



# ODISHA UNIVERSITY OF TECHNOLOGY AND RESEARCH

Techno Campus, Mahalaxmi Vihar, Ghatikia, Bhubaneswar-751029.

## Syllabus Structure (Effective from 2023-24)

**School/ Department: Department of Textile Engineering**  
**Course: M.Tech., Programme: Textile and Chemical Processing (TCP),**  
**Duration: 2 years (Four Semesters)**

### Abbreviation used:

|    |                          |     |                                |    |                      |
|----|--------------------------|-----|--------------------------------|----|----------------------|
| AC | Audit course             | LC  | Lab Course                     | PA | Practical Assessment |
| PC | Professional Core        | PR  | Project/ Practical/ Internship | L  | Lecture              |
| PE | Professional Elective    | SE  | Seminar/ Expert Lecture/ Etc.  | T  | Tutorial             |
| OE | Open Elective            | IA* | Internal Assessment            | P  | Practical            |
| MC | Mandatory/ Common Course | EA  | End-Semester Assessment        |    |                      |

\*Internal Assessment Mark (30 marks) consists of (i) Mid Semester (20 marks), (ii) Quiz/ Assignment (10 marks)

### Subject Code Format:

| A1                                       | A2 | B3   | C4           | C5                                 | C6 |
|--|----|--|--------------|------------------------------------|----|
| <b>School/ Dept. (Offering)</b>          |    | <b>Level</b>                                   | <b>0: AC</b> | <b>Serial Number (01 to 99)</b>    |    |
| <b>BH:</b> Basic Sciences and Humanities |    | <b>1:</b> UG/ Int. Msc. (1 <sup>st</sup> Year) | <b>1: PC</b> | 01/ 03/.../ 19: Odd Sem. (TCP)     |    |
| <b>CS:</b> Computer Sciences             |    | <b>2:</b> UG/ Int. Msc. (2 <sup>nd</sup> Year) | <b>2: PE</b> | 21/ 23/.../ 39: Odd Sem. (TE)      |    |
| <b>EE:</b> Electrical Sciences           |    | <b>3:</b> UG/ Int. Msc. (3 <sup>rd</sup> Year) | <b>3: OE</b> | 41/ 43/.../ 59: Odd Sem. (Prog-3)  |    |
| <b>EI:</b> Electronic Sciences           |    | <b>4:</b> UG/ Int. Msc. (4 <sup>th</sup> Year) | <b>4: MC</b> | 61/ 63/.../ 79: Odd Sem. (Prog-4)  |    |
| <b>IP:</b> Infrastructure and Planning   |    | <b>5:</b> UG/ Int. Msc. (5 <sup>th</sup> Year) | <b>5: LC</b> | 81/ 83/.../ 99: Odd Sem. (Prog-5)  |    |
| <b>MS:</b> Mechanical Sciences           |    | <b>6:</b> PG (1 <sup>st</sup> Year)            | <b>6: PR</b> | 02/ 04/.../ 20: Even Sem. (TCP)    |    |
| <b>BT:</b> Biotechnology                 |    | <b>7:</b> PG (2 <sup>nd</sup> Year)            | <b>7: SE</b> | 22/ 24/.../ 40: Even Sem. (TE)     |    |
| <b>TE:</b> Textile Engineering           |    | <b>8:</b> Ph.D.                                | <b>8:</b>    | 42/ 44/.../ 60: Even Sem. (Prog-3) |    |
|  |    |  | <b>9:</b>    | 62/ 64/.../ 80: Even Sem. (Prog-4) |    |
|  |    |  |              | 82/ 84/.../ 98: Even Sem. (Prog-5) |    |

