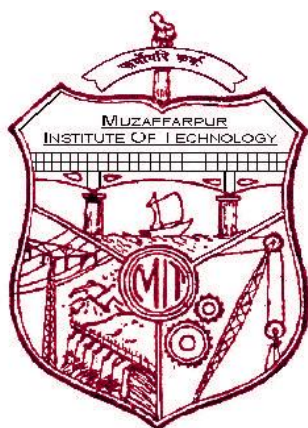


MIT MUZAFFARPUR



COURSE FILE OF

Theory & Practices of preservation and pre tanning processes

(071301)



Faculty Name:

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**ASSISTANT PROFESSOR, DEPARTMENT OF LEATHER
TECHNOLOGY**



विज्ञान एवं प्रावैधिकी विभाग
Department of Science and Technology
Government of Bihar

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VISION STATEMENT

- To emerge as a national leader in graduate level studies in all sub areas of leather field and to make significant contribution to the development of the society, industry, nation and the world.

MISSION STATEMENT

- Educate leather technology students to produce quality engineers who serve leading firms and different sectors of the industry and can work in multi-disciplinary environment to anticipate and address evolving challenges of the 21st century in tanning and footwear industry.
- Impart high performance knowledge in leather and footwear sector that are economic and environment friendly.
- To establish national leadership and provide technological support to the Indian leather industry.
- Improve fundamental knowledge of inter relationship between the built environment and natural systems.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

After successful completion of program, graduates will be able to

PEO1: Work in the leather, chemical and footwear industries.

PEO2: Pursue higher studies.

PEO3: Contribute in teaching, research and other developmental activities of Leather technology and its allied fields.

PEO4: Work in the multicultural and multidisciplinary groups for the sustainable development and growth of leather industry projects and profession.

PROGRAMME OUTCOMES (PO)

Students who complete the B.E. degree in leather technology will be able to:

1. An ability to apply knowledge of mathematics, science, and engineering,
2. The ability to conduct laboratory experiments and to critically analyze and interpret experimental data.
3. The ability to perform design of leather products by means of design experiences integrated throughout the professional component of the curriculum.

4. An ability to function on teams, that must integrate contributions from different areas of leather technology towards the solution of multi-disciplinary projects.
5. An ability to identify, formulate, and solve Leather technology problems.
6. An understanding of professional practice issues in leather technology including professional and ethical responsibility.
7. An ability to write and speak effectively.
8. The broad education necessary to understand the impact of leather technology solutions in a global and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning,
10. An ability to use the techniques, skills, and modern tools necessary for leather technology practices.
11. Possess a thorough understanding of techniques that are appropriate to environment and country.
12. Possess ability to estimate costs, estimate quantities and evaluate materials for leather manufacturing.

COURSE OBJECTIVE AND COURSE OUTCOMES:

| | | | |
|---|--|-----------------------|---|
| Institute / College Name : | MUZAFFARPUR INSTITUTE OF TECHNOLOGY | | |
| Program Name | B. Tech. Leather Technology | | |
| COURSE CODE | 071301 | | |
| COURSE NAME | Theory & Practices of preservation and pre tanning processes | | |
| Lecture / Tutorial / Practical (per week): | 3 – 0- 3 | Course Credits | 5 |
| Course Coordinator Name | MITHILESH KUMAR RAI | | |

Course objective:

The objective of this course is to provide the knowledge about pre tanning operation. To introduce the theory of Preservation of Hides and Skins operation. To give knowledge about soaking operation and soaking agents. To give knowledge about liming, deliming, bating and pickling operation.

Course outcomes (CO):

CO1: Became familiar with different pre tanning operation and application of these operation for leather manufacturing.

CO2: Learn the control of soaking operation and selection of suitable soaking for economical point of view.

CO3: Understand the mechanism of liming and unhairing operation.

CO4: Learn about the bating and pickling operation.

