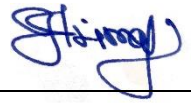
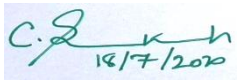
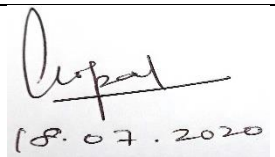
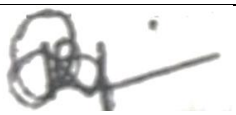
## Department of Fashion Technology

## Minutes of Board of Studies

The first Board of Studies meeting of Department of Fashion Technology was held on 18th July 2020 at 03:30 P.M in the R&D Lab – Mechanical Department, Sri Manakula Vinayagar Engineering College with the Head of the Department in the Chair.

The following members were present for the BoS meeting

| Sl.No | Name of the Member with Designation and official Address | Responsibility in the BoS | Signature |
|---|---|---|---|
| 1 | Dr. J. Thanikai Vimal<br>Associate Professor and Head<br>Department of FT, SMVEC | Chairman |  |
| **External Members** | | | |
| 2 | **Dr.D.Saravanan**<br>Dean – Academics and<br>Professor – Textile Technology<br>Kumaraguru College of Technology<br>Coimbatore 641 049 | University Nominee |  18.07.2020 |
| 3 | **Dr. C.Prakash,**<br>Director,<br>Indian Institute of handloom Technology,<br>Fulia colony, Shantipur,<br>Nadia (Dt)<br>West Bengal – 741 402 | subject Experts |  |
| 4 | **Dr.Sandhya Ravi**<br>Principl,<br>NITTE School of Fashion Technology and Interior Design<br>6429, NMIT Campus,<br>Yelahanka, Bangalore,<br>Karnatka - 560064 | subject Experts |  |
| 5 | **Mrs. R.Geetha Malini**<br>Material Manager, India Sourcing<br>RALPH LAUREN INDIA SOURCING LLP.,<br>WeWork Galaxy, Suite 2B-114<br>43 Residency Rd, Bangalore – 560025 | Industry Experts |  |
| 6 | **Mr.D.Gopal Krishnan**<br>Manager – Material Planning,<br>PUMA Sports India Private Limited,<br>509, CMH Road, Indra Nagar,<br>Bangalore - 560038 | Industry Experts |  |
| **Internal Members** | | | |
| 7 | Mr. L. Martin | Member |  |
| 8 | Mr. M. Ganesan | Member |  |

| | | | |
|---|---|---|---|
| 9 | Ms. M. Rajeswari | Member |  |
| 10 | Ms. Bavani | Member |  |
| 11 | Ms. R. Suganya | Member |  |

**Agenda of the Meeting**

1) Discuss about the curriculum Structure of B.Tech – Fashion Technology
2) To discuss and approve the B.Tech. Degree Regulations 2020 (R-2020), Curriculum and Syllabi from I to VIII semesters for the B.Tech – Fashion Technology and the students admitted in the Academic Year 2020-21. (First Year)
3) To discuss about the uniqueness of the Curriculum (R-2020)
4) To discuss and approve Evaluation Systems
5) To discuss about the Innovative Teaching / Practices Methodology adopted to handle the emerging. / Advanced Technological concept courses
6) Any other item with the permission of chair

**Minutes of the Meeting**

Dr. J. Thanikai Vimal, Chairman, BoS opened the meeting by welcoming and introducing the external members, to the internal and co-opted members and thanked them for accepting to become the member of the Board of Studies and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

| | |
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| **Item:1** | • **Recommended to Academic Council to approve** the curriculum Structure of B.Tech – Fashion Technology by offering Phython and Lab instead of Programming C and lab |
| **Item:2** | • **Recommended to Academic Council to approve** the B.Tech. Degree Regulations 2020 (R-2020), Curriculum from I to VIII semesters and syllabus for I to IV the B.Tech – Fashion Technology for the students going to be admitted in the Academic Year 2020-21 (First Year) with few suggestion<br>**1. Admission:** Consideration of lateral entry admission for those who completed B.Sc. Textile and Fashion Designing / Fashion Technology / Fashion and Costume Designing / Fashion and Apparel Design / courses<br>**2. Assessment Procedure for Awarding Marks :** Model examinations are not mandatory<br>**3. Syllabus:** Math's is not required for fashion technology till 4$^{th}$ semester; it can be curtailed up to 3$^{rd}$ semester if necessary. |
| **Item:3** | • **Discussion was done on the uniqueness of the Curriculum (R-2020)**<br>**1.** Many certification courses (EEC) regarding Fashion Technology is available.<br>**2.** Curriculum was gem, and it is framed for Future Industry needs.<br>**3.** In-Plant training is added along with internship – Without Credit – is appreciated. |

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| **Item:4** | • **Recommended to Academic Council to approve** the Evaluation Systems of our curriculum with few suggestions<br>**1.** Allotment of 10 marks for the students who do their Case Study / Project portfolio as an alternate to paper publication, since the publication possibility in fashion is limited.<br>**2.** Industry persons can call for End Semester Lab Practical / Project viva Examination**.** |
| **Item:5** | • **Discussions were done on various** innovative Teaching practices Methodology adopted to handle the emerging / Advanced Technological concept courses<br>**1.** Arrangements of Guest Lecture is appreciated.<br>**2.** Industrial live demo mappings with lecture hours - is appreciated.<br>**3.** NPTEL Courses offered for advanced concepts |
| **Item:6** | **Other points Discussed**<br>**Recommended to Academic Council to approve** the panel of examiners<br>CO-PO mapping, PSO and PEO to be included along with syllabus<br>**Overall the committee experts were satisfied with our curriculum structure and syllabus framing** |

The meeting was concluded at 5:30PM with vote of thanks by **Dr. J. Thanikai VImal**, Head of Department, Fashion Technology.

**Dr. J.Thanikai Vimal**
Chairman - BoS

| SEMESTER – I | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No. | Course Code | Course Title | Category | Periods | | | Credits | Max. Marks | | |
| | | | | L | T | P | | CAM | ESM | Total |
| **Theory** | | | | | | | | | | |
| 1 | U20BST101 | Engineering Mathematics -I | BS | 2 | 2 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20EST125 | Programming in Python | ES | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20ESTX17 | Basic Electrical and Electronics Engineering | ES | 3 | 1 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT101 | Basics of Apparel Technology | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT102 | Textile Fibre Science | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 6 | U20EST127 | Programming in Python Laboratory | ES | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 7 | U20ESTX18 | Basic Electrical and Electronics Engineering Lab | ES | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 8 | U20FTP102 | Fibre Analytical Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| **Employability Enhancement Course** | | | | | | | | | | |
| 9 | U20ECC1XX | Employability Enhancement Course -1 | EEC | - | - | 4 | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 10 | U20ECM101 | Induction Program | MC | 3 Weeks | | | - | - | - | - |
| | | | | | | | 18 | 375 | 525 | 900 |

| SEMESTER – II | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No. | Course Code | Course Title | Category | Periods | | | Credits | Max. Marks | | |
| | | | | L | T | P | | CAM | ESM | Total |
| **Theory** | | | | | | | | | | |
| 1 | U20MAT202 | Engineering Mathematics II | BS | 2 | 2 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20EST257 | Applied Mechanics Textile Technologists | ES | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20EST258 | Basic Engineering Graphics for Textile Designing | ES | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT201 | Basics of Yarn and Fabric Manufacturing | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT202 | Concepts of Fashion and Design | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20BST219 | Basics Textile Chemistry | BS | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 6 | U20FTP201 | Textile manufacturing Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 7 | U20FTP202 | Basic Engineering Graphics for Textile | ES | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 8 | U20FTP203 | Fashion And Design Concept Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| **Employability Enhancement Course** | | | | | | | | | | |
| 9 | U20ECC2XX | Employability Enhancement Course -2 | EEC | - | - | 4 | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 10 | U20ECM202 | Environmental Science | MC | 2 | - | - | - | 100 | - | 100 |
| | | | | | | | 21 | 500 | 600 | 1100 |

| SEMESTER – III | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No. | Course Code | Course Title | Category | Periods | | | Credits | Max. Marks | | |
| | | | | L | T | P | | CAM | ESM | Total |
| **Theory** | | | | | | | | | | |
| 1 | U20BST327 | Numerical Methods and Statics | BS | 2 | 2 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20FTT301 | Fashion Illustration | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTT302 | Pattern Engineering -I | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT303 | Fabric Structure and Design | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT304 | Yarns and Fabrics for Fashion | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20FTT305 | Knitting Technology | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20BSP326 | Statistical Laboratory | BS | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 8 | U20FTP301 | Fashion Illustration Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 9 | U20FTP302 | Pattern Engineering -I Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 10 | U20FTP303 | Fabric Structure and Design Graphics lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| **Employability Enhancement Course** | | | | | | | | | | |
| 11 | U20ECC3XX | Employability Enhancement Course -3 | EEC | - | - | 4 | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 12 | U20ECM304 | Physical Education | MC | - | - | 2 | - | 100 | - | 100 |
| | | | | | | | 22 | 550 | 650 | 1200 |

| SEMESTER – IV | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No | Course Code | Course Title | Category | Periods | | | Credits | Max. Marks | | |
| | | | | L | T | P | | CAM | ESM | Total |
| **Theory** | | | | | | | | | | |
| 1 | U20FTT401 | Pattern Engineering -II | PC | 3 | 1 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20FTT402 | Textile Chemical Processing | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTT403 | Apparel machinery and Equipment | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT404 | Intellectual Property Rights | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT405 | Garment Construction - I | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20FTT406 | Fashion Portfolio | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20HSP401 | General Proficiency - I | HS | - | - | 2 | 1 | 100 | - | 100 |
| 8 | U20FTP401 | Pattern Engineering -II Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 9 | U20FTP402 | Textile Chemical Processing LAB | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 10 | U20FTP403 | Garment Construction - I Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| **Employability Enhancement Course** | | | | | | | | | | |
| 11 | U20SDC40X | Employability Enhancement Course -4 | EEC | - | - | 4 | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 12 | U20ECM405 | NSS | MC | 0 | 0 | 2 | - | 100 | - | 100 |
| | | | | | | | 22 | 600 | 600 | 1200 |

| SEMESTER – V | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No | Course Code | Course Title | Category | Periods | | | Credits | Max. Marks | | |
| | | | | L | T | P | | CAM | ESM | Total |
| **Theory** | | | | | | | | | | |
| 1 | U20FTT501 | Garment Construction - II | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20HST507 | Environment Engineering and Sustainability | HS | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTT503 | Testing of Textile and Apparels | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT504 | Fashion Forecasting and Accessories | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTE50X | Professional Elective - I | PE | 3 | 1 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20FTO50X | Open Elective-I | OE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20HSP501 | General Proficiency -II | HS | - | - | 2 | 1 | 50 | 50 | 100 |
| 8 | U20FTP501 | Garment Construction - II Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 9 | U20FTP502 | Fashion Forecasting and Accessories LAB | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 10 | U20FTP503 | Testing of Textile and Apparels Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| **Employability Enhancement Course** | | | | | | | | | | |
| 11 | U20SDC50X | Employability Enhancement Course -5 | EEC | - | - | 4 | - | 100 | - | 100 |
| 12 | U20ECS508 | Foreign Language/ IELTS/ | EEC | 2 | - | 2 | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 13 | U20ECM506 | Indian Constitution | MC | 2 | - | - | - | 100 | - | 100 |
| | | | | | | | 22 | 650 | 650 | 1300 |

| SEMESTER – VI | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No | Course Code | Course Title | Category | Periods | | | Credits | Max. Marks | | |
| | | | | L | T | P | | CAM | ESM | Total |
| **Theory** | | | | | | | | | | |
| 1 | U20FTT601 | Garment Project Planning | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20FTT602 | CAD – CAM For Apparels | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTT603 | Apparel Design Development and Size Fit analysis | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTE60X | Professional Elective - II | PE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTE60X | Professional Elective - III | PE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20FTO60X | Open Elective-II | OE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20FTP601 | Garment Project Planning Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 8 | U20FTP602 | CAD – CAM For Apparels Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 9 | U20FTP603 | Apparel Design Development and Size Fit analysis Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| **Employability Enhancement Course** | | | | | | | | | | |
| 10 | U20SDC60X | Employability Enhancement Course -6 | EEC | 0 | 0 | 4 | - | 100 | - | 100 |
| 11 | U20FTS612 | Seminar | EEC | - | - | 2 | - | 100 | - | 100 |
| 12 | U20FTS611 | NPTEL/MOOC-I | EEC | - | - | - | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 13 | U20ECM607 | Essence of Indian Traditional Knowledge | MC | 2 | - | - | - | 100 | - | 100 |
| | | | | | | | 21 | 700 | 600 | 1300 |

| SEMESTER – VII | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl. No** | **Course Code** | **Course Title** | **Category** | **Periods** | | | **Credits** | **Max. Marks** | | |
| | | | | **L** | **T** | **P** | | **CAM** | **ESM** | **Total** |
| **Theory** | | | | | | | | | | |
| 1 | U20FTT701 | Apparel Production And Planning And Control | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20FTT702 | Brand Management and Visual Merchandising | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTE7EX | Professional Elective - IV | PE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTO70X | Open Elective-III | OE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20FTP701 | Apparel Production And Planning And Control Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 8 | U20FTP702 | Brand Management and Visual Merchandising LAB | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 9 | U20FTP703 | Apparel Finishing and Care Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 10 | U20HSP703 | Business Basics for Entrepreneur | HS | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| **Project Work** | | | | | | | | | | |
| 11 | U20FTW701 | Project Phase – I | PW | 0 | 0 | 4 | 2 | 100 | 0 | 100 |
| 12 | U20FTW701 | Internship / Inplant Training | PW | - | - | - | 2 | 100 | 0 | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 13 | U20ECM713 | Professional Ethics | MC | 2 | 0 | 0 | - | 100 | 0 | 100 |
| | | | | | | | 20 | 650 | 450 | 1100 |

| SEMESTER – VIII | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl. No.** | **Course Code** | **Course Title** | **Category** | **Periods** | | | **Credits** | **Max. Marks** | | |
| | | | | **L** | **T** | **P** | | **CAM** | **ESM** | **Total** |
| **Theory** | | | | | | | | | | |
| 1 | U20FTT801 | Apparel Exports Management | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20FTE8EX | Professional Elective - V | PE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTE8EX | Professional Elective - VI | PE | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 4 | U20HSP804 | Entrepreneurship Management | HS | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| **Project Work** | | | | | | | | | | |
| 5 | U20FTW802 | Project phase – II | PC | 0 | 0 | 16 | 8 | 60 | 40 | 100 |
| **Employment Enhancement Course** | | | | | | | | | | |
| 6 | U20ECS814 | NPTEL/MOOC-II | EEC | - | - | - | - | 100 | 0 | 100 |
| | | | | | | | 18 | 335 | 265 | 600 |

**PROFESSIONAL ELECTIVE (PE) COURSES**

| Sl. No. | Course Code | Course Title |
|---|---|---|
| **Professional Elective - I** | | |
| 1 | U20FTE505 | COLOUR AND FASHION |
| 2 | U20FTE506 | DRAPING TECHNIQUES |
| 3 | U20FTE507 | INTIMATE APPAREL |
| 4 | U20FTE508 | FASHION PHOTOGRAPHY |
| 5 | U20FTE509 | HIGH FASHION DESIGNING |
| **Professional Elective - II** | | |
| 6 | U20FTE604 | INDUSTRIAL ENGINEERING |
| 7 | U20FTE605 | ERP AND MIS IN APPAREL INDUSTRY |
| 8 | U20FTE606 | ADVANCES IN GARMENT PRODUCTION |
| 9 | U20FTE607 | APPAREL WORK STUDY |
| 10 | U20FTE608 | LEATHER TECHNOLOGY |
| **Professional Elective - III** | | |
| 11 | U20FTO605 | CLOTHING COMFORT |
| 12 | U20FTO606 | ADVANCES IN GARMENT FINISHING |
| 13 | U20FTO607 | FUNDAMENTALS OF NANOSCIENCE |
| 14 | U20FTO608 | DENIM GARMENT MANUFACTURING TECHNOLOGY |
| 15 | U20FTO609 | DESIGN OF SPORTS WEAR |
| **Professional Elective - IV** | | |
| 16 | U20FTE701 | APPAREL MERCHANDISING AND COST MANAGEMENT |
| 17 | U20FTE702 | COMPUTER APPLICATIONS IN THE GARMENT INDUSTRY |
| 18 | U20FTE703 | OPERATIONS RESEARCH IN TEXTILE INDUSTRY |
| 19 | U20FTE704 | FABRIC SOURING AND SAMPLING |
| 20 | U20FTE705 | TOTAL QUALITY MANAGEMENT IN APPAREL INDUSTRY |
| **Professional Elective - V** | | |
| 21 | U20FTE801 | APPAREL LOGISTICS AND SUPPLY CHAIN MANAGEMENT |
| 22 | U20FTE802 | FASHION MARKETING |
| 23 | U20FTE803 | SOCIAL COMPLIANCE IN APPAREL INDUSTRY |
| 24 | U20FTE804 | GLOBAL MARKETING AND SOURCING STRATEGIES |
| 25 | U20FTE805 | PRODUCT CERTIFICATION IN GARMENT INDUSTRY |
| **Professional Elective - VI** | | |
| 26 | U20FTE806 | INDUSTRIAL SAFETY AND HUMAN RESOURCE MANAGEMENT |
| 27 | U20FTE807 | INTERNATIONAL BUSINESS INAPPAREL INDUSTRY |
| 28 | U20FTE808 | INTERNATIONAL SOCIAL COMPLIANCE |
| 29 | U20FTE809 | HUMAN RESOURCE MANAGEMENT |
| 30 | U20FTE810 | FASHION ENTREPRENEURSHIP |

