**MIT MUZAFFARPUR**

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**COURSE FILE OF**

**PRINCIPLES OF POST-TANNING OPERATION**

**(071610)**



**Faculty Name:**

**SANJAY KUMAR CHOUDHARY**

**ASSISTANT PROFESSOR, DEPARTMENT OF LEATHER TECHNOLOGY**

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**VISION STATEMENT**

* To emerge as a national leader in graduate level studies in all sub areas of leather technology and to make significant contribution to the development of the society.

**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 and chemical and footwear field.

**PEO2:** Contribute in teaching, research and other developmental activities of Leather technology and its allied fields.

**PEO3:** 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 in leather 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 industries 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 fields 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** | 071610 |
| **COURSE NAME** | **PRINCIPLE OF POST-TANNING OPERATION** |
| **Lecture / Tutorial / Practical (per week):** | 3 – 0- 3 | **Course Credits** | 5 |
| **Course Coordinator Name** | SANJAY KUMAR CHOUDHARY |

**Course objective:**

The objective of this course is to have a clear concept of the chemistry and mechanism of plasticization, pigments, multiple coating and water proofing techniques as well as upgrading technologies in finishing in various leather industries.

 **Course outcomes (CO):**

**CO1**: Develop knowledge about post tanning operation in leather manufacturing.

**CO2**: To gain knowledge about re-tanning syntans on leather.

**CO3**: To develop his analyzing capacity to consequences of effects on changing of chemical percentage in different operation.

**MAPPING OF COs AND POs**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 |  3 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  2 |
| CO2 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

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

**COURSE SYLLABUS:**

|  |  |  |
| --- | --- | --- |
| **Topics** | **Number of Lectures** | **Weightage (%)** |
| **1 NEUTRALISATION :-**Its objectives, necessities and control to achieve desired uptake of dyes and fat liquors. | **8** | 20 |
|  |  |  |
| **2. BLEACHING :-**Definition, Theory, Mechanism of chemical bleaching, classification and application of different methods of bleaching to leathers. | **06** | 15 |
|  |  |  |
| **3 DYEING :-**Classification of dyes based on their chemical nature and also according to their application, Theory of colour, Manual colour matching, Theory and mechanism of dyeing, Chemistry and application of dyeing auxiliaries such as levelling agents, wet ting agents, dispersing agents and dye fixative, Metal complex dye. | **05** | 15 |
|  |  |  |
| 4 **FAT LIQUORING :-**Theory of stability of Emulsion (Surface tension theories and Electrical theories), Fatliquor based on natural oils, their chemistry and preparation, Oxidation, Sulphation, Sulphonation, Bisulphitation and their properties, Synthetic Fat liquor :-Preparation and Properties, Principles and objectives of fatliquoring, Differences between synthetic and natural fat & oils concept of curring..  | **05** | 15 |
|  |  |  |
| 5. **RETANNING SYNTANS AND RETANNING :-**Classification of retanning syntans, Tanning power of retanning syntan, Dipole theory of syntan tanning, General method of manufacture of aromatic syntans their general properties, Objective of retanage, Effect of different retanning agents on properties of leather principle of bondage of retanning material.. . | **05** | **15** |
| 6. **THEORY OF LEATHER DRYING :-**principles of energy and mass transfer, Physio-Chemical aspect of leather drying,Different methods of drying followed in leather Industry | **05** | **10** |
|  |  |  |
| **Total no. of lectures/weightage** | **40** | **100 %** |

**MUZAFFARPUR INSTITUTE OF TECHNOLOGY**

**B.Tech. 8TH Semester (2015 Batch) PROVISIONAL TIME TABLE WITH EFFECT FROM 10.07.2018**

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| **7thSEMESTER Leather technology ROOM NO. LB-1** |
|  | **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****E****C****E****S****S** |  |
| **TUES** |  |   |  |  |  |
| **WED** |  |  |  |  |  |
| **THUR** |  |  |  |  |  |
| **FRI** |  |  |  |  |  |  |  |
| **SAT** |  |  |  |  |  |  |  |
| FACULTY NAME: SKC: SANJAY KUMAR CHOUDHARYPAPER NAME: PPTO: PRINCIPLE OF POST-TANNING OPERAION.  |

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**STUDENTS LIST:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **College Roll No.** |  | **NAME** |
| 1 | 15LT01 |  | MANJAY KUMAR |
| 2 | 15LT02 |  | ANSHU PRIYA |
| 3 | 15LT03 |  | MD. AQUIB JAVED |
| 4 | 15LT04 |  | DIVYANSHU |
| 5 | 15LT05 |  | SAMRIDDHI |
| 6 | 15LT06 |  | ANKIT KUMAR |
| 7 | 15LT07 |  | VIKASH KUMAR |
| 8 | 15LT08 |  | PRASHANT KUMAR |
| 9 | 15LT09 |  | CHANDRAKANT PRASAD |

|  |  |  |  |
| --- | --- | --- | --- |
| 10 | 15LT10 |  | SARIKA KUMARI |
| 11 | 15LT11 |  | ARVIND KUMAR |
|  |  |  |  |