MAPPING OF COs AND POs

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | ✓ | | ✓ | ✓ | | | | | | | | |
| CO2 | ✓ | ✓ | ✓ | ✓ | | | | | | | | |
| CO3 | ✓ | | ✓ | ✓ | ✓ | | | | | | | |
| CO4 | ✓ | ✓ | | ✓ | ✓ | | | | | | | |

Correlation level: 1- slight (Low) 2- moderate (Medium) 3-substantial (High)

COURSE SYLLABUS:

| Topics | Number of Lectures | Weightage (%) |
|--|--------------------|---------------|
| Preservation of Hides and Skins : Principles and practice involved in long and short term preservation techniques for hides and skin, Preservation, defects. | 5 | 12 |
| PRETANNING PROCESSES : Soaking :- Physico-chemical explanation of wetting, objectives materials, methods and different controls in soaking operation | 4 | 10 |
| Liming :- Chemistry of Unhairing, Unhairing by different methods, Objectives of liming, Effects of liming in collagen, controls in liming operation to achieve different physical | 6 | 15 |

| | | |
|---|----|----|
| properties of leather | | |
| Deliming and Drenching :- Objectives, Principles and controls of deliming and drenching. | 3 | 8 |
| Bating :- Chemistry of proteolytic enzymes used for bating, Necessity of bating, its necessity and controls for desired properties of leather | 5 | 12 |
| Pickling :- Acid binding capacity of collagen, use of organic acids or salts in pickling, its necessity and controls, concept of De-pickling | 4 | 10 |
| Degreasing :- Objectives and necessity of Degreasing, different degreasing systems and methods. | 3 | 7 |
| Cleaner processing practices in beam house Salt free curing option, Sulfide free unhairing system, ammonia free deliming, salt free pickling system, eco friendly degreasing system, strategies to bring down BOD, COD and TDS of tannery effluents | 10 | 25 |
| | | |

Practical

| List of practical | Number of week | Weightage (%) |
|--|-----------------------|----------------------|
| Preservation of raw goat skin (wet salting method) | 1 | 14 |
| Soaking of previous preserved goat skin | 1 | 14 |
| Processing of liming operation | 1 | 14 |
| Processing of deliming operation | 2 | 28 |
| Processing of bating operation | 1 | 14 |
| Processing of pickling operation | 1 | 14 |

MUZAFFARPUR INSTITUTE OF TECHNOLOGY
B.Tech. 3th Semester (2017 Batch) TIME TABLE

| 3 th SEMESTER Leather technology | | | | | ROOM NO. LB-3 | | | |
|---|--------------|-----------------|-----------------|-----------------|---------------|---------------------|-------------|-------------|
| | 9:00 - 10:00 | 10:00 - 11:00 | 11:00- 12:00 | 12:00 – 1:00 | 1:00 – 2:00 | 2:00- 3:00 | 3:00 - 4:00 | 4:00 – 5:00 |
| MON | | | | | R | | | |
| TUES | | | | T&P of PP (MKR) | E | | | |
| WED | | | | | C | T&P of PP (MKR) Lab | | |
| THUR | | T&P of PP (MKR) | | | E | | | |
| FRI | | | T&P of PP (MKR) | | S | | | |
| SAT | | | | | S | | | |
| FACULTY NAME:MKR: MITHILESH KUMAR RAI | | | | | | | | |

STUDENT LIST:

| Sl. No. | College Roll No. | AKU Reg. No. | Name |
|----------------|-------------------------|---------------------|-------------------|
| 1 | 16LT12 | 16107107002 | ABHINASH KUMAR |
| 2 | 16LT13 | 16107107006 | KUMARI RINKI |
| 3 | 17LT12 | 17107107001 | YATISH KUMAR DEEP |
| 4 | 17LT15 | 17107107002 | VISHWAJEET KUMAR |
| 5 | 17LT14 | 17107107003 | ADITYA RAJ |
| 6 | 17LT09 | 17107107004 | SHREYANSH SOURABH |
| 7 | 17LT16 | 17107107005 | VIJAYA BHARTI |
| 8 | 17LT10 | 17107107006 | SHAGUFTA FATIMA |
| 9 | 17LT13 | 17107107007 | ABHILASHA KUMARI |
| 10 | 17LT11 | 17107107008 | RAGINI SWARAJ |
| 11 | 17LT17 | 17107107009 | ABHISHEK KUMAR |
| 12 | 17LT08 | 17107107010 | ABHISHEK KUMAR |
| 13 | 17LT18 | 17107107011 | ABHAY KUMAR |