## Annexure - II

## OPEN ELECTIVE COURSES (R-2020)

| S.No | Course Code | Course Title | Offering Department | Permitted Departments |
|---|---|---|---|---|
| **Open Elective – I (Offered in Semester IV)** | | | | |
| 1 | U20EEO401 | Solar Photovoltaic Fundamental and applications | EEE | ECE, ICE, MECH, CIVIL, Mechatronics, CCE |
| 2 | U20EEO402 | Electrical Safety | EEE | ECE, ICE, MECH, CIVIL, Mechatronics, CCE, BME, IT, CSE, FT |
| 3 | U20ECO401 | Engineering Computation with MATLAB | ECE | EEE, ICE, MECH, CIVIL, CCE, BME, AI&DS, Mechatronics |
| 4 | U20ECO402 | Consumer Electronics | ECE | EEE, ICE, CSE, MECH, IT, CIVIL, CCE, BME, Mechatronics, FT |
| 5 | U20CSO401 | Web Development | CSE | EEE, ECE, ICE, MECH, CIVIL, BME, Mechatronics |
| 6 | U20CSO402 | Analysis of Algorithms | CSE | EEE, ECE, ICE, MECH, CIVIL, BME, Mechatronics |
| 7 | U20ITO401 | Database System: Design & Development | IT | EEE, ECE, ICE, CCE, BME |
| 8 | U20ITO402 | R programming | IT | EEE, ECE, ICE, CCE, BME, MECH, Mechatronics |
| 9 | U20ICO401 | Sensors and Transducers | ICE | ECE, CSE, IT, MECH, CIVIL, CCE, AI&DS, FT |
| 10 | U20ICO402 | Control System Engineering | ICE | CSE, IT, MECH, CCE, AI&DS |
| 11 | U20MEO401 | Rapid Prototyping | MECH | EEE, ECE, ICE, CIVIL, BME, FT |
| 12 | U20MEO402 | Material Handling System | MECH | EEE, ICE, CIVIL, Mechatronics |
| 13 | U20MEO403 | Industrial Engineering for Textile | MECH | FT |
| 14 | U20CEO401 | Energy and Environment | CIVIL | EEE, ECE, MECH, BME, IT, Mechatronics, FT |
| 15 | U20CEO402 | Building Science and Engineering | CIVIL | EEE, MECH, BME |
| 16 | U20BMO401 | Medical Electronics | BME | EEE, ECE, CSE, IT, ICE, CCE, MECH, Mechatronics, AI&DS |
| 17 | U20BMO402 | Telemedicine | BME | EEE, ECE, CSE, IT, ICE, CCE, AI&DS |
| 18 | U20CCO401 | Basic DBMS | CCE | EEE, ECE, MECH, CIVIL, ICE, Mechatronics, BME |
| 19 | U20CCO402 | Introduction to Communication Systems | CCE | EEE, CSE, IT, MECH, CIVIL, ICE, Mechatronics |
| 20 | U20ADO401 | Knowledge Representation and Reasoning | AI&DS | EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics |

| | | | | |
|---|---|---|---|---|
| 21 | U20ADO402 | Introduction to Data Science | AI&DS | EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics |
| **Open Elective – II / Open Elective – III** | | | | |
| 1 | U20HSO501/ U20HSO601 | Product Development and Design | MBA | **Common to B. Tech**<br><br>(Offered in Semester V for **EEE, ECE, ICE, CIVIL, BME, CCE, FT**)<br><br>(Offered in Semester VI for **CSE, IT, MECH, Mechatronics, AI&DS**) |
| 2 | U20HSO502/ U20HSO602 | Intellectual Property and Rights | MBA | |
| 3 | U20HSO503/ U20HSO603 | Marketing Management and Research | MBA | |
| 4 | U20HSO504/ U20HSO604 | Project Management for Engineers | MBA | |
| 5 | U20HSO505/ U20HSO605 | Finance for Engineers | MBA | |
| **Open Elective – II / Open Elective – III**<br>(Offered in Semester V for **CSE, IT, MECH, Mechatronics, AI&DS**)<br>(Offered in Semester VI for **EEE, ECE, ICE, CIVIL, BME, CCE, FT**) | | | | |
| 1 | U20EEO503 / U20EEO603 | Conventional and Non-Conventional Energy Sources | EEE | ECE, ICE, MECH, CIVIL, BME, Mechatronics, CCE, AI&DS, FT |
| 2 | U20EEO504 / U20EEO604 | Industrial Drives and Control | EEE | ECE, ICE, MECH, Mechatronics, AI&DS |
| 3 | U20ECO503/ U20ECO603 | Electronic Product Design and Packaging | ECE | EEE, CSE, IT, ICE, MECH, CCE, BME, Mechatronics |
| 4 | U20ECO504/ U20ECO604 | Automotive Electronics | ECE | EEE, ECE, ICE, MECH |
| 5 | U20CSO503/ U20CSO603 | Platform Technology | CSE | EEE, ECE, ICE, MECH, CIVIL, BME |
| 6 | U20CSO504/ U20CSO604 | Graphics Designing | CSE | EEE, ECE, ICE, MECH, CIVIL, BME, FT |
| 7 | U20ITO503/ U20ITO603 | Essentials of Data Science | IT | EEE, ECE, ICE, MECH, CIVIL, BME |
| 8 | U20ITO504/ U20ITO604 | Mobile App Development | IT | EEE, ECE, ICE, MECH, CIVIL, BME, Mechatronics |
| 9 | U20ICO503/ U20ICO603 | Fuzzy logic and neural networks | ICE | CSE, IT, CIVIL, BME, AI&DS |
| 10 | U20ICO504/ U20ICO604 | Measurement and Instrumentation | ICE | ECE, Mechatronics |
| 11 | U20MEO504/ U20MEO604 | Heating, ventilation and air conditioning system (HVAC) | MECH | EEE, ECE, ICE, CIVIL |
| 12 | U20MEO505/ U20MEO605 | Creativity Innovation and New Product Development | MECH | EEE, ECE, ICE, CIVIL, BME, Mechatronics |
| 13 | U20CEO503/ U20CEO603 | Disaster Management | CIVIL | EEE, ECE, CSE, IT, ICE, MECH, BME, CCE, AI&DS, FT |
| 14 | U20CEO504/ U20CEO604 | Air Pollution and Solid Waste Management | CIVIL | EEE, ECE, CSE, IT, ICE, MECH, BME, CCE, AI&DS, FT |
| 15 | U20BMO503/ U20BMO603 | Biometric Systems | BME | EEE, ECE, CSE, IT, ICE, CCE, MECH, Mechatronics |
| 16 | U20BMO504/ U20BMO604 | Medical Robotics | BME | EEE, ECE, CSE, IT, ICE, CCE, MECH, CIVIL , Mechatronics |

| | | | | |
|---|---|---|---|---|
| 17 | U20CCO503/ U20CCO603 | Network Essentials | CCE | EEE, MECH, CIVIL, ICE, Mechatronics, BME |
| 18 | U20CCO504/ U20CCO604 | Web Programming | CCE | EEE, ECE, MECH, CIVIL, ICE, Mechatronics, BME |
| 19 | U20ADO503/ U20ADO603 | Principle of Artificial Intelligence and Machine Learning | AI&DS | EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE |
| 20 | U20ADO504/ U20ADO604 | Data science Application of Vision | AI&DS | EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics |
| 21 | U20MCO501/ U20MCO601 | Industrial Automation for Textile | Mechatronics | FT |
| **Open Elective – IV (Offered in Semester VII)** | | | | |
| 1 | U20EEO705 | Hybrid and Electrical Vehicle | EEE | ECE, Mechatronics , MECH |
| 2 | U20EEO706 | Electrical Energy Conservation and auditing | EEE | ECE, ICE, MECH, CIVIL, BME, Mechatronics, CCE, AI&DS |
| 3 | U20ECO705 | IoT and its Applications | ECE | EEE, ICE, CSE, MECH, IT, CIVIL, CCE, FT |
| 4 | U20ECO706 | Cellular and Mobile Communications | ECE | EEE, ICE, CSE, MECH, IT, CIVIL, CCE, BME, Mechatronics |
| 5 | U20CSO705 | Artificial Intelligence | CSE | EEE, ICE, CIVIL, CCE, MECH, FT |
| 6 | U20CSO706 | Cloud Technology and its Applications | CSE | EEE, ICE, MECH, CIVIL, CCE, BME, Mechatronics |
| 7 | U20ITO705 | Automation Techniques & Tools- DevOps | IT | EEE, ECE, ICE, CSE, MECH, CIVIL, CCE, BME, Mechatronics |
| 8 | U20ITO706 | Augmented and Virtual Reality | IT | EEE, ICE, MECH, CIVIL, CCE, BME |
| 9 | U20ICO705 | Process Automation | ICE | EEE, ECE, CSE, MECH, IT, CIVIL, CCE, BME, Mechatronics |
| 10 | U20ICO706 | Virtual Instrumentation | ICE | EEE, ECE, MECH, Mechatronics |
| 11 | U20MEO706 | Principles of Hydraulic and Pneumatic System | MECH | EEE, ECE, ICE, CIVIL |
| 12 | U20MEO707 | Supply Chain Management | MECH | EEE, ECE, CIVIL, Mechatronics |
| 13 | U20CEO705 | Energy Efficient Buildings | CIVIL | EEE, ECE, MECH |
| 14 | U20CEO706 | Global Warming and Climate Change | CIVIL | EEE, ECE, CSE, IT, ICE, MECH, BME, CCE, AI&DS, FT |
| 15 | U20MCO702 | Building Automation | Mechatronics | MECH, CIVIL |
| 16 | U20MCO703 | Automation in Manufacturing Systems | Mechatronics | MECH, CIVIL |
| 17 | U20BMO705 | Internet of Things for Healthcare | BME | EEE, ECE, ICE, CCE |

| | | | | |
|---|---|---|---|---|
| 18 | U20BMO706 | Telehealth Technology | BME | EEE, ECE, ICE, CCE |
| 19 | U20CCO705 | Data Science using python | CCE | EEE, ECE, MECH, CIVIL, ICE, Mechatronics, BME |
| 20 | U20CCO706 | Mobile Applications Development using Android | CCE | EEE, ECE, MECH, CIVIL, ICE, Mechatronics, BME |
| 21 | U20ADO705 | Data Science Application of NLP | AI&DS | EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics. |
| 22 | U20ADO706 | Artificial Intelligence Applications | AI&DS | EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME |
| 23 | U20HSO706 | Industrial Safety and Human Resource Management | MBA | FT |
| 24 | U20HSO707 | Operation Research in Textile Industry | MBA | FT |
| 25 | U20HSO708 | Global marketing and Sourcing Strategies | MBA | FT |
| 26 | U20HSO709 | Fashion Advertising and sales promotions | MBA | FT |
| 27 | U20HSO710 | Luxury Brand management | MBA | FT |
| 28 | U20HSO711 | Fashion Retail Store Operations | MBA | FT |

## Annexure – III

## EMPLOYABILITY ENHANCEMENT COURSES – (A). CERTIFICATION COURSES

| Sl. No. | Course Code | Course Title |
|---|---|---|
| 1 | U20FTCX01 | 3ds Max |
| 2 | U20FTCX02 | Advance Structural Analysis of Building using ETABS |
| 3 | U20FTCX03 | Advanced Java Programming |
| 4 | U20FTCX04 | Advanced Python Programming |
| 5 | U20FTCX05 | Analog System Lab Kit |
| 6 | U20FTCX06 | Android Medical App Development |
| 7 | U20FTCX07 | Android Programming |
| 8 | U20FTCX08 | ANSYS -Multiphysics |
| 9 | U20FTCX09 | Artificial Intelligence |
| 10 | U20FTCX10 | Artificial Intelligence and Edge Computing |

| | | |
|---|---|---|
| 11 | U20FTCX11 | Artificial Intelligence in Medicines |
| 12 | U20FTCX12 | AutoCAD for Architecture |
| 13 | U20FTCX13 | AutoCAD for Civil |
| 14 | U20FTCX14 | AutoCAD for Electrical |
| 15 | U20FTCX15 | AutoCAD for Mechanical |
| 16 | U20FTCX16 | Azure DevOps |
| 17 | U20FTCX17 | Basic Course on ePLAN |
| 18 | U20FTCX18 | Basic Electro Pneumatics |
| 19 | U20FTCX19 | Basic Hydraulics |
| 20 | U20FTCX20 | Bio Signal and Image Processing Development System |
| 21 | U20FTCX21 | Blockchain |
| 22 | U20FTCX22 | Bridge Analysis |
| 23 | U20FTCX23 | Building Analysis and Construction Management |
| 24 | U20FTCX24 | Building Design and Analysis Using AECO Sim Building Designer |
| 25 | U20FTCX25 | CATIA |
| 26 | U20FTCX26 | CCNA (Routing and Switching) |
| 27 | U20FTCX27 | CCNA (Wireless) |
| 28 | U20FTCX28 | Cloud Computing |
| 29 | U20FTCX29 | Computer Programming for Medical Equipments |
| 30 | U20FTCX30 | Corel Draw |
| 31 | U20FTCX31 | Creo (Modeling and Simulation) |
| 32 | U20FTCX32 | Cyber Security |
| 33 | U20FTCX33 | Data Science and Data Analytics |
| 34 | U20FTCX34 | Data Science using Python |
| 35 | U20FTCX35 | Data Science using R |
| 36 | U20FTCX36 | Deep Learning |
| 37 | U20FTCX37 | Design and Documentation using ePLAN Electric P8 |
| 38 | U20FTCX38 | Design of Biomedical Devices and Systems |
| 39 | U20FTCX39 | Digital Marketing |
| 40 | U20FTCX40 | Digital Signal Processing Development System |
| 41 | U20FTCX41 | DigSILENT Power Factory |
| 42 | U20FTCX42 | Electro Hydraulic Automation with PLC |
| 43 | U20FTCX43 | Embedded System using Arduino |
| 44 | U20FTCX44 | Embedded System using C |
| 45 | U20FTCX45 | Embedded System with IoT |

| | | |
|---|---|---|
| 46 | U20FTCX46 | ePLAN  Data Portal |
| 47 | U20FTCX47 | ePLAN Electric P8 |
| 48 | U20FTCX48 | ePLAN  Fluid |
| 49 | U20FTCX49 | ePLAN  PPE |
| 50 | U20FTCX50 | Fusion 360 |
| 51 | U20FTCX51 | Fuzzy Logic and Neural Networks |
| 52 | U20FTCX52 | Google Analytics |
| 53 | U20FTCX53 | Hydraulic Automation |
| 54 | U20FTCX54 | Industrial Automation |
| 55 | U20FTCX55 | Industry 4.0 |
| 56 | U20FTCX56 | Internet of Things |
| 57 | U20FTCX57 | Introduction to C Programming |
| 58 | U20FTCX58 | Introduction to C++ Programming |
| 59 | U20FTCX59 | IoT using Python |
| 60 | U20FTCX60 | Java Programming |
| 61 | U20FTCX61 | Machine Learning |
| 62 | U20FTCX62 | Machine Learning and Deep Learning |
| 63 | U20FTCX63 | Machine Learning for Medical Diagnosis |
| 64 | U20FTCX64 | Mechatronics |
| 65 | U20FTCX65 | Medical Robotics |
| 66 | U20FTCX66 | Microsoft Dynamics 365 ERP for HR , Marketing and Finance |
| 67 | U20FTCX67 | Mobile Edge Computing |
| 68 | U20FTCX68 | Modeling and Visualization using Micro station |
| 69 | U20FTCX69 | MX Road |
| 70 | U20FTCX70 | Photoshop |
| 71 | U20FTCX71 | PLC |
| 72 | U20FTCX72 | Pneumatics Automation |
| 73 | U20FTCX73 | Project Management |
| 74 | U20FTCX74 | Python Programming |
| 75 | U20FTCX75 | Revit Architecture |
| 76 | U20FTCX76 | Revit Inventor |
| 77 | U20FTCX77 | Revit MEP |
| 78 | U20FTCX78 | Robotics |
| 79 | U20FTCX79 | Search Engine Optimization |
| 80 | U20FTCX80 | Software Testing |

| | | |
|---|---|---|
| 81 | U20FTCX81 | Solar and Smart Energy System with IoT |
| 82 | U20FTCX82 | Solid Works |
| 83 | U20FTCX83 | Solid Works with Electrical Schematics |
| 84 | U20FTCX84 | Speech Processing |
| 85 | U20FTCX85 | STAAD PRO V8i |
| 86 | U20FTCX86 | Structural Design and Analysis using Bentley |
| 87 | U20FTCX87 | Total Station |
| 88 | U20FTCX88 | Video and Image Processing Development System |
| 89 | U20FTCX89 | VLSI Design |
| 90 | U20FTCX90 | Web Programming - I |
| 91 | U20FTCX91 | Web Programming - II |

## Annexure – IV

## EMPLOYABILITY ENHANCEMENT COURSES – (B). SKILL DEVELOPMENT COURSES

| Sl. No | Course Code | Course Title |
|---|---|---|
| 1 | U20FTS201 | Skill Development Course 1 * |
| | | 1) Development of Fashion Model |
| | | 2) Colour and Fashion |
| | | 3) Design and Data Collection |
| 2 | U20FTS302 | Skill Development Course 2 * |
| | | 1) Fashion Evolution and Traditional Indian Textile |
| | | 2) Garment Ornamentation |
| | | 3) Material Selection and Design of Sports Wear |
| 3 | U20FTS403 | Skill Development Course 3 * |
| | | 1) Computer Colour Matching |
| | | 2) Digital Fashion Marketing |
| | | 3) Import and Export Documentation |
| 4 | U20FTS504 | Skill Development Course 4 : Foreign Language/ IELTS -I |
| 5 | U20FTS505 | Skill Development Course 5 : Presentation Skills using ICT |
| 6 | U20FTS606 | Skill Development Course 6 : Foreign Language/ IELTS - II |
| 7 | U20FTS607 | Skill Development Course 7 : Technical Seminar |
| 8 | U20EES608 | Skill Development Course 8 : NPTEL / MOOC - I |
| 9 | U20EES809 | Skill Development Course 9 : NPTEL / MOOC-II |

**** Any one course to be selected from the list***

| SEMESTER – I | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl. No.** | **Course Code** | **Course Title** | **Category** | **Periods** | | | **Credits** | **Max. Marks** | | |
| | | | | **L** | **T** | **P** | | **CAM** | **ESM** | **Total** |
| **Theory** | | | | | | | | | | |
| 1 | U20BST101 | Engineering Mathematics -I | BS | 2 | 2 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20EST125 | Programming in Python | ES | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20ESTX17 | Basic Electrical and Electronics Engineering | ES | 3 | 1 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT101 | Basics of Apparel Technology | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT102 | Textile Fibre Science | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 6 | U20EST127 | Programming in Python Laboratory | ES | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 7 | U20ESTX18 | Basic Electrical and Electronics Engineering Lab | ES | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 8 | U20FTP102 | Fibre Analytical Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| **Employability Enhancement Course** | | | | | | | | | | |
| 9 | U20ECC1XX | Employability Enhancement Course -1 | EEC | - | - | 4 | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 10 | U20ECM101 | Induction Program | MC | 3 Weeks | | | - | - | - | - |
| | | | | | | | 18 | 375 | 525 | 900 |

| | ENGINEERING MATHEMATICS-I | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| U20BST101 | CALCULUS AND LINEAR ALGEBRA | 3 | 1 | 0 | 4 | 60 |

(Common to all branches)

## Course Objectives

- To familiarize the concept of matrices.
- To introduce mathematical tools to solve first order differential equations.
- To learn linear differential equations of higher order with constant coefficients.
- To understand the concept of partial differentiation.
- To introduce the concepts of curl, divergence and integration of vectors in vector calculus.

## Course Outcomes

*After completion of the course, the students will be able to*

***CO 1*** *- Find eigen values and eigen vectors, diagonalization of a matrix.*
***CO 2*** *- Solve differential equations.*
***CO 3*** *- Solve higher order differential equations.*
***CO 4*** *- Solve different types of partial differential equation.*
***CO 5*** *- Understand the use of vector calculus.*

**UNIT-I MATRICES (12 Hrs)**

Rank of a Matrix- Consistency of system of equations. Eigen values and Eigen vectors of a real matrix - Characteristic equation - Properties of Eigen values and Eigen vectors. Cayley-Hamilton Theorem - Diagonalization of matrices.

**UNIT – II DIFFERENTIAL EQUATIONS (12 Hrs)**

Exact equations, First order linear equations, Bernoulli's equation, Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

**UNIT – III DIFFERENTIAL EQUATIONS (HIGHER ORDER) (12 Hrs)**

Linear differential equations of higher order with constant coefficients, the operator D,
Euler's linear equation of higher order with variable coefficients, Solution by variation of parameter method.

**UNIT – IV PARTIAL DIFFERENTIAL EQUATIONS (12 Hrs)**

Partial derivatives, Total derivatives, Differentiation of implicit functions, Maxima and Minima of two variables.Partial differential equations of higher order with constant coefficients.

**UNIT – V VECTOR CALCULUS (12 Hrs)**

Gradient, divergence and curl - Directional derivative- Irrotational and Solenoidal vector fields - Gauss Divergence Theorem and Stoke's Theorem.

## Text Books

1. Erwin Kreyszig, "Advanced Engineering Mathematics", Wiley, Tenth edition, 2019
2. B.V.Ramana, "Higher Engineering Mathematics", Tata McGraw-Hill, New Delhi, Sixth edition 2018.
3. N.P. Bali and Manish Goyal, "A Text Book of Engineering Mathematics", Lakshmi Publications, New Delhi, Ninth Edition, 2018

## Reference Books

1. C W. Evans, "Engineering Mathematics", A Programmed Approach, 3th Edition, 2019
2. Singaravelu. A., "Engineering Mathematics - I", Meenakshi publications, Tamil Nadu, 2019

3. M.K. Venkataraman, “Engineering Mathematics (Third Year-Part A)”, The National Publishing Company, Madras, 2016.

## Web Resources

1. http://www.yorku.ca/yaoguo/math1025/slides/chapter/kuttler-linearalgebra –slides-systemsofquation-handout.pdf
2. http://www.math.cum.edu/~wn0g/2ch6a.pdf
3. https://nptel.ac.in/courses/122/104/122104017/
4.https://nptel.ac.in/courses/111/106/111106051/
5.https://nptel.ac.in/courses/111/108/111108081/

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **2** | 1 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **3** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **4** | 1 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **5** | 2 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |

| U20EST125 | PROGRAMMING IN PYTHON | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 | 45 |

**Course Objectives:**

- To acquire programming skill in core python.
- To learn how to design python program and applications.
- To acquire object oriented skills in python.
- To develop the skill of designing applications using modules and packages

**Course Outcomes:**

*After completion of the course, the students will be able to*

***CO1 -*** *Define the structure and components of a python program.*

***CO2 -*** *Write decision statements to facilitate code reuse.*

***CO3 -*** *Write loops and python functions to facilitate code reuse.*

***CO4 -*** *Use list, tuple, Set and dictionary in python program.*

***CO5 -*** *Read/ write data from/to files and structure a program using Exceptions and Modules*.

**UNIT I INTRODUCTION TO PYTHON PROGRAMMING LANGUAGE (9 Hrs)**

Introduction to Python Language- Strengths and Weaknesses- IDLE- Visual Source Code – Arithmetic Operators – Arithmetic Expressions - Dynamic Types- Naming Conventions- String Values- String Operations- String Slices - String Operators -Numeric Data Types-Conversions

**UNIT II DECISION MAKING (9 Hrs)**

Control Flow: Introduction - Control Flow and Syntax – Indenting - Relational Operators – Relational Expressions- Logical – Operators – Logical Expressions- The If Statement - if else - elif – Nested if.