### 1<sup>st</sup> Semester

| Sl. No.      | Subject Type   | Subject Code | Subject Name  | Teaching Hours |          |          | Credit    | Maximum Marks |            |            |            |
|--------------|----------------|--------------|---|----------------|----------|----------|-----------|---------------|------------|------------|------------|
|              |                |              |   | L              | T        | P        |           | IA            | EA         | PA         | Total      |
| 1            | PC 1           | TE6121       | Advanced Chemical Processing                          | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
| 2            | PC 2           | TE6123       | Chemistry of Dyes and Textile Chemicals               | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
| 3            | PE 1 (Any One) | TE6221       | Characterization of Polymer and Fibrous Material CPFM | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
|              |                | TE6223       | High Performance Fibers                               |                |          |          |           |               |            |            |            |
| 4            | MC 1           | BS6401       | Mathematical Methods in Engineering                   | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
| 5            | MC 2           | MS6403       | Research Methodology and IPR                          | 2              | 0        | 0        | 2         | 30            | 70         | -          | 100        |
| 6            | LC 1           | TE6521       | Evaluation of Textile Material Lab                    | 0              | 0        | 4        | 2         | -             | -          | 100        | 100        |
| 7            | LC 2           | TE6523       | Textile Chemical Processing Lab-I                     | 0              | 0        | 4        | 2         | -             | -          | 100        | 100        |
| 8            | AC 1           | BH6001       | English for Research Paper Writing                    | 2              | 0        | 0        | 0         | 30            | 70         | -          | 100        |
| <b>Total</b> |                |              |   | <b>16</b>      | <b>0</b> | <b>8</b> | <b>18</b> | <b>180</b>    | <b>420</b> | <b>200</b> | <b>800</b> |



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### 2<sup>nd</sup> Semester

| Sl. No.      | Subject Type      | Subject Code                                | Subject Name   | Teaching Hours |          |          | Credit    | Maximum Marks |            |            |            |
|--------------|-------------------|---|--|----------------|----------|----------|-----------|---------------|------------|------------|------------|
|              |                   |   |  | L              | T        | P        |           | IA            | EA         | PA         | Total      |
| 1            | PC 3              | TE6122                                      | Advances in Finishing of Textiles                    | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
| 2            | PC 4              | TE6124                                      | Sustainability Issues in Textile Chemical Processing | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
| 3            | PE 2<br>(Any One) | TE6222                                      | Manufactured Fiber Technology                        | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
|              |                   | TE6224                                      | Technical Textile                                    |                |          |          |           |               |            |            |            |
| 4            | PE 3<br>(Any One) | TE6226                                      | Application of Nano Technology in Textiles           | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
|              |                   | TE6228                                      | Textile reinforced composites                        |                |          |          |           |               |            |            |            |
| 5            | OE 1              | Any One from the List of *OE 1 (Appendix-I) |  | 3              | 0        | 0        | 3         | 30            | 70         | -          | 100        |
| 6            | PR 1              | TE6622                                      | Project (Specialization Related)                     | 0              | 0        | 4        | 2         | -             | -          | 100        | 100        |
| 7            | LC 3              | TE6522                                      | Textile Chemical Processing and Evaluation Lab-II    | 0              | 0        | 4        | 2         | -             | -          | 100        | 100        |
| 8            | AC 2              | IP6002                                      | Disaster Management                                  | 2              | 0        | 0        | 0         | 30            | 70         | -          | 100        |
| <b>Total</b> |                   |   |  | <b>17</b>      | <b>0</b> | <b>8</b> | <b>19</b> | <b>180</b>    | <b>420</b> | <b>200</b> | <b>800</b> |

### 3<sup>rd</sup> Semester

| Sl. No.      | Subject Type       | Subject Code | Subject Name                               | Teaching Hours |          |           | Credit    | Maximum Marks |           |            |            |
|--------------|--------------------|--------------|--|----------------|----------|-----------|-----------|---------------|-----------|------------|------------|
|              |                    |              |  | L              | T        | P         |           | IA            | EA        | PA         | Total      |
| 1            | PE 4*<br>(Any One) | TE7221       | Process Control in Textiles Wet Processing | 3              | 0        | 0         | 3         | 30            | 70        | -          | 100        |
|              |                    | TE7223       | Biotechnology in Textiles                  |                |          |           |           |               |           |            |            |
| 2            | PR 2               | TE7621       | Dissertation (Phase-I)                     | 0              | 0        | 24        | 12        | -             | -         | 100        | 100        |
| <b>Total</b> |                    |              |  | <b>3</b>       | <b>0</b> | <b>24</b> | <b>15</b> | <b>30</b>     | <b>70</b> | <b>100</b> | <b>200</b> |

\* Virtual/Online Course either offered by OUTR or available in MOOCs platform (No physical class)

### 4<sup>th</sup> Semester

| Sl. No.      | Subject Type | Subject Code | Subject Name            | Teaching Hours |          |           | Credit    | Maximum Marks |          |            |            |
|--------------|--------------|--------------|-------------------------|----------------|----------|-----------|-----------|---------------|----------|------------|------------|
|              |              |              |                         | L              | T        | P         |           | IA            | EA       | PA         | Total      |
| 1            | PR 3         | TE7622       | Dissertation (Phase-II) | 0              | 0        | 32        | 16        | -             | -        | 100        | 100        |
| <b>Total</b> |              |              |                         | <b>0</b>       | <b>0</b> | <b>32</b> | <b>16</b> | <b>-</b>      | <b>-</b> | <b>100</b> | <b>100</b> |