Text Books:**TB1:** Introduction to the Principles of Leather Manufacture by -S.S Dutta**TB2:** Theory and practice of leather Manufacture By K.T.Sarkar**COURSE PLAN**

| Topic No. | Topic | No. of Lecture/ lecture no. | Text book |
|------------------|---|--|------------------|
| 1. | Preservation of Hides and Skins | 5 | TB1, TB2 |
| | Principles and practice involved in long and short term preservation techniques for hides and skin | 1-4 | |
| | Preservation, defects | 5-5 | |
| | | | |
| 2. | Pretanning processes Soaking, | 4 | TB1, TB2 |
| | Physico-chemical explanation of wetting | 6-7 | |
| | objectives ,materials, methods and different controls in soaking operation | 8-9 | |
| | | | |
| 3 | Liming | 6 | TB1, TB2 |
| | Objectives of liming, Effects of liming in collagen, controls in liming operation to achieve different physical properties of leather | 10-11 | |
| | Chemistry of Unhairing | 12-13 | |
| | Unhairing by different methods | 14-15 | |
| | | | |
| 4 | Deliming and Drenching | 3 | TB1, TB2 |
| | Objectives | 16-16 | |

| | | | |
|----------|--|-----------|-----------------|
| | Principles and controls of delimiting and drenching | 17-18 | |
| 5 | Bating , | 5 | TB1, TB2 |
| | Chemistry of proteolytic enzymes used for bating | 19-20 | |
| | Necessity of bating | 21-22 | |
| | Its necessity and controls for desired properties of leather | 23-23 | |
| 6 | Pickling | 4 | TB1, TB2 |
| | Acid binding capacity of collagen, | 24-24 | |
| | Use of organic acids or salts in pickling | 25-26 | |
| | Its necessity and controls, concept of De-pickling | 27-27 | |
| 7 | Degreasing | 3 | TB1, TB2 |
| | Objectives and necessity of Degreasing | 28-28 | |
| | different degreasing systems and methods | 29-30 | |
| 8 | Cleaner processing practices in beam house | 10 | TB1, TB2 |
| | Salt free curing option | 31-32 | |
| | Sulfide free unhairing system, ammonia free delimiting | 33-33 | |
| | salt free pickling system | 34-35 | |
| | eco friendly degreasing system | 36-37 | |
| | strategies to bring down BOD | 38-39 | |

| | | | |
|--|----------------------------------|-----------|--|
| | COD and TDS of tannery effluents | 40-40 | |
| | Total Lectures | 40 | |

DETAILS OF ASSIGNMENTS:

| S.No. | Assignment | Topic No. |
|-------|--------------|-----------|
| 1 | Assignment 1 | 1,2 |
| 2 | Assignment 2 | 3,4 |
| 3 | Assignment 3 | 5,6 |
| 4 | Assignment 4 | 7,8 |

Theory & Practices of preservation and pre-tanning operations (071301)

Assignment -1

- Q.1 Explain the different methods of preservation operation of hide and skin.
- Q.2 What is the objective of pre tanning operation? Explain the theory of wetting agent.
- Q.3 Write down the control of soaking operation.

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Assignment -2

- Q.1 Explain the chemistry of Unhairing of hide and skin. Write down some unhairing agent which is used in leather industry.
- Q.2 What is effect of liming on hide and skin.
- Q.3 What is objective of liming operation and control of liming during processing..

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Assignment -3

- Q.1 Write down the objective of deliming operation.
- Q.2 What do you mean by drenching process.

Q.3 what is the objective of bating operation? Write down the mechanism of bating by proteolytic enzyme.

Q.4 What is the objective of pickling operation? What is the need of depickling operation?

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Assignment -4

Q.1 Explain the term BOD. Write down the methods for reduction of BOD in leather industry.

Q.2 What do you mean by COD.

Q.3 write down the method for Salt free curing operation.

Question bank;

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B.Tech (Leather Technology)
3rd Semester Exam., 2017

THEORY AND PRACTICES OF
PRESERVATION AND PRETANNING
PROCESSES

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Write in short on any *seven* of the following :

2×7=14

- (a) Wetting
- (b) Khari salt
- (c) Freeze drying
- (d) Wetting agents
- (e) Soaking
- (f) Curing
- (g) Drenching
- (h) Depickling
- (i) Deliming

8AK/37: 2500

(Turn Over)

(2)

2. What is liming? What are its objectives? What is pelt and lime blast? Explain the chemistry of unhairing. 14
3. Explain the principles and controls of deliming. 14
4. What are enzymes? Discuss the chemistry of proteolytic enzymes. 14
5. What is bating? Write about its control and necessity for desired properties. 14
6. What is pickling? What is its requirement? 14
7. Write down the objectives and necessity of degreasing, different degreasing systems and methods. 14
8. Discuss cleaner processing techniques in beamhouse operations. 14
9. Write a note on different preservation techniques for hides and skins. 14