**UNIT III LOOPING (9 Hrs)**

Loop: The while Loop -break and continue – nested while Loop – the for Loop – Nested for Loop. Functions: parameters - return values - local and global scope - function composition – recursion and lambda functions.

**UNIT IV LIST, TUPLE, SET, DICTIONARY, ARRAYS (9 Hrs)**

Lists: list operations - list slices - list methods - list loop – mutability –aliasing - cloning lists - list parameters - Tuples: tuple assignment - tuple as return value - advanced list processing – list comprehension – sets - Dictionaries: operations and methods - Arrays.

**UNIT V FILES, EXCEPTIONS, MODULES, AND PACKAGES (9 Hrs)**

Built In Functions - Files and exception: text files - reading and writing files - format operator - command line arguments -errors and exceptions -handling exceptions -modules-standard modules –packages-Bit Wise Operators.

**Text Books**


1. Martin C Brown, “Python The Complete Reference”, McGraw-Hill Education – Europe, 4th Edition, 2018
2. Allen B. Downey, “Think Python: How to Think Like a Computer Scientist‘‘, 2nd edition, Updated for Python 3, Shroff/O‘Reilly Publishers, 2016 (http://greenteapress.com/wp/thinkpython/).
3. Reema Thareja, “Python Programming Using Problem Solving Approach”, ISBN: 9780199480173, Publisher: Oxford University Press; First edition, 2017.


**Reference Books**


1. Ben Stephenson, “The Python Workbook A Brief Introduction with Exercises and Solutions”, Springer International Publishing Switzerland 2014
2. Robert Sedgewick, “Kevin Wayne, Robert Dondero, —Introduction to Programming inPython: An Inter- disciplinary Approach”, Pearson India Education Services Pvt. Ltd., 2016.
3. Timothy A. Budd, “Exploring Python”, Mc-Graw Hill Education (India) Private Ltd., 2015.

## Web References

1. https://www.learnpython.org/
2. https://pythonprogramming.net/introduction-learn-python-3-tutorials/
3. https://www.codecademy.com/learn/learn-python
4. https://nptel.ac.in/courses/106/106/106106182/

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **2** | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **3** | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **4** | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| **5** | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |

| U20ESTX17 | BASIC ELECTRICAL AND ELECTRONICS ENGINEERING | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 3 | 1 | 0 | 3 | 48 |

**Course Objectives**

- To introduce fundamental concepts, various laws and principles associated with electrical circuits and its analysis.
- To provide knowledge about the various factors in AC circuits and resonance condition.
- To introduce the concept of electrical safety, power system and working of transformers and motors.
- To understand the characteristics and applications of semiconductor devices
- To provide the basic knowledge in analog electronics
- To understand the purpose of communication and acquire knowledge on different communication systems

**Course Outcomes**

*On successful completion of the course, students will be able to*

***CO1 -*** *Analyze the basic concepts, various laws and theorems used in DC circuits.*

***CO2 -*** *Analyze and solve the AC circuits and develop resonance circuits for transmitter and receiver circuits.*

***CO3 -*** *Gain the knowledge of power system, importance of electrical safety measures and application of transformers and motors in real time.*

***CO 4 -*** *Understand the importance of semiconductor devices and its applications*

***CO 5 -*** *Understand the characteristics and operation of BJT and FETs.*

***CO 6 -*** *Awareness towards different Communication Systems*.

**PART A - ELECTRICAL ENGINEERING**

**UNIT I D.C CIRCUITS AND NETWORK THEOREMS (8 Hrs)**

Concept of Potential difference, voltage, current, work, Power, Energy, Electric networks, voltage source and current sources, linear passive and active elements, current-voltage relation, ideal and practical sources, concept of dependent and independent sources, Kirchhoff-s laws and applications to network solutions using mesh and nodal analysis, Simplifications of networks using series-parallel, Star/Delta transformation. Network Theorem – Superposition, Thevenin's, Norton's and Maximum Power Transfer.

**UNIT II AC CIRCUITS**

**(8 Hrs)**

AC waveform- definitions, form factor, peak factor, study of R-L, R-C,RLC series circuit, R-L-C parallel circuit, phasor representation in Polar and rectangular form, concept of impedance, admittance, active, reactive, apparent and complex power, power factor, Resonance in series and parallel circuits, bandwidth and quality factors,3 phase Balanced AC Circuits (Y-$\Delta$ & Y-Y)-power Measurement –two Wattmeter method

**UNIT III ELECTRICAL SAFETY AND ELECTRICAL MACHINES (8 Hrs)**

Layout of electrical power system and its functions, Safety devices and systems, Types of domestic wiring, Wiring Accessories, Necessity of earthing, insulators, cables, fuse and circuit breakers.

Law of Electromagnetic induction, Auto transformer, Single phase transformer- load test –OC and SC test, Fleming's Right & Left hand rule – construction, principle, load test and performance characteristics of rotating machines – DC Motor & DC Generator - single phase/three phase induction motor , Alternator and synchronous motor (Qualitative approach only)

**PART B - ELECTRONICS ENGINEERING**

**UNIT IV SEMICONDUCTOR DIODES AND APPLICATIONS (8 Hrs)**

Introduction semiconductor materials-Doping-Intrinsic and Extrinsic Semiconductor –PN junction diode, structure, characteristics-diffusion and depletion capacitance-Rectifier, Half wave and Full wave rectifier-zener diode characteristics-zener diode as regulator –Light Emitting Diode(LED)-Solar Panel

**UNIT V TRANSISTORS (8 Hrs)**

Bipolar Junction Transistor-construction-operation-Common Base, Common Emitter, Common collector Configuration-characteristics- Biasing- numerical application-Junction Field Effect Transistor(JFET), Metal oxide semiconductor Field Effect Transistor, EMOSFET-DMOSFET operation characteristics-Numerical applications

**UNIT VI COMMUNICATION SYSTEMS (8 Hrs)**

Need for Modulation – Block diagram of analog communication System - AM, FM, PM Definitions and Waveforms – Comparison of digital and analog communication system- Block diagram of digital communication system – Electromagnetic Spectrum. Wired and wireless Channel – Block diagram of communication systems – satellite communication – Cellular Mobile Communication – Fibre Optical Communication System.

## Text Books


1. Sudhakar.A and Shyam Mohan.S.P, “Circuits and Networks Analysis and Synthesis”, Tata McGraw Hill Publishing Company Ltd., New Delhi, 4th edition, 2010.
2. D.P.Kothari and I.J. Nagrath, “Electric Machines”, Tata McGraw Hill, New Delhi, 5th Edition, 2017.
3. A.E.Fitzgerald, Charles Kingsley, Stephen. D. Umans, “Electric Machinery”, Tata Mcgraw Hill, New Delhi, 7th Edition, 2013.
4. Theraja B. L and Theraja A. K., “A Textbook of Electrical Technology”, Vol. II, S Chand & Co. Ltd., New Delhi, 2009
5. V. K. Metha & Rohit Metha,”Principles of Power System”, S.Chand, 2005
6. Edward Hughes, John Hiley, Keith Brown, Ian McKenzie Smith, “Electrical and Electronics Technology”, Pearson Education Limited, New Delhi, 2010.


## Reference Books


1. V.Deltoro, “Principle of Electrical Engg.” PHI.
2. M.A Mallick, Dr. I. Ashraf, “Fundamental of Electrical Engg,” Word Press, Lucknow.
3. A T. K. Nagsarkar and M. S. Sukhija, Basic of Electrical Engineering, Oxford University Press, 2011
4. S.K. Sahdev, “Fundamentals of Electrical Engineering and Electronics”, DhanpatRai and Co, 2013.
5. Wayne Tomasi, “Electronic Communication Systems- Fundamentals Theory Advanced”, Fourth Edition, Pearson Education, 2001.


## Web References

1. https://www.electrical4u.com/
2. https://nptel.ac.in/courses/108/102/108102146/
3. https://www.javatpoint.com/electrical-machines-tutorial
4. http://www.electronics-tutorials.ws
5. http://www.eeweb.com/articles

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | 1 | - | - |
| 2 | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | 1 | - | - |
| 3 | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | - | - | 1 |
| 4 | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | 1 | - | - |
| 5 | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | 1 | - | - |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6** | 2 | 3 | 2 | 3 | 3 | | | | | | | | | | |

**U20FTT101** **BASICS OF APPAREL TECHNOLOGY**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 3 | 0 | 0 | 3 | 45 |

**Course Objectives**

1. To understand the basics of apparel industry
2. To familiarize the pre-production and post-production processes of apparel industry.
3. To highlight the production processes of apparel industry.
4. To understand the applications of CAD-CAM in apparel industry.

**Course Outcomes**

*At the end of the course, the students will be able to*

***CO1*** *-. Describe the structure and classification of garment industries as per size, labor and product.*

***CO2*** *-. Illustrate various pre-production and post-production processes with their importance's, process flow, requirements and machineries.*

***CO3*** *-. Describe the structure and classification of stiches and seams.*

***CO4*** *-. Categorize various production technologies*

***CO5*** *-. Explain various process in apparel industry.*

**UNIT I** **(7 Hrs)**

**Introduction to clothing** industry, classification as per the size, labour etc. fabric inspection and grading system used in the industry.

**Unit II** **(9 Hrs)**

**Cutting**: Importance of cutting, requirements of cutting, Types of cutting Machines, production processes in cutting room, planning, Laying, spreading, cutting, preparation for sewing. Bundling and labelling

**Fusing:** purpose of fusing, the process of fusing, requirement of fusing as per fabric, fusing machinery for garment parts, methods of fusing and quality control in fusing.

**Unit III** **(10 Hrs)**

**Sewing:** Classification of stitches & seams, feed systems, sewing threads, sewing needles, machinery and elements; functions of SNLS machine and working aids. Defects in seam and stitches,

**Unit IV** **(10 Hrs)**

**Production Technology**: Manual systems, make-through systems, straight line systems, modular production systems, unit production systems, quick response systems.

**Warehousing**: Handling equipment, storage equipment, packing equipment.

**Unit V** **(9 Hrs)**

**Pressing & finishing**: object, Objectives of pressing, classifications, means, components, machinery and equipments, garment finishing and inspection. Labelling and Packing.

**Text Books:**


1. Harrold Carr., and Barbara Latham., "The Technology of Clothing Manufacture" Backwell Science, U.K., 1994,ISBN: 0632037482 | ISBN-13: 9780632037483.
2. Gerry Cooklin., Steven George Hayes., and John McLoughlin., "Introduction to Clothing Manufacture", Wiley-Blackwell Science, U.K., 2006, ISBN: 0632058463 | ISBN- 13:9780632058464.


**References:**

1. Richard M. Jones., “The Apparel Industry”, Blackwell Science, U.K., 2006, ISBN: 1405135999 |ISBN-13: 9781405135993.
2. Kantilal Ila., “Apparel Industry in India”, NICTAS Publication, Ahmedabad, 1990,ISBN:8185472009 | ISBN-13: 9788185472003.
3. Raj kishore Nayak., and Rajiv Pandhya.,”Garment Manufacturing Technology”, Woodhead publications 2015, ISBN: 1782422323 | ISBN-13: 9781782422327.
4. ChutterA. J., “Introduction to Clothing Production Management”, Wiley-Blackwell Science, U.K., 1995, ISBN: 0632039396 | ISBN-13: 9780632039395.
5. Harold Carr, “The Clothing Factory”, Clothing and Footwear Institute, 1972. ISBN: B0012PP566.
6. Miller E., “Textile Properties and Behaviour in Clothing use”, Batsford Publication, 1992, ISBN:0713472359 | ISBN-13: 9780713472356.
7. Cooklin G., “Fusing Technology”, The Textile Institute, Manchester, 1990, ISBN: 1870812204 |ISBN-13: 9781870812207.
8. Jay Diamond., “Fashion Apparel and Accessories”, Delmar Publication, 1994, ISBN: 0827356242 | ISBN-13: 9780827356245.

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | 2 | 1 | - | - | - | - | 3 | - | - | - | 3 | 2 | - |
| **2** | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| **3** | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 | - |
| **4** | 3 | 2 | 2 | 1 | - | - | 2 | - | - | - | - | - | 3 | 2 | - |
| **5** | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | - |

**U20FTT102**

# TEXTILE FIBRES SCIENCE

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 3 | 0 | 0 | 3 | 45 |

## Course Objectives

- To understand the basics of textile fibres.
- To analyse morphological and chemical structure of natural fibres.
- To understand the manufacturing processes of manmade fibres.
- To explain properties of natural and manmade fibres.

## Course Outcomes

*After completion of the course, the students will be able to*

***CO1.*** *Explain the basics of textile natural fibres.*

***CO2.*** *Explain the basics of textile synthetic fibres.*

***CO3.*** *Describe morphological and chemical structure of regenerated fibres.*

***CO4.*** *Illustrate identification of various fibres*

***CO5.*** *Enunciate the selection of fibres.*

## Unit I – NATURAL FIBRES (10 Hrs)

**NATURAL FIBRES:** Classification of Textile Fibres – natural and synthetic. Requirements and characteristics of textile fibres. Properties, sourcing and end uses of cotton, jute, and flax. Wool: Different qualities, properties and end uses. Silk: different types, properties and end uses. Organic cotton and coloured cotton, Banana fibre – properties and end uses. Unconventional Fibres

## Unit II – SYNTHETIC FIBRES (10 Hrs)

**SYNTHETIC FIBRES:** Principles of fiber formation by dry, wet, melt spinning and solution spinning techniques. Manufacture, sourcing and properties of polyamide, polyester, polypropylene and polyacrylonitrile fibres. Drawing and heat setting process. Mono and multi filaments. High performance fibres- elastomers, glass, aramid, carbon fibres: properties, sourcing and applications. Bi component fibres - micro fibres, ultrafine denier fibres: properties and enduses. Dope dyed fibres, Nano fibres - properties and applications.

## Unit III – REGENERATED FIBRES (9 Hrs)

**REGENERATED FIBRES:** Cellulosic Fibres- Viscose rayon, lyocell, modal and Bamboo – Raw Material, production, structure & properties, sourcing and end uses. Regenerated Protein Fibres: Milk, soybean - structure & properties, sourcing and end uses.

## Unit IV – IDENTIFICATION OF FIBRES (6 Hrs)

**IDENTIFICATION OF FIBRES:** Feeling Test, Burning test, Microscopic test, Staining Test, Chemical test and Density measurement.

## Unit V – PRODUCT VARIATION AND FIBRE SELECTION (10 Hrs)

**PRODUCT VARIATION AND FIBRE SELECTION:** Fibre selection for apparels – casual, formal and partywear. Home textiles – safety and aesthetic properties. Basic properties and fibre selection for Sportswear, intimate garments, medical garments and protective clothing.

## Text Books:

1. Mishra S. P., —Text book of Fibre Science and Technology‖, Newnes-HV Butterworths & Co. Publishers Ltd., Oxford, 2000.
2. Premamoy Ghosh, —Fibre Science and Technology‖, McGraw Hill, India, 2004.

## References:

1. Morton W. E. and Hearle J. W. S., —Physical Properties of Textile Fibres‖, Textile Institute, Manchester, 1993
2. Gupta V. B. and Kothari V. K. —Manufactured Fibre Technology‖, Chapman & Hall, London, 1997.
3. Sreenivasamurthy H.V., —Introduction to Textile Fibres‖, The Textile Association India, Mumbai, 1998.

4. Gorden & Cook - Hand book of Textile Fibres Vol. I & II, Merrrow Publication Ltd, England.

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| **2** | 3 | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - |
| **3** | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - | - |
| **4** | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **5** | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 1 |

| U20EST127 | PROGRAMMING IN PYTHON LABORATORY | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To acquire programming skill in core python.
- To learn how to design python program and applications.
- To acquire object oriented skills in python.
- To develop the skill of designing applications using modules and packages.

## Course Outcomes

*After completion of the course, the students will be able to*

***CO1*** *- Examine Python syntax and semantics.*

***CO2*** *- Demonstrate proficiency in handling Strings and File Systems.*

***CO3*** *- Create, run and manipulate Python Programs using core data structures.*

***CO4*** *- Draw projections and solids and development of surfaces.*

***CO5*** *- Interpret the concepts of Object-Oriented Programming as used in Python.*

***CO6*** *- Implement exemplary applications related to modules and packages in Python.*

## List of Experiments

1. Develop simple programs using python syntax and semantics.
2. Demonstrate python program using Arithmetic expressions.
3. Demonstrate python program using Strings.
4. Demonstrate python program using relational expressions.
5. Understand the decision making statement.
6. Illustrate Conditional statements with real time problems.
7. Write Python Functions to facilitate code reuse.
8. Basic python applications using List, Tuples, Sets.
9. Implementation of searching.
10. Implementation of sorting.
11. Implement python programs using Dictionaries
12. Illustrate file concepts with real time problems
13. Use Exception handling in python applications for error handling.
14. Implement simple applications using Modules
15. Implement simple applications using Packages
16. Develop Real time application like Number guessing, Dice rolling simulator, Mobile contacts, etc

## Reference Books


1. Ben Stephenson, “The Python Workbook A Brief Introduction with Exercises and Solutions”, Springer International Publishing Switzerland 2014
2. Martin C Brown, “Python The Complete Reference”, McGraw-Hill Education – Europe, 4th Edition, 2018
3. Allen B. Downey, “Think Python: How to Think Like a Computer Scientist‘‘, 2nd edition, Updated for Python 3, Shroff/O‘Reilly Publishers, 2016 (http://greenteapress.com/wp/thinkpython/).
4. Reema Thareja, “Python Programming Using Problem Solving Approach”, ISBN: 9780199480173, Publisher: Oxford University Press; First edition, 2017.
5. Robert Sedgewick, Kevin Wayne, Robert Dondero, “Introduction to Programming in Python: An Inter- disciplinary Approach”, Pearson India Education Services Pvt. Ltd., 2016.
6. Timothy A. Budd, “Exploring Python”, Mc-Graw Hill Education (India) Private Ltd., 2015
7. Paul Gries, Jennifer Campbell and Jason Montojo, “Practical Programming: An Introduction to Computer Science using Python 3”, Second edition, Pragmatic Programmers, LLC,2013.


## Web References

1. https://www.learnpython.org/
2. https://pythonprogramming.net/introduction-learn-python-3-tutorials/

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | 1 | 1 | 3 | - | - | - | - | - | - | - | - | - | - |
| **2** | 3 | 2 | 1 | 1 | 3 | - | - | - | - | - | - | - | - | - | - |
| **3** | 3 | 2 | 1 | 1 | 3 | - | - | - | - | - | - | - | - | - | - |
| **4** | 3 | 2 | 1 | 1 | 3 | - | - | - | - | - | - | - | - | - | - |
| **5** | 3 | 2 | 1 | 1 | 3 | - | - | - | - | - | - | - | - | - | - |

| U20ESP104 | BASIC OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To introduce practical knowledge for the analysis of laws and theorems.
- To provide the methods to evaluate and test the devices and machines.
- To study VI characteristics of Diodes
- To understand Input and output characteristics of Transistors and FETs

## Course Outcomes

*On successful completion of the course, students will be able to*

***CO1 -*** *Implement the network theorems and validate the results through simulation.*

***CO2 -*** *Develop the various wiring diagrams for house, industries etc*

***CO3 -*** *Estimate the performance of DC and induction motor by conducting load and no load tests.*

***CO4-****Describe characteristics of semiconductor diode and utilize it for different applications*

***CO5-****Impart characteristics of transistor for various applications*

**List of Experiments**

**PART – B ELECTRONICS EXPERIMENTS**

Demonstration on Sources, Ammeters, Voltmeters, Wattmeters, Energy meters and Transducers are Pre Requisite for conducting this electrical engineering Lab.

1. Domestic Wiring Practice
    - Staircase wiring
    - Doctor's room wiring
    - Godown wiring
    - Ceiling fan and fluorescent lamp wiring
2. Verification of Network Theorems (simulation and experimental)
3. Determination of resistance temperature coefficient
4. Simulation of R-L-C Series Circuit for XL>XC, XC<XL
5. Load test on single phase transformer.
6. Measurement of 3-phase power using two wattmeter methods.
7. Load test on DC shunt motor.
8. Load test on single phase induction motor.