### Credits and Maximum Marks

| Sl. No.      | Semester        | Credits   | Maximum Marks |
|--------------|-----------------|-----------|---------------|
| 1            | 1 <sup>st</sup> | 18        | 800           |
| 2            | 2 <sup>nd</sup> | 19        | 800           |
| 3            | 3 <sup>rd</sup> | 15        | 200           |
| 4            | 4 <sup>th</sup> | 16        | 100           |
| <b>Total</b> |                 | <b>68</b> | <b>1900</b>   |



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**(APPENDIX-I)**

**LIST OF (MC/ \*OE/ AC) SUBJECTS OFFERED BY SCHOOLS/ DEPARTMENTS**

| School/ Department (Offering) | Subject Type                | Subject Code  | Subject Name  |
|-------------------------------|-----------------------------|---|---|
| Basic Science and Humanities  | MC 1                        | BS6401  | Mathematical Methods in Engineering                     |
|                               | *OE 1                       | BH6302  | Spectroscopic Techniques for Organic Compounds          |
|                               |                             | BH6304  | Chemical Biology  |
|                               |                             | BH6306  | Nanoscience and Technology                              |
|                               |                             | BH6308  | Statistical Methods                                     |
|                               |                             | BH6310  | Operations Research                                     |
|                               |                             | BH6312  | Advanced Numerical Methods                              |
|                               | AC 1                        | BH6001  | English for Research Paper Writing                      |
|                               |                             | BH6003  | Sanskrit for Technical Knowledge                        |
|                               |                             | BH6005  | Value Education   |
|                               |                             | BH6007  | Constitution of India                                   |
|                               | AC 2                        | BH6002  | Pedagogy Studies  |
|                               |                             | BH6004  | Stress Management by Yoga                               |
| BH6006                        |                             | Personality Development through Life Enlightenment Skills |   |
| Computer Sciences             | *OE 1                       | CS6302  | Pattern Recognition                                     |
|                               |                             | CS6304  | Distributed Systems                                     |
|                               |                             | CS6306  | Microfluidic Biochip                                    |
|                               |                             | CS6308  | Programming in C  |
|                               |                             | CS6310  | Data Structure  |
|                               |                             | CS6312  | Computer Vision   |
| Electrical Sciences           | *OE 1                       | EE6302  | Quantitative Methods for Energy Management and Planning |
|                               |                             | EE6304  | Soft Computing application to Engineering               |
|                               |                             | EE6306  | Illumination Engineering                                |
|                               |                             | EE6308  | AI and ML for Biomedical Sciences                       |
| Electronic Sciences           | *OE 1                       | EI6302  | Machine Learning and Artificial Intelligence            |
|                               |                             | EI6304  | IoT and its Applications                                |
|                               |                             | EI6306  | Parallel Processing                                     |
|                               |                             | EI6308  | Signal Processing in Mechatronics Systems               |
|                               |                             | EI6310  | Micro Electro Mechanical Systems                        |
| Infrastructure and Planning   | *OE 1                       | IP6302  | Universally Accessible Built Environments               |
|                               |                             | IP6304  | Environment Impact Analysis                             |
|                               |                             | IP6306  | Geotechnics for Waste Materials                         |
|                               |                             | IP6308  | Project Planning and Management                         |
|                               | AC 2                        | IP6002  | Disaster Management                                     |
| Mechanical Sciences           | MC 2                        | MS6403  | Research Methodology and IPR                            |
|                               | *OE 1                       | MS6302  | Production Planning and Control                         |
|                               |                             | MS6304  | Design of Experiment                                    |
|                               |                             | MS6306  | Total Quality Management and Six Sigma                  |
|                               |                             | MS6308  | Financial Institutions, Instruments and Markets         |
|                               |                             | MS6310  | Renewable Energy Systems                                |
|                               |                             | MS6312  | Design of Thermal Systems                               |
|                               |                             | MS6314  | Sensors and Actuators in Industry                       |
| MS6316                        | Robot Mechanics and Control |   |   |
| Biotechnology                 | *OE 1                       | BT6302  | Nanobiotechnology                                       |
| Textile Engineering           | *OE 1                       | TE6302  | Polymer Composite                                       |

**\*N.B.:**

The Open Elective Subjects (\*OE 1) are specifically open for all programs of Schools/ Departments, other than the School/ Department offering the same subject.