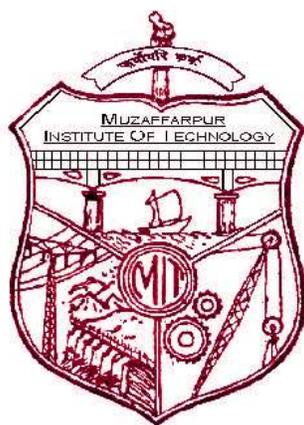


MIT MUZAFFARPUR



COURSE FILE OF Principle of Organic Tannage(071507)



Faculty Name:
MANIKANT KUMAR
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 and chemical and footwear field.

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 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	071507		
COURSE NAME	Principal of Organic Tannage		
Lecture / Tutorial / Practical (per week):	3 – 0- 0	Course Credits	3
Course Coordinator Name	Manikant Kumar		

Course Objective:

The objective of this course is to have a clear concept of vegetable and synthetic tannin materials, reactions of vegetable tannins with collagen, principal of vegetable tanning ,chemistry and mechanism of aldehyde tanning, combination tanning.

Course Outcomes (CO):

CO1: Became able to understand the chemistry of vegetable tanning. Hydrolysable and condensed types of tanning .Principle of vegetable tanning etc.

CO2: Became able to know chemistry and properties of sytans, role of tan and non tan ratio.

CO3: Became able to perform vegetable and retanning process.

CO4: Became able to analyze and solve various process problems of vegetable tanning.

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 (%)
<p>Introduction</p> <p>Tannins, Classification of Vegetable tannins – Structural aspects, Analysis of Chemistry of Hydrolysable & Condensed tannins, Manufacture of vegetable tannin extract use of additive for product notification, Reactions of vegetable tannins with collagen, Principle of vegetable tanning, Factors affecting tannin diffusion & factors affecting tannin fixation with collagen, Principle of Rapid tanning methods.</p>	10	25
<p>Synthetic tannins –</p> <p>Chemistry & Multifunctional properties of syntans, Nontans in synthetic tannins, General Manufacturing methods of Phenol, Formaldehyde Naphthalene, Formaldehyde and Naphthol, Formaldehyde condensates, Supra Syntans, Use of Syntans for the Manufacture of various Leathers & for chemical modifications for specific objectives, use of Lignosulfonic acids in Leather processing.</p>	10	25
<p>Resin Syntans –</p> <p>Urea, Formaldehyde & Melamine, Formaldehyde condensates as tanning agents for leather, their chemistry & structure, Property, Relationship, Polyacrylates & Polyurethanes as Resin tanning agent Principles and their use.</p>	6	15

<p>Aldehydes as tannins</p> <p>Formaldehyde and other mono, difunctional aldehydes their chemistry, Structure and general properties, Reaction of aldehydes with different functional groups of protein. Oil and quinone tannage.</p>	6	15
<p>Combination tannages</p> <p>Deficiencies of single tannage, Machanistic classification of tannages. All chrome based combination tannages, semi-chrome & semi – alum tannages.</p>	8	20

MUZAFFARPUR INSTITUTE OF TECHNOLOGY
B.Tech. 5th Semester (2016 Batch) PROVISIONAL TIME TABLE WITH EFFECT
FROM 12.02.2018

5 th SEMESTER 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			
TUES					E			
WED		POT(MK)			C			
THUR					E			
FRI		POT(MK)			S			
SAT		POT(MK)			S			
FACULTY NAME: AK: MANIKANT KUMAR PAPER NAME: POMT: PRINCIPLES OF ORGANIC TANNAGE								

STUDENTS LIST:

Sl. No.	College 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

Text Books:

TB1.: Principle of Leather Manufacture by S.S.Dutta

COURSE PLAN

Topic No.	Topic	No. of Lecture/ lecture no.	Text book
1.	Vegetable Tannins	10	TB1
	Classification of Vegetable tannins – Structural aspects	1-1	
	Chemistry of Hydrolysable & Condensed tannins,	2-3	
	Reactions of vegetable tannins with collagen, Principle of vegetable tanning,	4-5	
	Factors affecting tannin diffusion & factors affecting tannin fixation with collagen	6-8	
	Analysis of Manufacture of vegetable tannin extract use of additive for product notification	9-9	
	Principle of Rapid tanning methods	10-10	

2.	Synthetic tannins –	10	TB1
	Chemistry & Multifunctional properties of syntans, Nontans in synthetic tannins	11-14	
	General Manufacturing methods of Phenol, Formaldehyde Naphthalene, Formaldehyde and Naphthol, Formaldehyde condensates,	15-17	
	Supra Syntans, Use of Syntans for the Manufacture of various Leathers & for chemical modifications for specific objectives, use of Lignosulfonic acids in Leather processing.	18-20	TB1

3.	Resin Syntans –		TB1
	Urea, Formaldehyde & Melamine, Formaldehyde condensates as tanning agents for leather, their chemistry & structure,	21-23	
	Property, Relationship, Polyacrylates & Polyurethanes as Resin tanning agent Principles of their use.	24-26	
4.	Aldehydes as tannins –		TB1
	Formaldehyde and other mono, difunctional aldehydes their chemistry, Structure and general properties,	27-29	
	Reaction of aldehydes with different functional groups of protein oil, and quinone tannage.	30-32	
5.	Combination tannages –		TB1
	Deficiencies of single tannage, classification of tannages.	33-35	
	combination tannages, semi-chrome & semi – alum tannages.	36-40	
	Total Number of Lectures	40	

DETAIL OF ASSIGNMENTS:

S.No.	Assignment	Topic No.
1	Assignment 1	1
2	Assignment 2	2,3
3	Assignment 3	1,2
4	Assignment 4	4,5

Principles of Organic Tannage (071507)

Assignment -1

- Q.1 Describe tannins. Explain classification of tannins.
- Q.2 Explain reaction mechanism of vegetable tannins with collagen..

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Assignment - 2

- Q.1 Define Syntans. Explain different factors that affect the tanning capacity of syntans.
- Q.2 Explain chemistry and properties of Phenol formaldehyde syntans.

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Assignment -3

- Q. 1 Explain Factors affecting tannin diffusion & tannin fixation with collagen.
- Q. 2 Define tan/nontan ratio. How these ratio affects the vegetable tanning process?

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Assignment -4

- Q.1 Explain mechanism of Formaldehyde tanning.
- Q.2 Why combination tannage is required. Differentiate between chrome retan and semi chrome process.