**PART – B ELECTRONICS EXPERIMENTS**

1. Study of Electronic components and equipments: Resistor, Capacitor
2. Measurement of AC signal parameter (Peak-Peak, rms period, frequency) using CRO.
3. VI Characteristics of PN junction diode, Zener diode
4. Input and output characteristics of Common Emitter configuration of BJT
5. Characteristics of JFET
6. Measurement of Ripple factor of HWR

## Reference Books


1. Sudhakar.A and Shyam Mohan.S.P, "Circuits and Networks Analysis and Synthesis", Tata McGraw Hill Publishing Company Ltd., New Delhi, 4th edition, 2010.
2. D.P.Kothari and I.J. Nagrath, "Electric Machines", Tata McGraw Hill, New Delhi, 5th Edition, 2017.
3. Edward Hughes, John Hiley, Keith Brown, Ian McKenzie Smith, Electrical and Electronics Technology, Pearson Education Limited, New Delhi, 10 th edition 2010.
4. Edward Hughes, John Hiley, Keith Brown, Ian McKenzie Smith, "Electrical and Electronics Technology", Pearson Education Limited, New Delhi, 10 th edition 2010
5. David Bell, "Electronic Devices and Circuits", 5th Edition, Oxford University Press, 2008.

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | - | - | - |
| **2** | 2 | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - |
| **3** | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | - | - | - |
| **4** | 2 | 3 | 2 | 3 | 3 | - | - | - | - | - | - | - | - | - | - |
| **5** | 2 | 3 | 2 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - |

**U20FTP101** **FIBRE ANALYTICAL LABORATORY**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To understand Method of characterization of fibres.
- To identify of fibres by different methods.
- To analyse various Properties of fibre
- To understand nature and chemical reaction of various fibers

## Course Outcomes

*On successful completion of the course, students will be able to*

***CO1 -*** *Identify the common textile fibres*

***CO2*** *– Identify and determine the blend proportion.*

***CO3 –*** *Analyses the characteristics of fibres.*

***CO4 -*** *Solve real time problems in fibre identification and fibre properties*

***CO5 -*** *Determine the physical properties of fibre*

## LIST OF EXPERIMENTS

1. Identification of fibres by feel, microscopic view, burning behavior and solubility
   - Natural cellulose fibres
   - Natural protein fibres
   - Regenerated cellulose fibres
   - Polyamide fibres
   - Polyester fibres
   - Polyolefin fibres
2. Studying swelling behavior of cotton/Viscose fibres
3. Fibre maturity measurement by caustic soda method.
4. Identification of textile fibres by flammability methods
5. Determination of moisture absorption properties of textile fibres
6. Identification of textile fibres through solubility test.
7. Determination of the blend proportion
   - Natural/ regenerated cellulose
   - Cellulose/ protein fibres
   - Cellulose/polyester fibres

## Reference:

1. Laboratory Manual prepared by the Department of Fashion Technology, 2020

**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | - | - |
| **2** | 1 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | - | - |
| **3** | 2 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | - | - |
| **4** | 1 | 2 | 3 | 3 | - | - | - | - | - | - | - | - | 1 | - | - |
| **5** | 2 | 2 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | - | - |

| SEMESTER II | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl. No.** | **Course Code** | **Course Title** | **Category** | **Periods** | | | **Credits** | **Max. Marks** | | |
| | | | | **L** | **T** | **P** | | **CAM** | **ESM** | **Total** |
| **Theory** | | | | | | | | | | |
| 1 | U20MAT202 | Engineering Mathematics II | BS | 2 | 2 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20EST257 | Applied Mechanics Textile Technologists | ES | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20EST258 | Basic Engineering Graphics for Textile Designing | ES | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT201 | Basics of Yarn and Fabric Manufacturing | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT202 | Concepts of Fashion and Design | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20BST219 | Basics Textile Chemistry | BS | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20FTP201 | Textile manufacturing Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 8 | U20FTP202 | Basic Engineering Graphics for Textile | ES | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| 9 | U20FTP203 | Fashion And Design Concept Lab | PC | 0 | 0 | 2 | 1 | 50 | 50 | 100 |
| | **Employability Enhancement Course** | | | | | | | | | |
| 10 | U20ECC2XX | Employability Enhancement Course -2 | EEC | - | - | 4 | - | 100 | - | 100 |
| | **Mandatory Course** | | | | | | | | | |
| 11 | U20ECM202 | Environmental Science | MC | 2 | - | - | - | 100 | - | 100 |
| | | | | | | | 21 | 500 | 600 | 1100 |

**ENGINEERING MATHEMATICS II**

**U20MAT204** **MULTIPLE INTEGRALS AND TRANSFORMS**

**(Common to all branches)**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 3 | 1 | 0 | 4 | 60 |

## Course Objectives

- To develop logical thinking and analytic skills in evaluating multiple integrals.
- To equip themselves familiar with Laplace transform and solve the differential equations using Laplace transform techniques.
- To enable the students to expand functions into Fourier series using change of intervals.
- To gain good knowledge in application of Fourier transform.
- To inculcate the computational knowledge in Z-transforms.

## Course Outcomes

*After completion of the course, the students will be able to*

***CO1 -*** *Understand the concept of double and triple integrals.*

***CO2 -*** *Find Laplace transform and inverse transform of simple functions.*

***CO3*** *– convert a periodic function into series form.*

***CO4 -*** *Compute Fourier transforms of various functions.*

***CO5 -*** *To solve difference equations using Z- transforms.*

### UNIT I MULTIPLE INTEGRALS (12 Hrs)

Multiple Integrals, change of order of integration and change of variables in double integrals (Cartesian to polar). Applications: Areas by double integration and volumes by triple integration (Cartesian and polar).

### UNIT II LAPLACE TRANSFORMS AND INVERSE LAPLACE TRANSFORMS (12 Hrs)

Definition, Transforms of elementary functions, properties. Transform of derivatives and integrals. Multiplication by t and division by t. Transform of unit step function, transform of periodic functions. Initial and final value theorems, Methods for determining inverse Laplace Transforms, Convolution theorem, Application to differential equations and integral equations. Evaluation of integrals by Laplace transforms.

### UNIT III FOURIER SERIES (12 Hrs)

Dirichlet's conditions – General Fourier series – Expansion of periodic function into Fourier series – Fourier series for odd and even functions – Half-range Fourier cosine and sine series – Change of interval – Related problems.

### UNIT IV FOURIER TRANSFORMS (12 Hrs)

Fourier Integral theorem Fourier transform and its inverse, properties. Fourier sine and cosine transforms, their properties, Convolution and Parseval's identity.

### UNIT V Z - TRANSFORMS (12 Hrs)

Difference equations, basic definition, z-transform - definition, Standard z-transforms, Damping rule, Shifting rule, Initial value and final value theorems and problems, Inverse z-transform. Applications of z-transforms to solve difference equations.

## Text Books


1. Ravish R Singh and Mukul Bhatt, "Engineering Mathematics", Tata McGraw Hill, 1st Edition, New Delhi, 2016.
2. Sivaramakrishna Das P. and Vijayakumar C., "Engineering Mathematics", Pearsons, New Delhi, 2017.
3. Ramana B.V., "Higher Engineering Mathematics", Tata McGraw Hill, New Delhi 2018
4. M.D.Petale, "A text book on Z- Transforms (Engineering Mathematics)", Bames and Noble, New Edition, 2020.

5. Dr.G.Balaji, ”Transforms and Partial Differential Equations”, Balaji Publication,11th Edition,2017

## Reference Books

1. Dass .H.K, “Advanced Engineering Mathematics”, S. Chand & co, New Delhi, 2019.
2. Bali N.P. and Dr. Manish Goyal, “Engineering Mathematics”, Lakshmi Publications Pvt. Ltd., New Delhi, 9th Edition, 2015.
3. Erwin Kreyszig, “Advanced Engineering Mathematics”, John Wiley & Sons, New Delhi, 10th Edition. 2019.
4. Gupta .C.B, Shree Ram Singh, M. Kumar, “Engineering Mathematics for semester I & II”, Tata McGraw Hill, New Delhi, 2015.
5. Ramana B.V., ”Higher Engineering Mathematics”, Tata McGraw Hill, New Delhi 2018.

## Web References

1. https://nptel.ac.in/courses/111105121**/**
2. https://nptel.ac.in/courses/111105035/
3. https://nptel.ac.in/courses/111107119/
4. https://swayam.gov.in/nd1_noc20_ma17/preview
5. https://nptel.ac.in/courses/111/103/111103021/

**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **2** | 1 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **3** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **4** | 1 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **5** | 2 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20CET201** | **APPLIED MECHANICS TEXTILE TECHNOLOGISTS** | **3** | **0** | **0** | **3** | **45** |

**Course Objectives**

- To understand the concept of forces and various laws related to force with basic principles, theorems and concepts of mechanics.
- To understand the concepts like equilibrium, support reactions, friction, moment of inertia and use of simple machines.
- To study and analyse the effect of various types of forces on the bodies in static and dynamic conditions.
- To interpret the concept of transmission of motion and power in various machines by using various drives and bearings used in textile machines.

**Course Outcomes:**

*After completion of the course, the students will be able to*

***CO1*** *- Understand the concept of forces and various laws related to force with basic principles, theorems and concepts of mechanics.*

***CO2 -*** *Understand the concepts like equilibrium, support reactions and friction.*

***CO3*** *- Understand the moment of inertia and use of simple machines.*

***CO4 -*** *Analyses the effect of various types of forces on the bodies in static and dynamic conditions.*

***CO5 -*** *Interpret the concept of transmission of motion and power in various machines by using various drives and bearings used in textile machines*

**Unit I - Fundamentals of statics (9 Hrs)**

Statics, dynamics, Fundamental units of measurements, Metric system of units, SI. System, Scalar and Vector quantities. Force, system of forces, Resultant force and equilibriant, principle of transmissibility of force, moment of force. Couple, Law of parallelogram of forces, Varignon's theorem, Composition and resolution of Coplanar concurrent and nonconcurrent forces.

**Unit II - Equilibrium (9 Hrs)**

Equilibrium of Coplanar forces, Conditions of equilibrium, free body diagram, Lami's theorem. **Friction:**Introduction to friction, types of friction, Laws of friction. (No numerical examples on friction). **Beams:** Types of beams, Types of Loads, Types of supports, Analysis of Simply supported beams.

**Unit III - Moment of Inertia (13 Hrs)**

Centroid and Centre of gravity, Centroid of composite areas, Radius of gyration, parallel axis theorem, perpendicular axis theorem, Moment of inertia of composite sections. Mechanical advantage, velocity ratio, efficiency, law of machine, effort lost in friction, load lost in friction, Study and numerical examples on simple machines- Simple screw jack, Simple axle and wheel, differential axle and wheel, worm and worm wheel.

**Unit IV - Kinematics and Kinetics (9 Hrs)**

**Kinematics of Linear motion:** Equations of linear motion with constant and variable acceleration, motion under gravity.

**Kinematics of Angular motion:** Relation between angular motion & linear motion, Equations of angular motion, Centrifugal & centripetal forces, Motion along a curved path, Banking of roads.

**Kinetics:** Newton's laws of motion, Mass moment of inertia, D'Alemberts principle, work, power, energy, impulse, Work- Energy Principle, Impulse- Momentum Principle, Principle of conservation of energy.

**Unit V - Transmission of motion and power (6 Hrs)**

Belt, rope, chain and gear drives, P.I.V. drives, Type of gears and gear drives, Gear trains, velocity ratio, advantages of gear drives, uses in textile machines, Concept of epicyclic gearing. Types of bearing and their applications (Only theory, no numerical examples on this topic)

## Text Books:

1. Beer, F.P and Johnson Jr. E.R. “Vector Mechanics for Engineers (In SI Units): Statics and Dynamics”, 8th Edition, Tata McGraw-Hill Publishing company, New Delhi (2004)
2. Vela Murali, “Engineering Mechanics”, Oxford University Press (2010)

## References:

1. Hibbeller, R.C and Ashok Gupta, “Engineering Mechanics: Statics and Dynamics”, 11th Edition, Pearson Education (2010).
2. Irving H. Shames and Krishna Mohana Rao. G., “Engineering Mechanics – Statics and Dynamics”, 4th Edition, Pearson Education (2006).
3. J. L. Meriam and L.G.Kraige, “Engineering Mechanics - Statics - Volume 1, Dynamics Volume 2,Third Edition, John Wiley & Sons, (1993).
4. Rajasekaran, S and Sankarasubramanian, G., “Engineering Mechanics Statics and Dynamics”, 3rd Edition, Vikas Publishing House Pvt. Ltd., (2005).

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 2 | 1 | 2 | - | 2 | 1 | 1 | 1 | - | 2 | 2 | 2 | 2 | 2 |
| **2** | 2 | 2 | 1 | 2 | - | 2 | 1 | 1 | 1 | - | 2 | 2 | 2 | 3 | 2 |
| **3** | 3 | 2 | 1 | 3 | - | 2 | 2 | 1 | 1 | - | 2 | 2 | 3 | 3 | 3 |
| **4** | 2 | 2 | 1 | 3 | - | 2 | 2 | 1 | 1 | - | 2 | 2 | 3 | 3 | 3 |
| **5** | 3 | 2 | 1 | 3 | - | 2 | 2 | 1 | 1 | - | 2 | 2 | 3 | 2 | 2 |

| U20MET201 | BASIC ENGINEERING GRAPHICS FOR TEXTILE DESIGNING | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 | 45 |

## Course Objectives

- To understand procedure for converting a pictorial view into orthographic view.
- To understand procedure for converting an orthographic view in to isometric view.
- To understand procedure for drawing Development and anti-developmentof solids such as cone, cylinder, prism and pyramid.
- To study IS convections for various materials and mechanical elements,free hand sketches of various mechanisms used in textile machines.To know the use of Auto- CAD Commands.

## Course Outcomes

*At the end of the course students will be able to,*

***CO1**. Draw orthographic views from a given pictorial view.*

***CO2**. Draw isometric view from given orthographic views.*

***CO3**. Draw Development and anti-development of solids such as cone, cylinder, prism and pyramid.*

***CO4**. Draw IS convections for various materials and mechanical elements, free hand sketches of various mechanisms used in textile machines.*

***CO5 -** To write Commands for various entities in Auto-CAD.*

### UNIT 1 (9 Hrs)

**CONCEPTS AND CONVENTIONS (Not for Examination)**

Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.

**ORTHOGRAPHIC PROJECTION:** Principles of orthographic projection-projection of points, straight lines, planes and solids. Orthographic projection of simple engineering components – missing view exercises. Drawing orthographic projections of computer components.

### UNIT 2 (9 Hrs)

**PICTORIAL PROJECTIONS:** Principles of pictorial views, isometric view of simple engineering components. Orthographic views from given pictorial views. Isometric views from given two or three views. Drawing isometric views of typical electronic components.

### UNIT 3 (9 Hrs)

**SECTION OF SOLIDS:** Section of regular solids, types of sections, selection of section views. Sectional views of simple engineering components. Drawing sectional views of assemblies like electric motor, mobile phone.

### UNIT 4 (9 Hrs)

**DEVELOPMENT OF SURFACES:** Development of lateral surfaces of regular solids and truncated solids. Preparing parts like cubes, prisms, pyramids, cylinders, cones, tray, funnel, CPU housing using CAD software.

### UNIT 5 (9 Hrs)

**TEXTILE MACHINE DESIGNING BY AUTO- CAD**

(2D/3D CAD software) Making sketches various textile machine parts used in spinning, weaving & Knitting Commands for drawing lines, circles, polygons, ellipse etc.

## Text Books

1. Natrajan K.V., “A text book of Engineering Graphics”, Dhanalakshmi Publishers, Chennai, 2009.
2. Venugopal K.andPrabhu Raja V., “Engineering Graphics”, New Age International (P) Limited,2008.

## Reference Books

1. Basant Agarwal and Agarwal C.M., “Engineering Drawing”, Tata McGraw Hill Publishing Company Limited, New Delhi,2008.
2. Bhatt N.D. and Panchal V.M., “Engineering Drawing”, Charotar Publishing House, 50th Edition,2010.
3. Gopalakrishna K.R., “Engineering Drawing” (Vol. I&II combined), Subhas Stores, Bangalore,2007.
4. Luzzader, Warren.J. and Duff,John M., “Fundamentals of Engineering Drawing with an introduction to Interactive Computer Graphics for Design and Production, Eastern Economy Edition, Prentice Hall of India Pvt. Ltd, New Delhi,2005.
5. N S Parthasarathy And Vela Murali, “Engineering Graphics”, Oxford University, Press, New Delhi,2015.
6. Shah M.B., and Rana B.C., “Engineering Drawing”, Pearson, 2nd Edition,2009.

**Special points applicable to End Semester Examinations on BASIC ENGINEERING GRAPHICS FOR TEXTILE DESIGNING:**

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size. The examination will be conducted in appropriate sessions on the same day

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | - | 1 | - | - | 1 | - | - | - | 1 | - | 1 | - | 1 | 1 |
| **2** | 3 | - | 1 | - | - | 2 | - | - | - | 1 | - | 2 | - | 1 | 1 |
| **3** | 3 | - | 2 | - | - | 2 | - | - | - | 1 | - | 2 | - | 2 | 1 |
| **4** | 3 | - | 2 | - | - | 2 | - | - | - | 1 | - | 2 | - | 2 | 1 |
| **5** | 3 | - | 2 | - | 2 | 2 | - | - | - | 1 | - | 3 | - | 2 | 1 |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTT201** | **BASICS OF YARN AND FABRIC MANUFACTURING** | **3** | **0** | **0** | **3** | **45** |

**Course Objectives**

- To enable the students to learn about the basics of machines used in yarn formation
- To learn basics of machines used in fabric formation techniques.

**Course Outcomes (COs)**

*CO1-Analyze the principles of preparatory process in spinning and comprehend their production and quality parameters.*
*CO2-Analyze the principles of modern spinning systems and comprehend their production and quality parameters.*
*CO3- Classify the different types of yarn numbering techniques.*
*CO4-Process sequence for producing different types of yarns*
*CO5-Explain the principles of fabric formation in looms and classify the types of fabrics produced in them*.

**UNIT 1** **(9 Hrs)**

**Ginning:** Linear density systems for textile materials; Ginning – objectives, types, working principle and ginning performance on yarn quality.

**UNIT 2** **(9 Hrs)**

**Introduction to spinning:** Process flow chart of conversion fibre into yarn. Objectives of each process. Passage of material through blow room, card, draw frame, speed frame, comber and ring frame machines.

**UNIT 3 –** **(6 Hrs)**

Yarn- Types of Yarns, Its Classification and numbering system and classification

**UNIT 4** **(9 Hrs)**

**MODERN SPINNING SYSTEMS**: Definition and Classification and its principle. Objectives and Principle of different spinning system – rotor, friction, air-jet and air vortex spinning machines ; core, wrap spinning system, comparison of yarn properties

**UNIT 5 BASICS OF FABRIC PRODUCTION** **(12 Hrs)**

Woven fabric – warp, weft, weaving, path of warp; looms – classification, handloom and its parts, powerloom, automatic looms, shuttleless looms, special type of looms; preparatory machines for weaving process and their objectives; basic weaving mechanism - primary, secondary and auxiliary mechanisms; knitting – classification, principle, types of fabrics; nonwoven process – classification, principle, types of fabrics.

**Text Books**


1. Werner Klein , “The Rieter Manual of Spinning, Volume.1 – Technology of Short staple Spinning”, Rieter Machine Works Limited, Switzerland, 2008.
2. Werner Klein,“The Rieter Manual of Spinning, Volume.2 – Bloow room& Carding”, Rieter Machine Works Limited, Switzerland,2008.
3. Werner Klein,“The Rieter Manual of Spinning, Volume.3 – Spinning Preparation”, Rieter Machine Works Limited, Switzerland, 2008.
4. Vaidya A. A., “Production of Synthetic Fibres”, Prentice Hall of India Pvt. Ltd., New Delhi,1988
5. Nakasjima (English edition, edited by Kajiwara K. and McIntyre J. E.), “Advanced Fibre Spinning Technology”, Wood head Publication Ltd., England, 1994.


**References:**

1. Oxtoby E., “Spun Yarn Technology “, Butterworth Publications, London, 1987
2. Lord P.R., “Yarn Production: Science, Technology and Economics”, The Textile Institute, Manchester, 1999
3. Shaw J., “Short-staple Ring Spinning, Textile Progress”, The Textile Institute, Manchester, 1982
4. Iredale J., “Yarn Preparation: A Handbook “, Intermediate Technology, 1992.
5. Ajgaonkar, D.B., “Sizing, Materials, Methods and Machines”, Textile Trade Press, Mumbai,1982.
6. “Weaving: The knowledge in Technology”, Papers Presented at the Textile Institute Weaving Conference 1998, Textile Institute, ISBN: 18770372182
7. Booth J.E., “Textile Mathematics Volume 3”, The Textile Institute, Manchester, 1977, ISBN: 090073924X
8. Lord P.R. and Mohamed M.H., “Weaving: Conversion of Yarn to Fabric”, Merrow, 1992, ISBN: 090409538X

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | 2 | 2 | - | 2 | - | - | - | - | - | - | - | 1 | - | - |
| **2** | 1 | 1 | 2 | - | 2 | - | - | - | - | - | - | - | 1 | - | - |
| **3** | 2 | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | - | - |
| **4** | 2 | 3 | 2 | - | 1 | - | - | - | - | - | - | - | 2 | - | - |
| **5** | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | - | 2 | - | - |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTT202** | **CONCEPTS OF FASHION AND DESIGN** | **3** | **0** | **0** | **3** | **45** |

**Course Objectives**

- To explain and illustrate various elements of design
- To explain and illustrate various principles of design
- To explain basic tools and equipment used for fashion drawing.
- To explain drawing of human body by using 8, 10, 12 head measurements.

**Course Outcomes**

*At the end of the course students will be able to*

***CO1**. Work as a member of team and demonstrate practical applications of various elements and principles of art in fashion dress designing.*

***CO2**. Choose appropriate design details to rectify body irregularities.*

***CO3**. Use appropriate tools and equipments for fashion drawing.*

***CO4**. Analyze and create 8- head, 10- head and 12- head figures.*

***CO5**. Application of computer aided fashion in apparel industry.*

**UNIT 1. INTRODUCTION TO FASHION DESIGN: (6 Hrs)**

Definition and meaning of design, aspects of design: structural, functional & decorative. Optical illusion and its role in fashion designing.

**UNIT 2. ELEMENTS OF DESIGN: (6Hrs)**

Elements of Design –line, shape, form, size, colour, texture and pattern; principles of design - Harmony, Balance, Rhythm, Emphasis and Proportion; introducing elements and principles of design in apparels.

**UNIT 3. COLOUR CONCEPTS: (9 Hrs)**

Colour – definition; dimensions of colour-hue, value and intensity; colour categories and psychology - warm and cool colours; advancing and receding colours; colour theories – Prang colour system and Munsell colour system; colour harmonies.

**UNIT 4. FASHION CONCEPTS (12 Hrs)**

Fashion Terminology - Fashion, Fad, Trend, Classic, High Fashion, Mass Fashion. Fashion Cycle. Fashion theories – Trickle up, Trickle down and Trickle across theory. Art materials: features, advantages, limitations and applications. Pen and Ink Techniques. Wash Techniques. Figure drawing versus fashion illustration. 8-head, 10-head, 12-head female figure illustration. Male figure illustration.

**UNIT 5. COMPUTER AIDED FASHION DESIGN (12 Hrs)**

Vector versus bitmap software. Tools, menus and workspace in Adobe Photoshop, Adobe Illustrator and CorelDraw. Bitmap software: Basic Photo Corrections, various selection techniques, layers, masking of layers, colour applications, filters, etc. Vector Software: working with pen, freehand tools, text, colour and texture, mesh tools, blend tool, interactive fill tools, and tracing bitmaps.

**Text Books:**

1. Suzanne G. Marshall and Hazel O. Jackson, “Individuality in Clothing and Personal Appearance”, Prentice Hall, New Jersey, 2000, ISBN: 0023622008 / ISBN: 978- 0023622007.

2. Kathryn McKelvey and Janine Munslow, “Fashion Design: Process, Innovation and Practice”, Blackwell Publishing, USA, 2005, ISBN: 978-0-470-65577-1.

3. Angel Fernandez and Gabriel Martin Roig, “Drawing for fashion designers”, Anova books company ltd., UK, 2007, ISBN: 0713490756 / ISBN: 978-0713490756.

4. G.J. Sumathi , “Elements of Fashion and Apparel Design”, 2002, New Age International (P) Ltd. ISBN: 8122413714.

5. John Hopkins, Fashion Design: The Complete Guide, 2012, AVA Book Production Pvt. Ltd. ISBN: 9782940411528.

## References:

1. Diane T. and Cassidy T., “Colour forecasting”, Blackwell Publishing, 2005, ISBN: 1405121203 / ISBN: 978-1405121200.
2. Elaine Stone and Jean A. Samples, “Fashion Merchandising”, McGraw-Hill Book Company, 1985, ISBN: 0070617422.
3. Elizabeth Rouse, “Understanding Fashion”, Blackwell Scientific Publication, Oxford, 1989, ISBN: 0632018917 / ISBN: 9780632018918.
4. Harold Carr, “Fashion Design and Product Development”, John Wiley and Sons Inc., NewYork,1992, ISBN: 978-0-632-02893.
**5.** Marian L. Davis, “Visual Design and Dress”, Prentice Hall, New Jersey, 1996, ISBN: 0131121294 / ISBN: 978-0131121294.

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 3 | - |
| **2** | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | - | 2 | 3 | 2 | - |
| **3** | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - | - |
| **4** | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | - | 2 |
| **5** | 3 | 2 | 3 | - | - | - | - | - | - | 2 | - | - | - | - | 2 |

| U20FTT203 | BASICS TEXTILE CHEMISTRY | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 | 45 |

**Course Objectives**

- To explain organic compounds of textile industry
- To explain various inorganic compounds used in textile industry
- To explain polymers and polymerization in textile industry
- To explain surfactants and finishing agents used in textile industry

**Course Outcomes:**

*At the end of the course, the students will be able to,*

***CO1.*** *Understand the basics of organic chemistry and its role.*

***CO2.*** *Understand the basics of inorganic chemistry and its role.*

***CO3.*** *Understand the bleaching agents and impacts.*

***CO4.*** *Recognize the role applications of surfactants and catalysis in engineering and technology.*

***CO5.*** *Apply the various instrumental methods of analysis on numerous engineering materials and their significances.*

**UNIT I - ORGANIC COMPOUNDS FOR TEXTILE INDUSTRY (9 Hrs)**

Cellulose – structure of cellulose – structural aspects of cotton –waxes. Organic dyes – introduction – colour and chemical constitution – classification of dyes by structure – examples only– classification of dyes by methods of application – direct dyes – vat dyes – mordant dyes - azo dyes – disperse dyes – reactive dyes – examples only - chemistry of reactive dyes – Textile auxiliaries – dyeing auxiliaries – optical brighteners – printing auxiliaries – synthetic softeners – wetting agents.

**UNIT II - INORGANIC COMPOUNDS FOR TEXTILE INDUSTRY (9 Hrs)**

Zeolites – types – applications – ion exchange properties of pigments – white pigments- titanium dioxide – lithopone – zinc oxide – coloured pigments - iron oxide – ultramarine.

**UNIT III CHEMICALS AND AUXILIARIES (9 Hrs)**

Bleaching agents – Oxidizing bleaching agents, sodium hypochlorite, hydrogen peroxide. Reducing bleaching agents- sulphur dioxide and sodium hyposulphite. Determination of strength of hydrogen peroxide.

**UNIT IV - LAUNDRY REAGENTS (9 Hrs)**

**Laundry reagents:** Soaps, detergents, cleaning action of soaps, indigenous cleaning agents, industrial cleaning agents, application of perchloroethylene, acetone and petrol. Study on modern cleaning agents.

**UNIT V - STAIN REMOVAL AND STIFFENING (9 Hrs)**

**Stain Removal:** Principles of stain removal, classification of stains and stain removers, various solvents for removing stains like blood, tea, rust, oil/grease, ink, candle wax, fruit juice, gum and other handling stains, stain removal procedure in garment industries.

**Stiffening:** Stiffening agents, purpose of stiffening and classification of stiffening agents, preparation and uses of stiffeners, steps in stiffening process.

**Textbooks**

1. P.C.Jain and Monica Jain, “Engineering Chemistry” Dhanpat Rai Pub, Co., New Delhi, 2018 (17th Edition).
2. N. Panneer Selvam et al., “Chemistry For Textile Technologists – II” by Sonaversity, Sona College of Technology, Salem, 2019.

## References


1. O.G. Palanna “Engineering Chemistry” Tata McGraw-Hill Pub.Co.Ltd, New Delhi, 2017.
2. Kannan P., Ravikrishnan A., “Engineering Chemistry”, Sri Krishna Hi-tech Publishing Company Pvt. Ltd., Chennai, 2016.
3. H.K. Chopra, A. Parmer, “Chemistry for Engineers”, Narosa Publishing House, New Delhi, 110 002, 2016.
4. Gowariker V.R. , Viswanathan N.V. and Jayadev Sreedhar, “Polymer Science”, New Age International P (Ltd.,), Chennai, 2006
5. Gurdeep R. Chatwal, “Synthetic Organic Chemistry”, Himalaya Publishing House, Mumbai, 1994.
6. Dr. C.V. Koushik and Antao Irwin Josico, “Chemical Processing of Textiles Preparatory Processes and Dyeing”, NCUTE Publication, New Delhi – 110 016.
7. Dantyagi S., “Fundamentals of Textile and Their Care”, Oriental Longmans Ltd, New Delhi, 1996.
8. Noemia D’Souza, “Fabric Care”, New Age International (P) Ltd. Publishers, Chennai, 1998.
9. Shenai V. A., “Technology of Textile Finishing”, Sevak Publications, Bombay, 1995.
10. Davis, “Laundry and Clothing Care”, Drama Book Publishers, 1995.


**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | - | - |
| **2** | 3 | - | - | 2 | - | - | - | - | - | - | - | - | 3 | - | - |
| **3** | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | - | - |
| **4** | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | - | - |
| **5** | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | - | - |

**U20FTP201** **TEXTILE MANUFACTURING LAB**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To enable the students to learn technology of yarn manufacturing
- To enable the students to handle spinning machines for effective operation
- To train the students on different mechanisms of various weaving mechanism

## Course Outcomes

*On successful completion of the course, students will be able to*

***CO1 –*** *Manufacture yarn using the sequence of Blowroom, Carding, Drawing and Spinning.*

***CO2 -*** *Understand the material passage in the machine gearing diagram.*

***CO3****. Identify the components of spinning and weaving machines*

***CO4 -*** *Calculate draft, twist and production rate of spinning machines*

***CO5 -*** *Understand the mechanism of weaving machine*

## LIST OF EXPERIMENTS

1. Study on working of Opening Machine machine in Blowroom line
2. Study on working of Mixing and Blending Machines .
3. Study on working of Carding.
4. Study on working of Draw frame.
5. Study on working of Comber.
6. Study on working of Speed frame.
7. Study on working of Ring frame and Rotor spinning.
8. Determination of yarn type, linear density and twist
9. Study and fabric development in shuttle looms – Non- Automatic
10. Study and fabric development in shuttle looms – Automatic looms.
11. Study and fabric development in shuttle looms – Terry weaving
12. Study and fabric development in shuttleless looms – Flexible rapier
13. Study and fabric development in shuttleless looms – Air Jet
14. Practice on designs development in Jacquard looms and fabric development.

## Reference:


1. Laboratory Manual prepared by the Department of Fashion Technology, 2020.


**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | - | - | - | - | - | - | - | 2 | - | 1 | 2 | - | - |
| **2** | 3 | 2 | - | - | - | - | - | - | - | 2 | - | 1 | 2 | - | - |
| **3** | 3 | 2 | - | - | - | - | - | - | - | 2 | - | 1 | 2 | - | - |
| **4** | 3 | 2 | - | - | - | - | - | - | - | 2 | - | 1 | 2 | - | - |
| **5** | 3 | 2 | - | - | - | - | - | - | - | 2 | - | 1 | 2 | - | - |

| U20FTP202 | BASIC ENGINEERING GRAPHICS FOR TEXTILE LAB | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To develop graphic skills for communication of concepts, ideas and design of engineering products.
- To expose them to standardized technical drawings.
- To extend the skill to use software for creating 2D and 3D models.

## Course Outcomes

*On successful completion of the course, students will be able to*

***CO1 -*** *Familiarize with the fundamentals and standards of engineering graphics*

***CO2 -*** *Perform freehand sketching of basic geometrical constructions and multiple views of objects.*

***CO3 -*** *Plan orthographic projections of lines and plane surfaces.*

***CO4 -*** *Draw projections, solids and development of surfaces.*

***CO5 -*** *Visualize the project isometric and perspective sections of simple solids.*

***CO6 -*** *Draft software packages for drafting and modelling*.

## LIST OF EXPERIMENTS

1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Drawing of a Title Block with necessary text and projection symbol.
3. Drawing of curves like parabola, spiral, involute using Bspline or cubic spline.
4. Drawing of front view and top view of simple solids like prism, pyramid, cylinder, cone, etc., andDimensioning.
5. Drawing front view, top view and side view of objects from the given pictorial views (eg. Vblock,Base of a mixie, Simple stool, Objects with hole and curves).
6. Drawing of a plan of residential building (Two bed rooms, kitchen, hall, etc.)
7. Drawing of a simple steel truss.
8. Drawing sectional views of prism, pyramid, cylinder, cone, etc,
9. Drawing isometric projection of simple objects.
10. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-Dmodel.

**Note:** Plotting of drawings must be made for each exercise and attached to the records written byStudents.

## Reference Books


1. James D. Bethune, Engineering Graphics with AutoCAD A Spectrum book 1st Edition, Macromedia Press, Pearson, 2020
2. NS Parthasarathy and Vela Murali, Engineering Drawing, Oxford university press, 2015.
3. M.B Shah, Engineering Graphics, ITL Education Solutions Limited, **Pearson Education** Publication, 2011
4. Bhatt N.D and Panchal V.M, Engineering Drawing: Plane and Solid Geometry, Charotar Publishing House, 2017.
5. Jeyapoovan T, Engineering Drawing and Graphics Using AutoCAD, 7th Edition, Vikas Publishing House Pvt Ltd., New Delhi, 2016
6. C M Agrawal, Basant Agrawal, Engineering Graphics,McGraw Hill, 2012
7. Dhananjay A. Jolhe, Engineering Drawing: With An Introduction To CAD McGraw Hill, 2016
8. James Leach, AutoCAD 2017 Instructor, SDC Publications, 2016.


## Web References

1. http://vlabs.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/egraphics_lab/labs/index.php

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | - | 1 | - | - | - | - | 2 | 2 | - | - | 2 | - | 1 | 2 |
| **2** | 3 | - | 1 | - | - | - | - | 2 | 2 | - | - | 2 | - | 2 | 2 |
| **3** | 3 | - | 1 | - | - | - | - | 2 | 2 | - | - | 2 | - | 3 | 3 |
| **4** | 3 | - | 1 | - | - | - | - | 2 | 2 | - | - | 2 | - | 3 | 3 |
| **5** | 3 | - | 1 | - | - | - | - | 2 | 2 | - | - | 2 | - | 2 | 2 |
| **6** | 3 | - | 1 | - | 2 | - | - | 2 | 2 | - | - | 2 | - | 2 | 2 |

**U20FTP203** **FASHION AND DESIGN CONCEPTS LAB**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To explain and illustrate various elements of design
- To explain and illustrate various principles of design
- To explain basic tools and equipment used for fashion drawing.
- To explain drawing of human body by using 8, 10, 12 head measurements.
- To explain Photoshop and Corel draw

## Course Outcomes

*At the end of the course students will be able to*

***CO1**. Work as a member of team and demonstrate practical applications of various elements and principles of art in fashion dress designing.*

***CO2**. Choose appropriate design details to rectify body irregularities.*

***CO3**. Use appropriate tools and equipments for fashion drawing.*

***CO4**. Analyze and create 8- head, 10- head and 12- head figures.*

***CO5**. Analyze and create various design by Photoshop and Corel draw*

## LIST OF EXPERIMENTS

1. To study elements of design.
2. Development of a color wheel - Primary, Secondary and Tertiary colours , Neutral , warm colours, cool colours
3. To study psychological characteristics of colors.
4. To study tint, shade & tone of color.
5. Development of various textures.
6. To study principles of design.
7. Drawing of human body with the help of 8 head theory of body Measurements.
8. Drawing of human body with the help of 10 head theory of body Measurements.
9. Drawing of human body with the help of 12 head theory of body Measurements
10. Study tools, menus and workspace of Adobe Photoshop.
11. Study tools, menus and workspace of Adobe Illustrator.
12. Study tools, menus and workspace of CorelDraw.

## Reference:


1. Laboratory Manual prepared by the Department of Fashion Technology, 2020


**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | - | - | 3 | - | 3 | - | - | - | - | 2 | - | - | 2 | 1 | - |
| **2** | - | 2 | 3 | - | - | - | - | - | - | 2 | - | - | 2 | 1 | - |
| **3** | - | 2 | 3 | - | 3 | - | - | 2 | - | 2 | - | - | 2 | 1 | - |
| **4** | - | - | 3 | - | 3 | - | - | 2 | - | 2 | - | - | 2 | - | 1 |
| **5** | - | - | 3 | - | - | - | - | - | - | 2 | 3 | - | 2 | - | 1 |

| SEMESTER III | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No. | Course Code | Course Title | Category | Periods | | | Credits | Max. Marks | | |
| | | | | L | T | P | | CAM | ESM | Total |
| **Theory** | | | | | | | | | | |
| 1 | U20BST327 | Numerical Methods and Statics | BS | 2 | 2 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20FTT301 | Fashion Illustration | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTT302 | Pattern Engineering -I | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT303 | Fabric Structure and Design | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT304 | Yarns and Fabrics for Fashion | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20FTT305 | Knitting Technology | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20BSP326 | Statistical Laboratory | BS | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 8 | U20FTP301 | Fashion Illustration Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 9 | U20FTP302 | Pattern Engineering -I Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 10 | U20FTP303 | Fabric Structure and Design Graphics lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| | **Employability Enhancement Course** | | | | | | | | | |
| 11 | U20ECC3XX | Employability Enhancement Course -3 | EEC | - | - | 4 | - | 100 | - | 100 |
| **Mandatory Course** | | | | | | | | | | |
| 12 | U20ECM304 | Physical Education | MC | - | - | 2 | - | 100 | - | 100 |
| | | | | | | | 22 | 550 | 650 | 1200 |

| U20MAT313 | NUMERICAL METHODS AND STATISTICS | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 3 | 1 | 0 | 4 | 60 |

**Course Objectives**

- To know the solution of algebraic and transcendental equations
- To introduce the numerical techniques of differentiation and integration
- To know the basic concepts of statistical parameters like mean, median, mode etc.
- To understand the concept of Correlation , Regression analysis and to learn the concept of testing of hypothesis using statistical analysis
- To learn the concept of Small sampling.

**Course Outcomes**

*After completion of the course, the students will be able to*

***CO 1*** *- Use numerical techniques to solve algebraic and transcendental equations.*

***CO 2*** *- Analyze and apply the knowledge of differentiation and integration by using numerical methods.*

***CO 3*** *- Understand the basic concepts of Statistics.*

***CO 4*** *- Know the applications of Design of experiments and fitness of curve and Understand the applications of large samples.*

***CO 5*** *- Solve the problems related to testing of hypothesis in small samples.*

**UNIT I SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS AND EIGEN VALUE PROBLEMS (12Hrs)**

Bisection method- Method of false position -Newton Raphson method (single and system of two equations) - Eigen value and Eigen vector by power method

**UNIT II INTERPOLATION (12 Hrs)**

Finite Differences - Relation between operators - Interpolation by Newton's forward and backward difference formula for equal intervals - Newton's divided difference method and Lagrange's method for unequal intervals - Differentiation based on finite differences - Integrations by Trapezoidal and Simpson's rules.

**UNIT III MEASURES OF DISPERSION (12Hrs)**

Standard deviation – Mean deviation – Quartile deviation – Range – Measures of Skewness and Pearson's coefficient of skewness – Moments about the arbitrary origin and moments based on measures of skewness and kurtosis.

**UNIT IV CURVE FITTING AND LARGE SAMPLES (12 Hrs)**

Curve fitting by the method of least squares – fitting of straight lines, second degree parabolas and more general curves. One way classification and Two way classifications.

Test of significance: Large samples test for single proportions, differences of proportions, single mean, difference of means and standard deviations.

**UNIT V SMALL SAMPLES (12 Hrs)**

Test for single mean – Difference of means and correlations of coefficients – Test for ratio of variances – Chi-square test for goodness of fit and independence of attributes.

**Text Books**


1. Grewal. B.S., "Numerical Methods in Engineering and Science ", Mercury learning & Information, Kindle Edition, 2018.
2. Atul Goyal, Madhuchanda Rakshit,suchetkumar, "Numerical Methods", New India publishing Agency, 1st Edition 2019
3. Richard A. Johnson, Irwin Miller and John E. Freund, "Probability and Statistics for Engineers", Pearson Education, Asia, 9th Edition, 2018.
4. T.Veerarajan and T.Ramachandran, "Statistics and Numerical methods", Mc.Graw Hill, 1st Edition,2018

5. R. S. Salaria ,“A Textbook of Statistical and Numerical Methods in Engineering”Khanna Book Publishing co Pvt Ltd, January 2016
6. **M.K. Jain, R.K. Jain, S.R.K. Iyengar, “**Numerical Methods for Scientific and Engineering Computation”,New Age International Pvt. Ltd., 7th Edition,2019.

## Reference Books

1. Rajesh Kumar Guptat, “Numerical Methods, Fundamental and its Applications”, Cambridge University, 2019.
2. Erwin Kreyszig, “Advanced Engineering Mathematics”, John Wiley & Sons, New Delhi,10th Edition. 2019.
3. . Timothy Sauer, “Numerical Analysis”, 3rd Edition, Pearson Education, 2017.
4. Arvind PragatiGautam, “Numerical Methods”, Alpha Science International Limited 2019.
5. Bali N.P. and Dr. Manish Goyal, “Engineering Mathematics”, Lakshmi Publications Pvt. Ltd., New Delhi, 9th Edition, 2015
6. 6. C.B. Gupta, Shree Ram Singh, M. Kumar, “Engineering Mathematics for semesters III & IV”, Tata McGraw Hill, 1st Edition, 2016

## Web Resources

1. http://nptel.ac.in/courses/111107063/
2. https://nptel.ac.in/courses/111107119/
3. https://easyengineering.net/ma6452-statistics-and-numerical-methods/
4. http://www.velhightech.com/wp-content/uploads/2019/11/ma8452-statistics-and-numerical-methods-ii-yr-4th-sem.pdf
5. https://nptel.ac.in/courses/110/105/110105087/
6. https://nptel.ac.in/courses/111/105/111105077/
7. https://www.math.ust.hk/~machas/numerical-methods.pdf

### COs/POs/PSOs Mapping

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **2** | 1 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **3** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **4** | 1 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **5** | 2 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |

**U20FTT301** **FASHION ILLUSTRATION**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 3 | 0 | 0 | 3 | 45 |

**Course Objectives**

- Explain difference between real and fashion figure proportions.
- Demonstrate drawing of female, male and children fashion figures.
- Demonstrate rendering of garments and accessories.
- Describe flats and specs for women, men, and children.

**Course Outcomes**

*At the end of the course students will be able to*

***CO1-*** *Explain rules of fashion figure proportions.*

***CO2-*** *Explain the photograph and fashion fantasy*

***CO3*** *- Draw fashion figures.*

***CO4-*** *Illustrate various types of fabrics and garments with appropriate draping & rendering technique.*

***CO5-*** *Draw technical drawings for women, men, and children garments*.

**UNIT 1. FIGURE PROPORTIONS: (9 Hrs)**

Greek rules of body proportions. Golden Mean, Real Figure versus fashion figure. 8 head theory, 10 head theory and 12 Head Theory. Robotised fashion figure. Tone mannequins. Fleshing out. Profile figure, Three-quarter turned figure. Proportional analysis of head and facial features: eyes, nose, mouth and ear. Hairstyles. Structural analysis of arm, hand, and leg.

**UNIT 2. PHOTOGRAPH TO FASHION FANTASY: (9 Hrs)**

Drawing from photographs: balance line, movement and balance, importance of center front, and angles. Attitude in poses. Stylization. Rotation and counter rotation of body. Multiple poses with a fixed upper body. Models on catwalk. Focus techniques: full shot, medium shot, knee shot, waist shot, close-up, extreme close-up and detail shot.

**UNIT 3. DRAWING MALE & KIDS FIGURE: (9 Hrs)**

Figure Proportions features of Female, male figure, male facial features versus female facial features, figure, drawing male figures, female figures. Figure Analysis- Types of figure Drawing hairstyle, difference between male and female figure gestures. Proportions as per children's age groups: Infants, Toddlers, Child, Teen.

**UNIT 4. CLOTHED FIGURE: (9 Hrs)**

Draping of folds on clothed figure. Basic body movements and main types of fabric folds: S-shaped, trap & closure, radial, direct thrust, flying & organ-pipe, compressed, fragmented, angular, and hanging folds. Flounces and ruffles. Flat folds and pleats. Giving volume to folds. Lacing & drawstrings.

**UNIT 5. RENDERING AND TECHNICAL DRAWING OF GARMENTS: (9 Hrs)**

Rendering skin tone. Rendering materials like denim, chiffon, satin, taffeta, gouache, gauze, net, velvet, knits, fur, silk, wool, etc. Rendering black garments. Rendering hairs. Rendering accessories: hats, shoes, scarves, bags, belts, gloves, sunglasses, etc. Tailor's dummy. Size measurement. Production or specification sheet. Fit & Silhouettes. Flats for women. Flats for men. Flats for children.

**Text Books:**


1. Fashion Illustration, Anna Kiper, David & Charles Book, 2011
2. Fashion Illustration Children, Patric, John Ireland, BT Bastford Ltd, 2005
3. Vandana Bhenderi, "Costume, Textiles and Jewellery of India – Traditions in Rajasthan", Prakash Books, New Delhi, 2004.
4. Fashion Sketchbook by BinaAbling (2012), Bloomsbury Publishing India Private Limited. ISBN: 1609012283.

5. Illustrating Fashion: Concept to Creation by Steven Stipelman (2010), Fairchild Books. ISBN: 1563678306.
6. Illustrating Fashion by Kathryn McKelvey and Janine Munslow (2007), Wiley Blackwell Publication. ISBN: 1405139528.

## Reference Books

1. Figure Drawing for Fashion Design by ElisabettaDrudi (2010), The Pepin Press. ISBN: 9054961503.
2. Figure Drawing for Men's Fashion by ElisabettaDrudi (2014), The Pepin Press. ISBN: 9054961554.
3. Fabric Texture and Patterns by ElisabettaDrudi (2008), The Pepin Press. ISBN: 9057681129.
4. Fashion Drawing: The basic principles by Anne Allen and Julian Seaman (2003), Batsford. ISBN: 0713470968.
5. Rendering Fashion, Fabric and Prints With Adobe Photoshop by Steve Greenberg and M. K. Colussy (2007), Pearson Education. ISBN: 8131709973.
6. Fashion Artist: Drawing Techniques to Portfolio Presentation by Sandra Burke (2013), Burke Publishing. ISBN: 0958273383.
7. Fashion Design Drawing and Presentation by Patrick John (1982), Batsford Ltd. ISBN: 0713435194.
8. Fashion Design Illustration (Women) by Patrick John (1993), Batsford Ltd. ISBN: 0713466227.
9. Fashion Design Illustration (Men) by Patrick John (1996), Batsford Ltd. ISBN:0713466235.

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | - | - | - | - | - | 2 | - | - | - | 2 | 3 | 2 | - |
| **2** | 3 | 2 | - | - | - | 2 | - | 2 | - | - | - | 2 | 3 | 2 | - |
| **3** | 3 | 1 | - | - | - | - | - | 2 | - | - | - | 1 | 3 | 2 | - |
| **4** | 3 | 1 | - | - | - | 2 | - | 2 | - | - | - | 1 | 2 | 2 | 2 |
| **5** | 3 | 1 | - | - | - | - | - | 2 | - | - | - | 2 | 2 | 2 | 2 |

**U20FTT302** **PATTERN ENIGINEERING-I**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 3 | 0 | 0 | 3 | 45 |

### Course Objectives

- To understand fundamentals of basic pattern making.
- To explain procedure for designing with darts.
- To develop the patterns for garment components.
- To describe different types of garment closures.

### Course Outcomes

*At the end of the course students will be able to*

***CO1**. Define the various pattern making tools and Develop basic five piece pattern set*

***CO2**. Explain the basic principles of pattern set.*

***CO3.** Explain dart manipulation techniques and dart designing.*

***CO4**. Illustrate and create the patterns for sleeve, collar, pockets, yokes and plackets*

***CO5.** Describe and interpret garment closures and neckline finishing*

### UNIT 1. BASIC PATTERN MAKING: (9 Hrs)

Patternmaking Essentials for the Workroom, Anthropometric Measurements, Function of Pattern Making Tools, Pattern Making Terms, Model form and measurements, Measurement Taking – Size chart and Measuring of Sizes. Concepts of seam allowance & production patterns

### UNIT 2. DRAFTING OF BASIC PATTERN SET: (6 Hrs)

Basic dress foundation, front and back bodice block, front and back skirt and sleeve, testing of fitting of basic blocks & correction.

### UNIT 3. DART MANIPULATION: (9 Hrs)

Introduction to darts and flat pattern making, Techniques of dart manipulation, Pivotal method & Slash & Spread method, Dart terminology, creating styles through dart manipulation.

### UNIT 4. DESIGNING WITH DARTS: (6 Hrs)

Introduction, Tuck darts, pleats, flares, gathers fullness, Dart clusters & dart equivalents, multiple darts. Importance of drill hole marks in the darts.

### UNIT 5. DRAFTING OF GARMENT COMPONENTS: (15 Hrs)

**SLEEVES:** Introduction, sleeve terminologies, dart less sleeve pattern, adaptations for various types. **COLLARS:** Introduction, collar terms, collar classification, basic shirt collar foundation, collar variations. **YOKES:** Yokes for bodice, gathers, yokes design variations, gathers, flanges, pleat tucks & pin tucks. **PLACKETS:** Pointed placket with facing-in-one, wing collar placket, slit opening with placket. **POCKETS:** Pocket classification, outside pockets, seam pocket, jeans pocket, accordion pockets, stylized outside pockets, and pocket with hidden side seam.

Application of zippers-fly, kissing lap, button & button holes, hooks, and eye snaps. Velcro, eyelets, cords. Cuffs – Contoured cuffs, Roll-up Cuffs.

### Text Books:


1. Halen Josep Armstrong "**Pattern Making for Fashion Design"** 5 th Edition, Pretence Hall, New Jercey , 2014.
2. Claire Schaeffer, "**The Complete Book of Sewing Shortcuts**", Sterling Publishing(NY), 2009
3. Le Pechoux B and Ghosh T K , — Apparel Sizing and Fitll, Textile Progress, Volume 32, The Textile Institute, Manchester, 2002.

## Reference Books


1. Pattern making for fashion design by Helen Joseph Armstrong fifth edition, Pearson Education, Inc. ISBN-10: 0-13-606934-7
2. Pattern grading for women's clothes by Gerry Cooklin, Blackwell Publishing. ISBN 0-632-05692-4
3. Metric pattern cutting for women's wear by Winifred Aldrich, Blackwell Publishing. 5th edition, ISBN: 978-1-118-37205-0
4. Metric pattern cutting for men's wear by Winifred Aldrich, Blackwell Publishing. 5th edition, ISBN 978-81-265-3241-4
5. The art of fashion draping by connieamaden-crawford, third edition, Fairchild Publications, Inc. ISBN 81-8710-7359
6. Draping for fashion design by Hilde Jaffe and NurieRelis, fourth edition, Pearson Education, Inc. ISBN 978-81-317-2696-9


**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | - | - | 3 | - | - | - | 1 | 1 | - | - | 3 | - | - |
| **2** | 3 | 2 | - | - | - | - | - | - | 1 | 1 | - | - | 3 | 2 | - |
| **3** | 3 | - | 3 | - | 2 | - | - | - | 1 | 1 | - | - | 2 | - | 2 |
| **4** | 3 | - | 3 | - | 2 | - | - | - | 1 | 1 | - | - | 2 | 2 | - |
| **5** | 3 | 3 | - | - | - | - | - | - | 1 | 1 | - | - | 1 | 1 | - |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTT303** | **FABRIC STRUCTURE AND DESIGN** | **3** | **0** | **0** | **3** | **45** |

### Course Objectives

- Explain construction and application of various compound fabrics.
- Explain color and weave effect.
- Describe concepts of Fabric Engineering.
- Explain application and principle of gauze and leno.

### Course Outcomes

*At the end of the course students will be able to*

***CO1.*** *Explain the fabric classification and cloth geometry.*

***CO2.*** *Analyze and construct compound fabrics.*

***CO3.*** *Demonstrate color and weave effect.*

***CO4.*** *Describe concepts of Fabric Engineering.*

***CO5.*** *Describe construction of gauze and leno.*

**UNIT I** **(9Hrs)**

Fabric engineering: fabric classification as per structure - yarn diameter, cloth cover, cloth geometry of plain & twill fabrics, practical applications of cloth geometry and cover factor.

**UNIT II** **(9Hrs)**

Bedford cords: plain faced - twill faced. Wadded - modifications. Welt piques: wadded piques - Loose back and fast back welts and piques, waved pique.

**UNIT III** **(9Hrs)**

Colour and weave effects: Examples of simple colour and weave effects, Stripe & check weave combination. Backed Fabrics: Warp and Weft back, wadded backed fabric. Extra warp and extra weft figuring. Extra warp and extra weft figuring with two colours.

**UNIT IV** **(9Hrs)**

Double cloth: Object, Classification: - self stitched - face to back - back to face -Combination face to back and back to face stitched double cloth. Wadded double cloth - weft and warp Wadded double cloth - Center Warp & Weft Stitched double cloth. Interchanging double cloths, multilayer fabrics, open to double & triple width & tubular fabrics.

**UNIT V** **(9Hrs)**

Warp pile produced by - terry weaves, Face to face weaving, wire insertion methods. Weft pile: plain back - twill back velveteen, corduroy, Weft plush, Length, density and fastness of pile. Gauze & Leno: Principles, basic sheds, leno with flat steel doups And slotted doups, point draft or counter leno, applications.

### Text Books

1. Talukdar M. K., Sriramulu P. K. and Ajgaonkar D. B., “Weaving: Machines, Mechanisms, Management”, Mahajan Publishers Pvt Ltd, 2004
2. Gokarneshan N., “Fabric Structure and Design”, New Age International (P) Limited, 2009

### Reference Books

1. Grosicki Z., "Watson's Textile Design &Color: Elementary weaves & Figure", Blackwell Science, Commerce place.
2. Grosicki Z., "Advanced Textile Design &Colour:, Blackwell Science, Commerce place.
3. H.Nisbet, "Grammar of textile Design", Tarporevala sons &Co. Pvt. Ltd.,
4. W.S. Murphy, "Textile weaving & Design", Abhishek Publications.

5. Marks &robinson, " woven cloth construction"
6. nptel.ac.in/courses/116102005/26.
7. J.E. Booth," Textile mathematics- vol-I &II"

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | 1 | - | - | - | - | - | - | 2 | - | - | 2 | - | - |
| **2** | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - | - | 2 | - | - |
| **3** | 3 | 1 | 2 | - | - | - | - | - | - | 1 | - | - | 2 | - | - |
| **4** | 2 | 3 | 3 | - | - | - | - | - | - | 2 | - | - | 2 | - | - |
| **5** | 2 | 3 | 1 | - | - | - | - | - | - | 1 | - | - | 2 | - | - |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTT304** | **YARNS AND FABRICS FOR FASHION** | **3** | **0** | **0** | **3** | **45** |

## Course Objectives

- To classify types, structures and manufacturing of fancy yarns.
- To explain requirements and manufacturing techniques of hosiery yarns sewing thread and embroidery thread.
- To Describe principles of jet weft insertion and continuous weft insertion.
- To explain the techno-economics of different shuttleless weaving and fabric inspection methods.

## Course Outcomes

*At the end of the course students will be able to*

***CO1*** *- Illustrate the types, structure and manufacturing techniques of fancy yarns.*

***CO2*** *- Describe the requirements and manufacturing techniques of hosiery yarns, sewing thread and embroidery thread.*

***CO3*** *- Describe the requirements and manufacturing techniques of sewing thread and embroidery thread.*

***CO4*** *- Describe the weft insertion in Airjet, Waterjet, Circular, Multiphase and Tri-axial looms.*

***CO5*** *- Explain the sample weaving process and fabric inspection systems.*

### UNIT 1. FANCY YARNS (9 Hrs)

Various types of fancy yarns - manufacturing techniques and structure - Slub yarn, multi twist, multi count yarn, Crep yarn, multi component fancy yarn, Rotor and Ring frame slub yarn, Blended Fancy yarns (mélange), SIRO, Bobtex yarn, chenille yarn. Elastane (polyurethane) Yarns and Air Covered Yarns- production of core / cover lycra yarn on ring spinning. Applications of elastane yarn.

### UNIT 2. HOSIERY YARNS (6 Hrs)

Requirements of hosiery yarns. Raw materials, parameters of Hosiery yarns. Properties and applications of hosiery yarns.

### UNIT 3. SEWING THREADS AND EMBROIDERY YARN (9 Hrs)

Introduction of Thread construction, Characteristics and production methods of sewing threads, Types of thread package, Thread storage & degradation. Introduction of thread construction, Raw material used, Characteristics of embroidery yarn, Thread production methods and types of thread package.

### UNIT 4. JET WEFT INSERTION (9 Hrs)

Principles of Airjet weft insertion from single nozzle, confusor and multi nozzle airjet weaving machines and their elements, Take up, let off and Auxiliary motions. Water jet weft insertion system, Water consumption, quality and its requirement. Field of applications, commercial viability of Airjet and Waterjet weaving machines. Techno-economical ratings of different shuttleless technologies.

### UNIT 5. MULTIPHASE, CIRCULAR AND TRI-AXIAL WEAVING (12 Hrs)

Principle of Multiphase weaving, Passage of yarn, Study of Sulzer M8300 multiphase weaving machine, Field of applications. Principle of Circular weaving, Passage of yarn, Classification, Yarns used and field of applications. Principle of Tri-axial weaving, Properties and applications of tri-axial fabric, Yarns used. **Concept of sample weaving** - Importance of fabric inspection, Different fabric inspection systems.

## Reference Books


1. Fancy yarns –Their manufacture and application by R H Gong and R.M Wright, The textile institute -CRC-Wood head publishing limited.
2. 'Modern Yarns for Modern Fabrics Seminar' Conference proceddings. By TTI, The Textile Inst. Publisher.
3. Yarns & Fabric Classification Main Items in wool and blends, Italtex Editor.
4. Textile guide synthesis to create yarns & fabrics, Italtex Editor
5. Sewing Threads' Textile progress vol.30 no.3/4, by J.O. Ukponmwan, The Textile Inst. Publisher.
6. “Modern preparation and weaving” By A. Ormerod

7. “Weaving machines, mechanism, management” By Talukdar, Ajagaokar Sriramulu
8. “Shuttleless weaving” By Talav and Svaty
9. “Modern developments in weaving Machinery” By Duxbury
10. “Shuttleless weaving” by NCUTE programme by IITDelhi.
11. Brouchers and Machine pamphlets of various machine manufacturers
12. “airjet weft Insertion” By L. Vangheluwe, Textile Progess

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | 3 | 1 | - | 1 | - | - | - | 1 | - | - | - | 2 | - | 1 |
| **2** | 2 | 3 | - | - | 1 | - | - | - | 1 | - | - | - | 2 | - | 3 |
| **3** | 2 | 2 | - | - | 2 | - | - | - | - | - | - | - | 2 | - | 1 |
| **4** | 1 | 2 | 2 | - | 2 | - | - | - | 1 | - | - | - | 2 | - | 1 |
| **5** | 1 | 2 | 2 | - | 2 | - | - | - | 1 | - | - | - | 2 | - | 1 |

| U20FTT305 | KNITTING TECHNOLOGY | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 | 45 |

**Course Objectives**

- To understand the basics of warp and weft knit structures and its derivatives.
- To comprehend the design for various knitted fabric structures
- To understand the knitting machine parameters for producing various knitted structures

**Course Outcomes**

*CO1 - Analyze the warp knitted and weft knitted fabrics by interpreting their structure.*
*CO2 - Distinguish between the various knitted fabrics*
*CO3 - Determine the production of weft knitted fabrics by varying the fabric forming parameters.*
*CO4 - Explain and outline the working principles of warp knitting machines and the pattern of fabric formation.*
*CO5 - Determine the production of warp knitted fabrics by varying the fabric forming parameters.*

**UNIT I - FUNDAMENTALS OF KNITTING (9 Hrs)**

Introduction to knitting, Comparison of weaving and knitting, classification of warp and weft knitting machines, comparison of warp and weft knitted fabrics, elements of knitted loop structure. Symbolic, Graph paper and Diagrammatic representation of stitches. Knitting needles - Types, Knitting action, advantages and disadvantages

**UNIT II - WEFT KNITTING MACHINE (9 Hrs)**

Elements of knitting machine - Cylinder, Sinker, Cam, Needle, Creel, Feeders - positive feeder, storage positive feeder, elastane feeder, take down mechanism. Patterning mechanism. Electronic devices for needle selection. Working principle of plain, rib, interlock and purl knitting machines. Formation of knit, tuck and float stitches. Effect of loop length.