NAME LIST OF B.TECH 2016 BATCH

LEATHER TECHNOLOGY BRANCH

|  |  |  |  |
| --- | --- | --- | --- |
| SL.NO. | ROLL NO. | AKU REG.NO. | NAME |
| 1 | 16LT08 | 16107107001 | ARCHANA KUMARI |
| 2 | 16LT20 | 16107107003 | RAVINDRA RAM |
| 3 | 16LT15 | 16107107004 | SURBHI SAURAV |
| 4 | 16LT11 | 16107107005 | AMAN SHRIVASTAVA |
| 5 | 16LT05 | 16107107007 | VIKASH KUMAR |
| 6 | 16LT19 | 16107107008 | DEEPSHI |
| 7 | 16LT16 | 16107107009 | RAKESH KUMAR SAH |
| 8 | 16LT14 | 16107107010 | RAKESH KUMAR |
| 9 | 16LT17 | 16107107011 | KRITIKA VAGMI |
|  |  |  |  |

NAME LIST OF B.TECH 2017 BATCH

LEATHER TECHNOLOGY BRANCH

|  |  |  |  |
| --- | --- | --- | --- |
| SL. NO. | ROLL NO. | AKU REG. NO. | NAME |
| 1 | 17LT15 | 17107107002 | VISHWAJEET KUMAR |
| 2 | 17LT14 | 17107107003 | ADITYA RAJ |
| 3 | 17LT16 | 17107107005 | VIJAYA BHARTI |
| 4 | 17LT10 | 17107107006 | SHAGUFTA FATIMA |
| 5 | 17LT13 | 17107107007 | ABHILASHA KUMARI |
| 6 | 17LT11 | 17107107008 | RAGINI SWARAJ |
| 7 | 17LT17 | 17107107009 | ABHISHEK KUMAR |
| 8 | 17LT08 | 17107107010 | ABHISHEK AMAN |
| 9 | 17LT18 | 17107107011 | ABHAY KUMAR |
| 10 | 18 LE LT(01) | 1710710700 | VIKASH KUMAR |
|  |  |  |  |

**Text Books:**

**TB1**:. An Introduction To The Principles Of Leather Manufacture By S.S.Dutta

**COURSE PLAN**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic No.** | **Topic** | **No. of Lecture/ lecture no.** | **Text book** |
| 1.
 | **NEUTRALISATION :-**Its objectives, necessities and control to achieve desired uptake of dyes and fat liquors.**03**. | **08** | **TB1** |
|  |  | 1-4 |  |
|  |   | 5-8 |  |
|  **2.** |  **BLEACHING :-**Definition, Theory, Mechanism of chemical bleaching, classification and application of different methods of bleaching to leathers. | **06** |  |
|  |  | 9-12 | **TB1** |
|  |   |  13-14 |  |
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|  |  |  |  |
| **3.** |  **DYEING :-**Classification of dyes based on their chemical nature and also according to their application, Theory of colour, Manual colour matching, Theory and mechanism of dyeing, Chemistry and application of dyeing auxiliaries such as levelling agents, wet ting agents, dispersing agents and dye fixative, Metal complex dye. | 15-17 | **TB1** |
|  |  | 17-19 |  |
| **4.** |  **FAT LIQUORING :-**Theory of stability of Emulsion (Surface tension theories and Electrical theories), Fatliquor based on natural oils, their chemistry and preparation, Oxidation, Sulphation, Sulphonation, Bisulphitation and their properties, Synthetic Fat liquor :-Preparation and Properties, Principles and objectives of fatliquoring, Differences between synthetic and natural fat & oils concept of curring. | 20-22 |  |
|  | .  | 22-24 | **TB1** |
|  **5.** |  **RETANNING SYNTANS AND RETANNING :-**Classification of retanning syntans, Tanning power of retanning syntan, Dipole theory of syntan tanning, General method of manufacture of aromatic syntans their general properties, Objective of retanage, Effect of different retanning agents on properties of leather principle of bondage of retanning material. |  25-27 |  |
|  |  | 27-29 |  |
|  **6.** |  **THEORY OF LEATHER DRYING :-**principles of energy and mass transfer, Physio-Chemical aspect of leather drying,Different methods of drying followed in leather Industry | 30-32 |  |
|  | .  | 32-34 | **TB1** |
|  |  |  35-37 |  |
|  |  | 38-40 |  |
|  |  |  |  |
|  | **Total Number of Lectures** | **40** |  |
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**DETAIL OF ASSIGNMENTS:**

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

**ASSIGNMENT-1**

1. Explain the process of neutralization.

2. What is synthetic fat liquor?

**ASSIGNMENT-2**

1. What is the metal complex dye?

2. State the use of sperm oil.

**ASSIGNMENT-3**

1. What is chromophores and auxochromes?

2. explain the saponification of oil?