# GUJARAT TECHNOLOGICAL UNIVERSITY

**BRANCH NAME: TEXTILE PROCESSING**
**SUBJECT NAME: TECHNOLOGICAL ADVANCES IN TEXTILE PROCESSING**
**SUBJECT CODE:** 2182802
**B.E. 8thSEMESTER**

**Type of course:** Textile Processing Engineering

**Prerequisite:** Zeal to learn the subject

**Rationale:** This subject includes all the latest technologies of the research field. Major technologies are available for dyeing and finishing of textiles. The technical and instrumentation of many latest types of equipment are also involved in the same. Ecological process i.e. application of bio technology is also the core of this course.

**Teaching and Examination Scheme:**

| Teaching Scheme | | | Credits | Examination Marks | | | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|---|---|
| L | T | P | C | Theory Marks | | | Practical Marks | | | |
| | | | | ESE (E) | PA(M) | | PA (V) | | PA (I) | |
| | | | | | PA | ALA | ESE | OEP | | |
| 3 | 0 | 0 | 3 | 70 | 20 | 10 | 00 | 00 | 00 | 100 |

**L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment; OEP-Open Ended problem; AL-Active learning.**

**Content:**

| Sr. No. | Content | Total Hrs. | Weightage (%) |
|---|---|---|---|
| **1** | Technological Advances in Dyeing Process such as Electrochemical Dyeing, Space Dyeing, Foam Dyeing, Super Critical Carbon Dioxide, Solvent Dyeing, etc. | 15 | 27 |
| **2** | Applications of Biotechnology in Various Unit Operations of Wet Processing | 10 | 18 |
| **3** | Applications of Micro encapsulation in Various Textile Processing Operations | 9 | 16 |
| **4** | Applications of Ultra Sound and Plasma Technology in Textile Processing | 8 | 14 |
| **5** | Applications of Nanotechnology in Textile Processing | 7 | 12.5 |
| **6** | Recent Developments in Technological Advances | 7 | 12.5 |

**Suggested specification table with marks (Theory):**

| Distribution of Theory Marks | | | | | |
|---|---|---|---|---|---|
| R Level | U Level | A Level | N Level | E Level | C Level |
| 08 | 10 | 15 | 13 | 10 | 14 |

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)**

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Reference Books:**


1. Handbook of Natural Colorants - Thomas Bechtold & Rita Mussak
2. Plasma: Spray Coating - Robert B. Heimann
3. Applied Surfactants: Principles and Applications - Tharwat F. Tadros
4. Biologically Inspired Textiles - A. Abbott & M. Ellison
5. Introduction to Nanotechnology - Charles P. Poole, Jr. Frank & J. Owens
6. Encyclopaedia of Textile Finishing - Hans-Karl Rouette
7. Textile Processing with Enzymes - A. Cavaco, Paulo & G. M. Gübitz


**Course outcome:**

After learning the content of the subject the students will be able to:

1. Utilise the latest technologies applicable in various processes.
2. Get aware of latest technologies running in the universe.
3. Implement nano technology in various fields of textiles.
4. Compare the results obtained through advanced technology with the conventional.
5. Divert towards the bio technology concerning the ecological aspects required.
6. Understand the concept and applications of micro encapsulation.

**List of Open Source Software/learning website:**

1. http://www.wto.org/
2. http://www.wtin.com/
3. http://textileinformation.blogspot.in/
4. http://www.fibre2fashion.com/
5. http://textilelearner.blogspot.in/
6. http://www.fashion-era.com/

**ACTIVE LEARNING ASSIGNMENTS**: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.