**UNIT III - WEFT KNITTED STRUCTURES (9 Hrs)**

Production of weft knitted fabric structures -Single jersey, Rib, Purl, Interlock. Derivatives of single and double jersey structures: plaited fabrics, 2X2 rib structure, half cardigan, full cardigan, Ponte-di-Roma, Ottoman rib, Texipique, Pin-tuck, Milano rib, French pique, Swiss pique. Applications of weft knit fabric, Common defects in weft knit fabric

**UNIT IV - WARP KNITTING MACHINE (9 Hrs)**

Elements of Tricot and Raschel warp knitting machines - warp beam, guide bar, needle, needle bar, sinker, presser bar, links, and trick plate. Knitting cycle and working principles of Tricot and Raschel knitting machine. Pattern controlling mechanism - pattern wheels, pattern chains links, Electronic Jacquard.

**UNIT V - WARP KNITTED STRUCTURES (9 Hrs)**

Representation of warp knit structures. Point Paper, Chain-Link Notation, single fabrics, Chain stitch, Tricot lap, Full tricot, Lock Knit, Reverse Lock Knit, satin, Loop raided fabrics, Queen's cord, Sharkskin, Blind lap. Applications of warp knit fabric, Common defects in warp knit fabric

**Text Books:**


1. Ajgaonkar D.B., “Knitting technology”, Universal Publishing Corporation, Mumbai, 1998, ISBN: 81-85027-34-X.
2. Chandrasekhar Iyer, Bernd Mammel and Wolfgang Schach., “Circular Knitting”, Meisenbach GmbH, Bamberg, 1995, ISBN: 3-87525-066-4.

## References:


1. Spencer D.J., “Knitting Technology”, III Ed., Textile Institute, Manchester, 2001, ISBN: 1 85573 333 1.
2. Samuel Raz., “Flat Knitting: The new generation”, Meisenbach GmbH, Bamberg, 1997, ISBN: 3-87525-054-0.
3. Samuel Raz., “Warp Knitting production”, Melliand Textilberichte, GmbH, Rohrbacher, 1987, ISBN: 3-87529-022-4


**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | - | - |
| **2** | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 | - |
| **3** | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| **4** | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| **5** | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 1 | - | - |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20BSP326** | **STATISTICAL LABORATORY MATLAB** | **0** | **0** | **2** | **1** | **30** |

## Course Objectives

- To familiarize the concept of Mean, Median, Mode and Standard deviation.
- To know Correlation and Regression analysis
- To learn the concept of single mean, difference of mean.
- To understand sampling distribution.
- To introduce the concepts of ANOVA classification.

## Course Outcomes

*After completion of the course, the students will be able to*

**CO1** -Gain knowledge in the concepts of statistical methods and models.
**CO2** -Trained for data collection on various fields of survey enabling them to classify them statistically.
**CO3** -Familiarized in various statistical software.
**CO4 -**Find the correlation between two variables.
**CO5 -** Compute regression lines.

## List of Experiments:

1. Descriptive Statistics.
2. Test for Single mean.
3. Test for difference of mean.
4. Standard Deviation.
5. Sampling distributions
6. ANOVA One-way Classification.
7. Two-way ANOVA.
8. Chi-Square Test.
9. Correlation and Regression (Simple and Multiple).
10. Maximum likelihood estimation.

## Web References

1. https://www.mathworks.com/help/matlab/ref/std.html
2. https://www.mathworks.com/help/stats/mle.html
3. https://www.mathworks.com/help/stats/two-way-anova.html
4. https://youtu.be/ullVTCmQdpI
5. www.youtube.com/watch?v=ullVTCmQdpI

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **2** | 1 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **3** | 2 | 3 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **4** | 1 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| **5** | 2 | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |

**U20FTP301** **FASHION ILLUSTRATION LAB**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To make the students understand the basic concepts of fashion art and learning the aspects of fashion
- rendering.
- To improve their skills in creating new designs and dresses.
- To develop their skills in fashion arts and creating innovative sketches
- Developing design improvisation of basics fashion rendering.

## Course Outcomes

***CO1****. Illustrate the different body sections of human anatomy and plan different postures*
***CO2****. Plan the fabric and colour application for developed fashion figures*
***CO3.*** *Generate sketches in exclusive methods suitable for distinct presentations*
**CO4** *- train the students in fashion illustration*
***CO5-*** *Draw technical drawings for women, men, and children garments*.

## LIST OF EXPERIMENTS

1. Illustration of stick figures, block figures and fleshing on block figures
2. Figure analysis - Skecthing of fashion figures in 8 ½ , 10 & 12 head proportions
3. Face analysis – Skecthing of facial shapes & features and hairstyles
4. Illustration of varied postures – front, back, side and ¾ profiles
5. Colour rendering techniques – mixed media application
6. Fabric rendering techniques – wovens and knits
7. Fabric rendering techniques – drape lines, pleats, gathers, surface ornamentation
8. Illustration of croquis – female
9. Illustration of croquis – male
10. Illustration of croquis – children

## Reference:

1. Laboratory Manual prepared by the Department of Fashion Technology, 2020

**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 2 | - | - | 1 | - | - | - | 2 | 2 | - | - | 2 | - | - |
| **2** | 2 | - | - | - | 2 | - | - | - | 2 | 2 | - | - | 2 | - | - |
| **3** | 2 | - | - | - | 1 | - | - | - | 2 | 2 | - | - | 2 | - | - |
| **4** | 2 | - | - | - | 1 | - | - | - | - | - | - | - | 2 | - | - |
| **5** | 1 | - | - | - | 1 | - | - | - | - | - | - | - | 2 | - | - |

**U20FTP302** **PATTERN ENIGINEERING-I LAB**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To train the students in pattern making of apparels.
- To develop the patterns for garment components

## Course Outcomes (COs)

***CO1 -*** *Upon completion of this practical course, the student would have practical experience on pattern making of garments*
***CO2****. Explain the pattern making techniques and terminologies applied in them.*
***CO3****. Apply draping and flat pattern technique to draft patterns of basic bodice, sleeve, skirt and trousers.*
***CO4****. Apply the principles of pattern making to manipulate the basic pattern according to the styles.*
***CO5****. Generate style lines, altered and graded patterns.*

## LIST OF EXPERIMENTS

1. Study of pattern making tools, stitching machine and measurements of dress form, live model and garment.
2. Machine practice to sew lines in various shapes, following a guide line on SNLS machine. (Paper exercise)
3. Machine practice to sew lines in various shapes, following a guide line on SNLS machine. (Fabric exercise)
4. Prepare samples for various seams and stitches.
5. Draft and stitch 5 piece patterns set and check for fit.
6. To develop patterns by using dart manipulation techniques.
7. Prepare and stitch patterns for graduated and radiating darts
8. Adopt and stitch patterns for puff and raglan sleeve.
9. Adopt and stitch patterns for collar with stand and peter pan collar
10. Draft and prepare sample for different types of cuffs.
11. Draft and prepare sample for patch and side pockets.
12. Draft and prepare samples for shirt placket and sleeve placket

## Reference:

1. Laboratory Manual prepared by the Department of Fashion Technology, 2020

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | 3 | - | 2 | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **2** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **3** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **4** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **5** | 3 | 2 | 3 | - | 2 | - | - | - | 2 | 2 | - | - | 2 | 2 | - |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTP203** | **FABRIC STRUCTURE AND DESIGN GRAPHICS LAB** | **0** | **0** | **3** | **1** | **45** |

## Course Objectives

- To train the students on developing basic fabric weaves and simulate their appearance
- To impart the knowledge of developing print designs appropriate for a concept.
- To equip them in developing concept boards, logo designs and brochure designs.

## Course Outcomes

***CO1.*** *Design fabric weaves and render them based on fashion trends.*

***CO2.*** *Design different types of print designs for a concept.*

***CO3****. Plan and prepare concept boards, logo designs and brochure designs for fashion communication*.

**CO4** – Develop various motifs and images.

**CO5** – Design the brochure for various product development.

## LIST OF EXPERIMENTS

1. Design and Development of Plain and twill weave patterns with two color ways.
2. Development of dobby blanket design with a color way.
3. Design and Development of an elaborate jacquard design with an extra warp and weft design for a stole.
4. Design and Development of half drop all over print pattern of geometric motifs.
5. Design and Development of directional print of floral motifs.
6. Design and Development of t-shirt chest print design for a digital printing.
7. Design and Development of a typographical print design for a tote bag.
8. Design and Design a conceptual board based on a theme using a collage of images.
9. Modify an existing logo of a brand.
10. Design and Develop a brochure design for a company featuring it's product details and logo.

## Reference:


1. Laboratory Manual prepared by the Department of Fashion Technology, 2020


**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | - | 3 | - |
| **2** | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | - | 3 | - |
| **3** | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | - | 3 | - |
| **4** | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | - | 3 | - |
| **5** | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | - | 3 | - |

| SEMESTER IV | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sl. No.** | **Course Code** | **Course Title** | **Category** | **Periods** | | | **Credits** | **Max. Marks** | | |
| | | | | **L** | **T** | **P** | | **CAM** | **ESM** | **Total** |
| **Theory** | | | | | | | | | | |
| 1 | U20FTT401 | Pattern Engineering -II | PC | 3 | 1 | 0 | 3 | 25 | 75 | 100 |
| 2 | U20FTT402 | Textile Chemical Processing | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 3 | U20FTT403 | Apparel machinery and Equipment | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 4 | U20FTT404 | Intellectual Property Rights | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 5 | U20FTT405 | Garment Construction - I | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 6 | U20FTT406 | Fashion Portfolio | PC | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| **Practical** | | | | | | | | | | |
| 7 | U20HSP401 | General Proficiency - I | HS | - | - | 2 | 1 | 100 | - | 100 |
| 8 | U20FTP401 | Pattern Engineering -II Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 9 | U20FTP402 | Textile Chemical Processing LAB | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| 10 | U20FTP403 | Garment Construction - I Lab | PC | 0 | 0 | 3 | 1 | 50 | 50 | 100 |
| | **Employability Enhancement Course** | | | | | | | | | |
| 11 | U20SDC40X | Employability Enhancement Course -4 | EEC | - | - | 4 | - | 100 | - | 100 |
| | **Mandatory Course** | | | | | | | | | |
| 12 | U20ECM405 | NSS | MC | 0 | 0 | 2 | - | 100 | - | 100 |
| | | | | | | | 22 | 600 | 600 | 1200 |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTT401** | **PATTERN ENGINIREEING-II** | **3** | **0** | **0** | **3** | **45** |

## Course Objectives

- To explain various style lines used in patterning.
- To explain various garment components and stitching procedure for it.
- To teach grading process and quality of garments
- To explain fundamentals of draping and demonstrate draping procedure for basic blocks

## Course Outcomes

*At the end of the course students will be able to*

***CO1.*** *Recognize various style lines and their aesthetical values in garments.*

***CO2.*** *Describe various garments/components and their construction.*

***CO3.*** *Apply grading procedure for various basic blocks and use patterning principles to correct pattern defects.*

***CO4.*** *Demonstrate draping procedure for various basic blocks.*

***CO5*** *– Analysis the pattern quality with various aspects.*

**UNIT I** **(9 Hrs)**

**Stylelines** – Introduction to style lines, The Classic Princess Style line, Armhole Princess Style line, The Panel Styleline. **Cowls** – Introduction to Cowls, Types of cowls, Preparing patterns for Back Cowls, Armhole Cowls, Pleated Cowls, Exaggerated Cowls, Inset Cowls

**UNIT II** **(6 Hrs)**

**Skirts/Circles and Cascades** – Types of skirts, skirt lengths, Drafting of flared skirts, gored skirts, godets, wrap skirts, circles, peplums and cascades, skirts with uneven hemlines

**UNIT III** **(9 Hrs)**

**Dresses without Waistline Seams-** torso foundation, dress categories, three basic dress foundations, styleline foundation, pattern making problems.

**UNIT IV** **(9 Hrs)**

**Grading** – Introduction to grading, General principles, Grade Rules, Zero Point and Cardinal Points, Methods of grading: Track grading and nested grading, Grading the basic block and basic skirt, grading of sleeves and collars

**UNIT V** **(12 Hrs)**

**Draping** – Draping terminologies, Preparation of fabric for draping, Elements of fabrics, Principles and fitting methods, Basic Bodice draping, basic skirt draping, draping of sleeves and collars **Pattern Quality Analysis** – Relationship between pattern making and quality of the garment, Factors affecting pattern quality, Introduction to computerized pattern making, computerized grading, study of available software for pattern making.

## Text Books:


1. Helen Joseph, Armstrong, “Patternmaking for Fashion Design”, Pearson Education Pte. Ltd., 2005.
2. Winifred Aldrich, “Metric Pattern Cutting for Children’s Wear and Baby Wear”, Blackwell Publishing, 2004.
3. Pattern grading for women’s clothes by Gerry Cooklin, Blackwell Publishing. ISBN 0-632-05692-4
4. Metric pattern cutting for men’s wear by Winifred Aldrich, Blackwell Publishing. 5th edition, ISBN 978-81-265-3241-4
5. Metric pattern cutting for women’s wear by Winifred Aldrich, Blackwell Publishing. 5th edition, ISBN: 978-1-118-37205-0

**References:**


1. Fan J, Yu W, and Hunter L., “Clothing Appearance and Fit: Science and Technology”, Wood head Publishing Limited, 2004
2. Ashdown S. P., “Sizing in Clothing”, Wood head Publishing Limited, 2007.
3. Pattern making for fashion design by Helen Joseph Armstrong fifth edition, Pearson Education, Inc. ISBN-10: 0-13-606934-7
4. The art of fashion draping by connieamaden-crawford, third edition, Fairchild Publications, Inc. ISBN 81-8710-7359
5. Draping for fashion design by Hilde Jaffe and NurieRelis, fourth edition, Pearson Education, Inc. ISBN 978-81-317-2696-9


**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | 3 | - | 2 | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **2** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **3** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **4** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **5** | 3 | 2 | 3 | - | 2 | - | - | - | 2 | 2 | - | - | 2 | 2 | - |

## TEXTILE CHEMICAL PROCESSING 3 0 0 3 45

### Course Objectives

- To describe the grey inspection and mechanical processing of textiles
- To describe the pretreatments of textiles.
- To explain the colouration processes of textiles like dyeing and printing.
- To explain the objectives and effects of various finishes.

### Course Outcomes

*At the end of the course students will be able to*

***CO1.*** *Understand the importance of grey inspection and mechanical processes*

***CO2.*** *Understand the process of desizing and scouring.*

***CO3.*** *Understand the process of bleaching and mercerization.*

***CO4.*** *Understand the dyeing and printing colouration processes on cotton and polyester*

***CO5.*** *Understand the objects and effects of various finishes.*

### UNIT I - GREY INSPECTION AND MECHANICAL PROCESSES (9 Hrs)

Importance of grey inspection, Four point & ten point system & numerical for acceptance & rejection of fabrics, Defect analysis, Types of stitches, Inspection machines for woven and knit goods, Working of shearing and cropping machine, Objectives of singeing. Gas singeing of woven & knitted fabrics. General process sequence

### UNIT II - DESIZING SCOURING (9 Hrs)

Objectives of desizing, methods and classification of desizing. Desizing of Cotton, P/C and Polyester fabrics, Evaluation of efficiency of desizing, Degumming of silk, Objectives of scouring, Concept of alkaline scouring, solvent scouring and bio scouring, Scouring of cotton, blends and synthetic fabrics, evaluation of efficiency of scouring.

### UNIT III - BLEACHING AND MERCERIZATION (9 Hrs)

Objectives of bleaching, Introduction to bleaching agents like sodium hypochlorite and hydrogen peroxide, bleaching of cotton, blends and synthetics. Bleaching of wool, silk, evaluation of efficiency of bleaching. Objectives of mercerization, Changes in cotton after mercerization, Study of machinery used for mercerization of yarn, woven and knit fabrics. Liquid ammonia treatment, Evaluation of mercerization efficiency using barium activity number

### UNIT IV - DYEING AND PRINTING (9 Hrs)

Introduction to dyeing, classification of colouring matters, Methods of dyeing: batch, semi-continuous and continuous process Dyeing of cellulosic fibres using direct, vat, reactive and sulphur dyes. Dyeing of polyester using disperse dye.

Difference between dyeing and printing, Styles of printing: Direct, discharge, resist style Methods of printing: tie and dye, batik, block printing, screen printing. Concept of transfer printing, digital printing

Printing of cotton by various styles using reactive dye, Printing of polyester by various styles using disperse dye, Pigment printing

### UNIT V - FINISHING PROCESSES (9 Hrs)

Objectives of finishing, classification of finishes. Mechanical and chemical finishing, application of softeners, Functional finishes: Resin finishing, flame retardant finish, antimicrobial Finish.

### Textbooks:

1. Trotman E. R., “Dyeing and Chemical Technology of Textile Fibres”, B.I Publishing Pvt.Ltd., New Delhi, 1994, ISBN: 0471809101 | ISBN-13: 9780471809104

2. Karmarkar S.R., “Chemical Technology in Pre-treatment processes of Textiles”, Elsevier Publications, Newyork,1999, ISBN: 044450060X | ISBN-13: 9780444500601
3. Shenai V. A., “Chemistry of Dyes and Principles of Dyeing”, Sevak Publications, Mumbai, 1995, ISBN: B0007BFE9Y.
4. Shenai V. A., “Technology of Printing”, Sevak Publications, Mumbai, 1996
5. Miles W. C., “Textile Printing”, Wood head Publication, 2003, ISBN 0 901956 76 1

## References:

1. Hall A.J., “Textile Finishing”, 2nd ed., McGraw Hill, 1995.
2. Marsh J.T., “Introduction to Textile Finishing” Vol. II, New Age, 1996
3. Heywood D.,”Textile Finishing”, Woodhead Publishing Ltd.,2003 ISBN 090195681
4. Shenai V.A., “Technology of Finishing”, Vol. X, Usha, 1998
5. Schindler W.D and Hauser P., “Chemical Finishing of Textiles”, Wood head Publications, ISBN: 1855739054.
6. Yin-Ling Lam , Chi-Wai Kan & Chun-Wah Marcus Yuen, "Developments in functional finishing of cotton fibres – wrinkle-resistant, flameretardant and antimicrobial treatments", Textile Progress, Vol. 44, Nos. 3 - 4, September-December 2012,175–249.
7. Jones B. W., “Garment Dyeing: Ready to Wear Fashion from the Dyehouse”, Textile Progress, Vol. 19, No. 2, 1988, ISBN 1870812131.
8. Roshan Paul (Ed.), "Denim – Manufacture, Finishing and Applications", Woodhead Publishing, 2015.
9. Reife A. and Freeman H.S., “Environmental Chemistry of Dyes and Pigments”, Wiley, 1996, ISBN: 0471589276.

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | - | - | - | - | 3 | 3 | - | - | - | - | - | 2 | 2 | - |
| **2** | 1 | - | - | - | - | 3 | 3 | - | - | - | - | - | 2 | 2 | - |
| **3** | 2 | - | 2 | - | - | 3 | 3 | - | - | - | - | - | 2 | 2 | - |
| **4** | 1 | - | - | - | - | 3 | 3 | - | - | - | - | - | 2 | 2 | - |
| **5** | 2 | - | - | - | - | 3 | 3 | - | - | - | - | - | 2 | 2 | - |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTT403** | **APPAREL MACHINERY AND EQUIPMENT** | **3** | **0** | **0** | **3** | **45** |

**Course Objectives**

- To explain the classification of sewing machinery
- To describe the various parts and adjustment of a single needle lockstitch & overlock machine.
- To describe the stitch, sewing needle and sewing thread.
- To interpret the work aids and latest developments in apparel production machinery

**Course Outcomes**

*At the end of the course students will be able to*

***CO1.*** *Understand the classification of sewing machinery according to bed types, stitch types and material wise.*

***CO2.*** *Understand the various parts, features and adjustment of single needle lock stitch and overlock machine.*

***CO3.*** *Categorize the stitch, sewing needles and sewing threads requirements and its application.*

***CO4.*** *Describe the work aids and latest developments in apparel production machinery.*

***CO5-*** *Describe the spreading and fusing in apparel production machinery.*

**UNIT 1. HISTORY AND DEVELOPMENT OF SEWING MACHINES (9 Hrs)**

History of sewing machines and development. Sewing machinery - classification according to bed types, stitch types (hook or looper), material wise (extra light to heavy weight). Introduction to spreading machines and cutting machines - types and functions.

**UNIT 2. PARTS OF SEWING MACHINES (9 Hrs)**

Major parts of sewing machinery and functions. Major parts of Single needle lock stitch machine – UBT and non-UBT: stand height, pedal, presser foot, height of needle bar, needle to hook relationship, height of feed dog, normal and reverse feed stitch length, feed timing, presser foot pressure, needle and bobbin thread tension, bobbin winding assembly, belt tension and their adjustment. Sewing machine safety regulations.

**UNIT 3. ADJUSTMENTS OF MAJOR PARTS (9 Hrs)**

Sewing needle and sewing thread, thread consumption, thread routing. Adjustment on SNLS UBT: Needle stop position, wiper, thread timing sequence, timing of thread trimmer cam, positioning the moving knife, installation, sharpening, replacing moving knives, adjusting the floating amount of the auxiliary tension disk. Parts, functions and adjustments of Overlock machines: Needle height, feed dog height, differential feed ratio, tilt of the feed dog, position of the upper and lower knives, sharpening of knife and loopers, trouble shooting in over lock.

**UNIT 4. WORK AIDS (9 Hrs)**

Work-aids and attachments as deskilling devices, functions of pullers, guides and folders compensating presser foots- left, right, double; feller, hemmer etc. Collar turning machines, folding machinery. Computer controlled cutting, sewing, folding machinery.

**UNIT 5. SPREADING AND FUSING (9 Hrs)**

Manual and automatic spreading, features and specifications, fusing and pressing machinery. Application according to use.

**Latest developments:** Latest developments in production machinery, automatic spreading, cutting, fusing, pressing and sewing machines.

**Text Books:**

1. Harold Carr and Barbara Latham, The Technology of Clothing Manufacture, Om Book Service, 2002.
2. Shaeffer Claire, Sewing for the Apparel Industry, Prentice Hall, New Jersey, 2001.

## Reference Books


1. Mr. R. Rathinamoorthy et al, “Apparel machinery Equipments”, woodhead publication 2015.
2. Juki machine manual for single needle lockstitch machine by Juki machine
3. Jacob Solinger., “Apparel Manufacturing Handbook ", Van Nostrand Reinhold Company (1980).
4. Peyton B .Hudson., " Guide to Apparel Manufacturing ", Media Apparel Inc (1989) ISBN: 0 -945116-08-X.
5. Carr.H, Latham. B., “The Technology of Clothing Manufacture ", Blackwell Scientific Publications (1988).


**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | 2 | - | - | - | - | 1 | - | - | - | 2 | 3 | 2 | - |
| **2** | 1 | 2 | - | - | - | - | - | 1 | - | - | - | 2 | 3 | 2 | - |
| **3** | 3 | 3 | 3 | - | - | - | - | 1 | - | - | - | 2 | 3 | 2 | - |
| **4** | - | 2 | - | - | - | - | - | 1 | - | - | - | 2 | 3 | 2 | - |
| **5** | - | 2 | - | - | - | - | - | 1 | - | - | - | 2 | 3 | 2 | - |

**U20FTT404** **INTELLECTUAL PROPERTY RIGHTS**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 3 | 0 | 0 | 3 | 45 |

### Course Objectives

- To explain concept of IPR and its implementation.
- To explain terms in IPR through case studies and their usage.
- To explain IPR provisions in GATT and WTO.
- To explain IPR implementation in cyber world

### Course Outcomes

*At the end of the course students will be able to*

***CO1.*** *Understand concept of IPR and its implementation*

***CO2.*** *Describe the terms in IPR through case studies.*

***CO3.*** *Explain provisions in GATT, WTO and IPR conventions.*

***CO4****. Identify IPR usage in cyber world*.

***CO5*** *– Explain cyber IPR*

**UNIT I - INTRODUCTION (9 Hrs)**

Invention and Creativity - Intellectual Property (IP) – need and Importance Protection of IPR – Basic types of property (i. Movable Property ii. Immovable Property and iii. Intellectual Property).

**UNIT II - IP TOOLS (9 Hrs)**

Patents, Copyrights and related rights, Trade secrets, Franchise, Trade Marks and rights arising from Trademark registration, Trade secret, Industrial Designs and Integrated circuits Protection of Geographical Indications at national and International levels Application Procedures. Basics of Traditional Knowledge.

**UNIT III - IP TRANSACTIONS (6 Hrs)**

Licensing, Franchising and Merchandising. Three routes for protection- PCT, Madrid, Hague.

**UNIT IV – INTERNATIONAL TRADE POLICY (9 Hrs)**

International Convention Relating to Intellectual Property Establishment of WIPO - Mission and Activities - History – General Agreement on Trade and Tariff (GATT). Indian Position Vs WTO and Strategies - Indian IPR legislations - commitments to WTOPatent Ordinance and the Bill - Draft of a national Intellectual Property Policy - Present against unfair competition.

**UNIT V. CYBER INTELLECTUAL PROPERTY (12 Hrs)**

Introduction and overview of Cyber Intellectual Property; Intellectual property and cyberspace; Emergence of cybercrime ; Grant in software patent and Copyright in software; Software piracy; Trademarks issues related to Internet (Domain name); Data protection in cyberspace; Ecommerce and E-contract; Salient features of Information Technology Act; IPR provisions in IT Act; Internet policy of Government of India. unfair competition.
**Case Studies :** Case Studies on - Patents - Copyright and related rights – Trade Marks Industrial design and Integrated circuits – Geographic indications - Protection against unfair competition.

### Text Books:


1. V. Scople Vinod, "Managing Intellectual Property", Prentice Hall of India pvt Ltd, 2012.
2. S. V. Satakar, “Intellectual Property Rights and Copy Rights, Ess Ess Publications, New Delhi, 2002


### References:


1. Deborah E. Bouchoux, “Intellectual Property: The Law of Trademarks, Copyrights, Patents and Trade Secrets”, Cengage Learning, Third Edition, 2012.
2. Prabuddha Ganguli, ”Intellectual Property Rights: Unleashing the Knowledge Economy”, McGraw Hill Education, 2011.

3. Edited by Derek Bosworth and Elizabeth Webster, The Management of Intellectual Property, Edward Elgar Publishing Ltd., 2013.

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | - | 3 | - | 3 | - | - | 2 | - | 2 | 1 | - | 1 | - | 2 |
| **2** | 1 | - | 3 | - | 3 | - | - | 2 | - | 2 | 1 | - | 1 | - | 2 |
| **3** | 1 | - | 3 | - | 3 | - | - | 2 | - | 2 | 1 | - | 1 | - | 2 |
| **4** | 1 | - | 3 | - | 3 | - | - | 2 | - | 2 | 1 | - | 1 | - | 2 |
| **5** | 1 | - | 3 | - | 3 | - | - | 2 | - | 2 | 1 | - | 1 | - | 2 |

| | | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| **U20FTT405** | **GARMENT CONSTRUCTION - I** | **3** | **0** | **0** | **3** | **45** |

**Course Objectives**

- To describe preparatory stages of garment and layout metods followed for various width of fabric.
- To explain the drafting of various blocks
- To explain the cutting process of various garments.
- To explain and apply stitching and fit checking –process for various garments.

**Course Outcomes**

*At the end of the course students will be able to*

***CO1.*** *Describe preparatory stages of garment and layout methods followed for various width of fabric.*

***CO2****. Explain the various sewing techniques.*

***CO3.*** *Explain the drafting of various blocks of men's and women's garment component.*

***CO4.*** *Explain the cutting process of various garments.*

***CO5.*** *Explain and apply stitching and fit checking –process for various garments.*

**UNIT I SPREADING AND CUTTING (12 Hrs)**

Basics of fabric spreading, modes of spreading, different fabric packages, spreading tension, uniformity and alignment, woven fabric lay, knitted fabric lay, types of fabric lay, Lay planning principles. Marker making, principles of marker making, types of markers, marker planning and marker efficiency, and fabric design parameters on markers, matching and grain line. Fabric cutting methods, latest fabric cutting equipments, and record keeping in cutting room, advancements in cutting room technology

**UNIT II BASIC SEWING TECHNIQUES (9 Hrs)**

Seams: Definition, Types of seams, seam quality, seam performance, factors to be considered in the selection of seam, seam finishes, seam defects. Stitches: Definition, stitch classes, stitch parameters, factors to be considered in the selection of stitches. Stitching defects. Sewing Thread: Types, construction, sewing thread quality, selection of sewing thread.

**UNIT III GARMENT COMPONENTS FOR MEN'S AND WOMEN'S TOP (9 Hrs)**

Men's and women's tops – basic bodice blocks, collars, sleeves, cuffs, plackets – types, pleats, gathers and darts, functional purpose of components in garment construction.

**UNIT IV GARMENT COMPONENTS FOR MEN'S AND WOMEN'S BOTTOM (9 Hrs)**

Men's and women's bottom – trousers basic blocks, pockets – side pocket, welt pocket, patch pocket, yoke, skirt basic blocks, waist bands, panels, other components in innerwear, functional purpose.

**UNIT V ACCESSORIES (6 Hrs)**

Labels, linings, interlinings, wadding, lace, braid, elastic, hook and loop fastening, shoulder pads, eyelets and laces, zip fasteners, buttons

**Text Books:**

1. Jacob Solinger, "Apparel Production Handbook", Reinhold Publications,1998
2. Carr H and Latham B., "The Technology of Clothing Manufacturing", Blackwell Science, U.K.,1994

**References:**

1. Ruth E. Glock, Grace I. Kunz, “Apparel Manufacturing, Sewn Product Analysis”, fourth edition, Pearson Education, ISBN: 8177580760159 4
2. Laing R.M., Webster J, “Stitches & Seams”, The Textile Institute, India,1998
3. Shaeffer Claire, “Sewing for the Apparel Industry”, Prentice Hall, New Jersey, 2001
4. Singer, “Sewing Lingerie”, Cy De Cosse Incorporated, 1991.
5. Patty Brown & Janett Rice, “Ready-To-Wear Apparel Analysis’”, Third Edition, PrienticeHall Inc., New Jersey,ISBN:0130254347.

**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | 1 | 2 | - | 1 | - | - | - | 1 | 1 | - | - | - | - | - |
| **2** | 2 | 1 | 3 | - | 1 | - | - | - | 1 | 1 | - | - | - | - | - |
| **3** | 1 | 2 | 3 | - | 1 | - | - | - | 1 | 1 | - | - | - | - | - |
| **4** | 1 | 2 | 3 | - | 1 | - | - | - | 1 | 1 | - | - | - | - | - |
| **5** | 2 | 2 | 3 | - | 1 | - | - | - | 1 | 1 | - | - | - | - | - |

**U20FTT406** **FASHION PORTFOLIO**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 3 | 0 | 0 | 3 | 45 |

## Course Objectives

- To explain various students document presentation skills.
- To explain various forecasting and importance.
- To teach Fashion presentation with various media.
- To explain various technical details and documents.
- To explain fundamentals of designer display folders & different design options.

## Course Outcomes

*At the end of the course students will be able to*

***CO1.*** *Understand the various students document presentation skills*

***CO2.*** *Understand the various forecasting and importance.*

***CO3.*** *Understand the Fashion presentation with various media.*

***CO4.*** *Understand the various technical details and documents*

***CO5.*** *Understand the selection of designer display folders & different design options are possible for showcasing their creative works..*

**UNIT -I** **(9 Hrs)**

Portfolio Preparation- Introduction, Definition, Types, importance and need, presentation skills using various media.

**UNIT-II** **(9 Hrs)**

Fashion Forecasting- Introduction, Definition, Types, Methods, Sources. Colour forecasting- importance, need and application

**UNIT-III** **(9 Hrs)**

Fashion Presentation Boards- Inspiration Boards, Theme Board, Mood Board, concept Board, Colour board, Swatch Board, Client board, Illustrations

**UNIT-IV** **(9 Hrs)**

Technical details- Material Handling, Material Management, Flat sketch, Spec Sheet, cost sheet,

**UNIT-V** **(9 Hrs)**

Fashion Photography- Introduction, Definition, types, Importance, Selection of Location, Lights- Day light, Night Light. Speed, aperture, ISO Fashion show-Introduction, Types, Importance, techniques, choreography, Makeup and hair style.

## References


- Linda Tain “Portfolio Presentation for Fashion Designers”, Fairchild Publication Inc., 4th edition, New York 2018
- Gini Stephens Frings, “Fashion – From concept to Consumer”. Pearson Education, 9th edition 2007
- Nancy Riegelman, “Colours for modern Fashion- Drawing fashion with coloured markers.” Nine Heads media, I edition 2006
- Jeremy Web, “ Basics Creative Photography- Design Principles”, Bloomsbury Visual Arts, Ist edition 2017


**COs/POs/PSOs Mapping**

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| 1 | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | 3 | 2 | - |
| 2 | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | 3 | 2 | - |
| 3 | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | 3 | 2 | - |
| 4 | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | 3 | 2 | - |
| 5 | 2 | 2 | - | - | 3 | - | - | - | 2 | 2 | - | - | 3 | 2 | - |

| | GENERAL PROFICIENCY–I | L | T | P | C | Hrs |
|---|---|---|---|---|---|---|
| U20HSP401 | | 0 | 0 | 2 | 1 | 30 |

**Course Objectives**

- To build a strong sight of vocabulary and decoding skills.
- To improve the communication and leadership skills in an innovative way
- To identify the information and understand the underlying meaning of the given concept
- To build the written communication skills to meet organizational goals
- To extend knowledge on verbal aptitude and prepare for interviews

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Gain strategies to build literal and inferred *meaning through comprehension analysis*
**CO2 -** Develop interpersonal communication skills professionally
**CO3** - Recognize the information not directly stated and progress in employability skills
**CO4**- Select compile and synthesize information for written mode of communication
**CO5**- Learn to solve verbal aptitude for competitive exams

**UNIT I - COMPREHENSION ANALYSIS (6 Hrs)**

**Listening:** Listening Comprehension (IELTS based) – **Speaking**: Break the iceberg - **Reading:** Reading technical passage (IELTS based) - **Writing:** Writing Task: 1 (IELTS: Graph / Process /Chart Description) **Vocabulary:** Synonyms (IELTS)

**UNIT II - PERSONALITY DEVELOPMENT (6 Hrs)**

**Listening**: Interview Videos- **Speaking:** Extempore& Presentation (Soft Skills) - **Reading:** British & American Vocabulary, Read and review (Books, Magazines) - **Writing**: SWOT Analysis **Vocabulary:** Idioms (IELTS)

**UNIT III - INFERENTIAL LEARNING (6 Hrs)**

**Listening:** Listening Speech sounds to overcome Mother Tongue Influence, Anecdotes– **Speaking**: Interpersonal Interaction & Situational attribution–**Reading**: Distinguish between facts & opinions - **Writing:** Writing Conversation to different context **Vocabulary:** Phrasal Verbs (IELTS)

**UNIT IV - INTERPRETATION AND FUNCTIONAL WRITING (6 Hrs)**

**Listening**: Group Discussion videos - **Speaking:** Group Discussion Practice - **Reading:** Interpretation of data - Graph, table, chart, diagram (IELTS based) -**Writing**: Writing Task: 2 (IELTS) **Vocabulary:** Collocations (IELTS)

**UNIT V - APTITUDE (6 Hrs)**

**Language Enhancement:** Articles**,** Preposition, Tenses
**Verbal Ability Enhancement:** Blood Relation, Completing Statements- Cloze test, Spotting Errors –Sentence Improvement, One Word Substitution, Word Analogy, Word Groups( **GATE**)

**Reference Books**


1. Jeff Butterfield, —Soft Skills for Everyone‖, Cengage Learning, New Delhi, 2013.
2. GrantTayler, English conversation practice, English, 1998
3. Bailey, Stephen. Academic Writing: A practical guide for students. New York: Rutledge,2011.
4. Marc Roche"IELTS Vocabulary Masterclass 8.5. Master Phrasal Verbs, Essay Vocabulary, Graph Vocabulary & Speaking Vocabulary"

**5** A Modern Approach to Verbal & Non –Verbal Reasoning, Dr.R.S.Agarwal
**6** High School English Grammar and Composition, Wren & Martin, Revised by Dr.N.D.V.Prasada Rao, Jan 2017

**Web References**

1. https://www.ielts-exam.net/grammar/
2. www.espressoenglish.net › free-English-grammar-e-book
3. https://www.thebalancecareers.com/list-of-soft-skills-2063770

**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 1 | - | - | - | - | - | - | 1 | - | 3 | - | 2 | - | - | - |
| **2** | 1 | - | - | - | - | - | - | 1 | - | 3 | - | 2 | - | - | - |
| **3** | 1 | - | - | - | - | - | - | 1 | - | 3 | - | 2 | - | - | - |
| **4** | 1 | - | - | - | - | - | - | 1 | - | 3 | - | 2 | - | - | - |
| **5** | 1 | - | - | - | - | - | - | 1 | - | 3 | - | 2 | - | - | - |

**U20FTP401** **PATTERN ENGINIREEING-II LAB**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To train the students in pattern engineering of garments.
- To develop the patterns grading of patterns
- To develop the patterns for garment components.

## Course Outcomes

***CO1 -*** *Develop Patterns For Women's, Men's And Children's Garments*
***CO2 -*** *Do Grading Of Patterns*
***CO3 –*** *Develop pattern for godets*
***CO4 –*** *Develop pattern for Jeans And Jumpsuits*
***CO5 -*** *Develop Patterns For Basic Bodice, Gored and Flared Skirts.*

## LIST OF EXPERIMENTS

1. Draft and stitch pattern for classic princess style line using two-dart basic block pattern
2. Draft and stitch pattern for pleated shoulder cowl using the basic front pattern block
3. Draft and stitch pattern for 6-gore flared skirt.
4. Draft and stitch torso foundation for dresses without waist line seam.
5. Grade a basic block of size 8 to size 6
6. Grade a skirt of size 12 to size 6
7. Draft and stitch pattern for godets
8. Prepare muslin fabric for draping and drape a basic bodice on the body form.
9. Prepare muslin fabric for draping and drape any skirt on the body form.
10. Prepare muslin fabric for draping and drape shawl collar on the body form.
11. Prepare muslin fabric for draping and drape convertible collar on the body form.
12. Study of fabric manipulation techniques and stitch sample for any one.

## Reference:

1. Laboratory Manual prepared by the Department of Fashion Technology, 2020

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 2 | 3 | - | 2 | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **2** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **3** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **4** | 3 | 2 | 3 | - | - | - | - | - | 2 | 2 | - | - | 2 | 2 | - |
| **5** | 3 | 2 | 3 | - | 2 | - | - | - | 2 | 2 | - | - | 2 | 2 | - |

**U20FTP402** **TEXTILE CHEMICAL PROCESSING LAB**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To train the students in pattern engineering of garments.
- To develop the patterns grading of patterns
- To develop the patterns for garment components.

## Course Outcomes

*After successful completion of this course, the students should be able to*

***CO1:*** *Acquiring knowledge on bleaching, dyeing and printing process*

***CO2:*** *Estimation and application of chemicals and dyes for processing the textile materials.*

***CO3:*** *Demonstrate ability to formulate appropriate shade and process parameters of chemical process.*

***CO4:*** *Apply the different types of machines for the chemical processing*

***CO5:*** *Acquiring knowledge on fastness properties of dyed materials*.

## LIST OF EXPERIMENTS:

1. Acid and enzymatic desizing of Cotton fabrics.
2. Batch wise alkaline scouring of cotton fabric and P/C blend.
3. Peroxide bleaching of Cotton fabrics
4. Mercerization of cotton hank
5. Dyeing of cotton with direct dye.
6. Dyeing of cotton with vat dye.
7. Dyeing of cotton with reactive dye.
8. Dyeing of cotton with sulphur dye.
9. Dyeing of 100% polyester with disperse dye by using HTHP beaker dyeing machine.
10. Direct style of printing on cotton with reactive dye
11. Discharge and Resist style of printing on cotton with reactive dye
12. Direct and discharge style of printing on PET with disperse dye
13. Softening treatments on garment.

## Reference:

1. Laboratory Manual prepared by the Department of Fashion Technology, 2020

**COs/POs/PSOs Mapping**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 | 1 |
| **2** | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 | 1 |
| **3** | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 | 1 |
| **4** | 1 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 | 2 | 1 |
| **5** | 2 | 3 | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 | 1 |

**U20FTP403** **GARMENT CONSTRUCTION - I LAB**

| L | T | P | C | Hrs |
|---|---|---|---|---|
| 0 | 0 | 3 | 1 | 45 |

## Course Objectives

- To demonstrate skills in sewing different types of seams.
- To demonstrate skills in constructing commercial garment categories
- To demonstrate skills in finishing garment samples

## Course Outcomes (COs)

***CO1.*** *Fabricate seam specifications of commercial garment categories.*
***CO2.*** *Choose and apply sewing techniques in constructing the garment.*
***CO3.*** *Construct samples making use of garmenting techniques.*
***CO4.*** *Predict the technical problems faced in seam sample preparation*
***CO5.*** *Apply fundamental concepts and prepare technical specifications.*

## LIST OF EXPERIMENTS

1. Study of SOP for shirt measurement.
2. Tech pack preparation for Men's formal shirt
3. Prepare pattern for Men's Formal shirt.
4. