics - Originality	Several of the graphics used on the poster reflect a exceptional degree of student creativity in their creation and/or	One or two of the graphics used on the poster reflect student creativity in their creation and/or display.	The graphics are made by the student, but are based on the designs or ideas of others.	No graphics made by the student are included.

	display.			
Graphics - Relevance	All graphics are related to the topic and make it easier to understand. All borrowed graphics have a source citation.	All graphics are related to the topic and most make it easier to understand. All borrowed graphics have a source citation.	All graphics relate to the topic. Most borrowed graphics have a source citation.	Graphics do not relate to the topic OR several borrowed graphics do not have a source citation.
Labels	All items of importance on the poster are clearly labeled with labels that can be read from at least 3 ft. away.	Almost all items of importance on the poster are clearly labeled with labels that can be read from at least 3 ft. away.	Several items of importance on the poster are clearly labeled with labels that can be read from at least 3 ft. away.	Labels are too small to view OR no important items were labeled.
Required Elements	The poster includes all required elements as well as additional information.	All required elements are included on the poster.	All but 1 of the required elements are included on the poster.	Several required elements were missing.
Knowledge Gained	Student can accurately answer all questions related to facts in the poster and processes used to create the poster.	Student can accurately answer most questions related to facts in the poster and processes used to create the poster.	Student can accurately answer about 75% of questions related to facts in the poster and processes used to create the poster.	Student appears to have insufficient knowledge about the facts or processes used in the poster.
Content - Accuracy	At least 7 accurate facts are displayed on the poster.	5-6 accurate facts are displayed on the poster.	3-4 accurate facts are displayed on the poster.	Less than 3 accurate facts are displayed on the poster.

Attractiveness	The poster is exceptionally attractive in terms of design, layout, and neatness.	The poster is attractive in terms of design, layout and neatness.	The poster is acceptably attractive though it may be a bit messy.	The poster is distractingly messy or very poorly designed. It is not attractive.
Title	Title can be read from 6 ft. away and is quite creative.	Title can be read from 6 ft. away and describes content well.	Title can be read from 4 ft. away and describes the content well.	The title is too small and/or does not describe the content of the poster well.
Mechanics	Capitalization and punctuation are correct throughout the poster.	There is 1 error in capitalization or punctuation.	There are 2 errors in capitalization or punctuation.	There are more than 2 errors in capitalization or punctuation.

RUBRICS TO EVALUATE ORAL PRESENTATION AND SIMILAR ACTIVITIES

CATEGORY	4	3	2	1
Comprehension	Student is able to accurately answer almost all questions posed by classmates about the topic.	Student is able to accurately answer most questions posed by classmates about the topic.	Student is able to accurately answer a few questions posed by classmates about the topic.	Student is unable to accurately answer questions posed by classmates about the topic.
Enthusiasm	Facial expressions and body language generate a strong interest and enthusiasm about the topic in others.	Facial expressions and body language sometimes generate a strong interest and enthusiasm about the topic in others.	Facial expressions and body language are used to try to generate enthusiasm, but seem somewhat faked.	Very little use of facial expressions or body language. Did not generate much interest in topic being presented.
Attire	Business attire, very professional look.	Casual business attire.	Casual business attire, but wore sneakers or seemed somewhat	General attire not appropriate for audience (jeans, t-shirt, shorts).

			wrinkled.	
Preparedness	Student is completely prepared and has obviously rehearsed.	Student seems pretty prepared but might have needed a couple more rehearsals.	The student is somewhat prepared, but it is clear that rehearsal was lacking.	Student does not seem at all prepared to present.
Evaluates Peers	Fills out peer evaluation completely and always gives scores based on the presentation rather than other factors (e.g., person is a close friend).	Fills out almost all of the peer evaluation and always gives scores based on the presentation rather than other factors (e.g., person is a close friend).	Fills out most of the peer evaluation and always gives scores based on the presentation rather than other factors (e.g., person is a close friend).	Fills out most of the peer evaluation but scoring appears to be biased.
Listens to Other Presentations	Listens intently. Does not make distracting noises or movements.	Listens intently but has one distracting noise or movement.	Sometimes does not appear to be listening but is not distracting.	Sometimes does not appear to be listening and has distracting noises or movements.
Time-Limit	Presentation is 5-6 minutes long.	Presentation is 4 minutes long.	Presentation is 3 minutes long.	Presentation is less than 3 minutes OR more than 6 minutes.
Speaks Clearly	Speaks clearly and distinctly all (100-95%) the time, and mispronounces no words.	Speaks clearly and distinctly all (100-95%) the time, but mispronounces one word.	Speaks clearly and distinctly most (94-85%) of the time. Mispronounces no more than one word.	Often mumbles or can not be understood OR mispronounces more than one word.

Props	Student uses several props (could include costume) that show considerable work/creativity and which make the presentation better.	Student uses 1 prop that shows considerable work/creativity and which make the presentation better.	Student uses 1 prop which makes the presentation better.	The student uses no props OR the props chosen detract from the presentation.
Vocabulary	Uses vocabulary appropriate for the audience. Extends audience vocabulary by defining words that might be new to most of the audience.	Uses vocabulary appropriate for the audience. Includes 1-2 words that might be new to most of the audience, but does not define them.	Uses vocabulary appropriate for the audience. Does not include any vocabulary that might be new to the audience.	Uses several (5 or more) words or phrases that are not understood by the audience.
Uses Complete Sentences	Always (99-100% of time) speaks in complete sentences.	Mostly (80-98%) speaks in complete sentences.	Sometimes (70-80%) speaks in complete sentences.	Rarely speaks in complete sentences.
Stays on Topic	Stays on topic all (100%) of the time.	Stays on topic most (99-90%) of the time.	Stays on topic some (89%-75%) of the time.	It was hard to tell what the topic was.
Posture and Eye Contact	Stands up straight, looks relaxed and confident. Establishes eye contact with everyone in the room during the presentation.	Stands up straight and establishes eye contact with everyone in the room during the presentation.	Sometimes stands up straight and establishes eye contact.	Slouches and/or does not look at people during the presentation.

Content	Shows a full understanding of the topic.	Shows a good understanding of the topic.	Shows a good understanding of parts of the topic.	Does not seem to understand the topic very well.
Collaboration with Peers	Almost always listens to, shares with, and supports the efforts of others in the group. Tries to keep people working well together.	Usually listens to, shares with, and supports the efforts of others in the group. Does not cause \"waves\" in the group.	Often listens to, shares with, and supports the efforts of others in the group but sometimes is not a good team member.	Rarely listens to, shares with, and supports the efforts of others in the group. Often is not a good team member.

RUBRICS TO EVALUATE LAB REPORT AND SIMILAR ACTIVITIES

CATEGORY	4	3	2	1
Components of the report	All required elements are present and additional elements that add to the report (e.g., thoughtful comments, graphics) have been added.	All required elements are present.	One required element is missing, but additional elements that add to the report (e.g., thoughtful comments, graphics) have been added.	Several required elements are missing.
Question/Purpose	The purpose of the lab or the question to be answered during the lab is clearly identified and stated.	The purpose of the lab or the question to be answered during the lab is identified, but is stated in a somewhat unclear manner.	The purpose of the lab or the question to be answered during the lab is partially identified, and is stated in a somewhat unclear manner.	The purpose of the lab or the question to be answered during the lab is erroneous or irrelevant.

Drawings/Diagrams	Clear, accurate diagrams are included and make the experiment easier to understand. Diagrams are labeled neatly and accurately.	Diagrams are included and are labeled neatly and accurately.	Diagrams are included and are labeled.	Needed diagrams are missing OR are missing important labels.
Participation	Used time well in lab and focused attention on the experiment.	Used time pretty well. Stayed focused on the experiment most of the time.	Did the lab but did not appear very interested. Focus was lost on several occasions.	Participation was minimal OR student was hostile about participating.
Error Analysis	Experimental errors, their possible effects, and ways to reduce errors are discussed.	Experimental errors and their possible effects are discussed.	Experimental errors are mentioned.	There is no discussion of errors.
Procedures	Procedures are listed in clear steps. Each step is numbered and is a complete sentence.	Procedures are listed in a logical order, but steps are not numbered and/or are not in complete sentences.	Procedures are listed but are not in a logical order or are difficult to follow.	Procedures do not accurately list the steps of the experiment.
Journal/Notebook	Clear, accurate, dated notes are taken regularly.	Dated, clear, accurate notes are taken occasionally.	Dated, notes are taken occasionally, but accuracy of notes might be questionable.	Notes rarely taken or of little use.

Background Sources	Several reputable background sources were used and cited correctly. Material is translated into student's own words.	A few reputable background sources are used and cited correctly. Material is translated into student's own words.	A few background sources are used and cited correctly, but some are not reputable sources. Material is translated into student's own words.	Material is directly copied rather than put into students own words and/or background sources are cited incorrectly.
Summary	Summary describes the skills learned, the information learned and some future applications to real life situations.	Summary describes the information learned and a possible application to a real life situation.	Summary describes the information learned.	No summary is written.
Calculations	All calculations are shown and the results are correct and labeled appropriately.	Some calculations are shown and the results are correct and labeled appropriately.	Some calculations are shown and the results labeled appropriately.	No calculations are shown OR results are inaccurate or mislabeled.
Materials	All materials and setup used in the experiment are clearly and accurately described.	Almost all materials and the setup used in the experiment are clearly and accurately described.	Most of the materials and the setup used in the experiment are accurately described.	Many materials are described inaccurately OR are not described at all.
Conclusion	Conclusion includes whether the findings supported the hypothesis, possible sources	Conclusion includes whether the findings supported the hypothesis and what was learned	Conclusion includes what was learned from the experiment.	No conclusion was included in the report OR shows little effort and reflection.

	of error, and what was learned from the experiment.	from the experiment.		
Analysis	The relationship between the variables is discussed and trends/patterns logically analyzed. Predictions are made about what might happen if part of the lab were changed or how the experimental design could be changed.	The relationship between the variables is discussed and trends/patterns logically analyzed.	The relationship between the variables is discussed but no patterns, trends or predictions are made based on the data.	The relationship between the variables is not discussed.
Safety	Lab is carried out with full attention to relevant safety procedures. The set-up, experiment, and tear-down posed no safety threat to any individual.	Lab is generally carried out with attention to relevant safety procedures. The set-up, experiment, and tear-down posed no safety threat to any individual, but one safety procedure needs to be reviewed.	Lab is carried out with some attention to relevant safety procedures. The set-up, experiment, and tear-down posed no safety threat to any individual, but several safety procedures need to be reviewed.	Safety procedures were ignored and/or some aspect of the experiment posed a threat to the safety of the student or others.
Replicability	Procedures appear to be replicable. Steps are outlined sequentially and are adequately detailed.	Procedures appear to be replicable. Steps are outlined and are adequately detailed.	All steps are outlined, but there is not enough detail to replicate procedures.	Several steps are not outlined AND there is not enough detail to replicate procedures.

Scientific Concepts	Report illustrates an accurate and thorough understanding of scientific concepts underlying the lab.	Report illustrates an accurate understanding of most scientific concepts underlying the lab.	Report illustrates a limited understanding of scientific concepts underlying the lab.	Report illustrates inaccurate understanding of scientific concepts underlying the lab.
Experimental Design	Experimental design is a well-constructed test of the stated hypothesis.	Experimental design is adequate to test the hypothesis, but leaves some unanswered questions.	Experimental design is relevant to the hypothesis, but is not a complete test.	Experimental design is not relevant to the hypothesis.
Variables	All variables are clearly described with all relevant details.	All variables are clearly described with most relevant details.	Most variables are clearly described with most relevant details.	Variables are not described OR the majority lack sufficient detail.
Appearance/Organization	Lab report is typed and uses headings and subheadings to visually organize the material.	Lab report is neatly handwritten and uses headings and subheadings to visually organize the material.	Lab report is neatly written or typed, but formatting does not help visually organize the material.	Lab report is handwritten and looks sloppy with cross-outs, multiple erasures and/or tears and creases.
Experimental Hypothesis	Hypothesized relationship between the variables and the predicted results is clear and reasonable based on what has been studied.	Hypothesized relationship between the variables and the predicted results is reasonable based on general knowledge and observations.	Hypothesized relationship between the variables and the predicted results has been stated, but appears to be based on flawed logic.	No hypothesis has been stated.

Data	Professional looking and accurate representation of the data in tables and/or graphs. Graphs and tables are labeled and titled.	Accurate representation of the data in tables and/or graphs. Graphs and tables are labeled and titled.	Accurate representation of the data in written form, but no graphs or tables are presented.	Data are not shown OR are inaccurate.
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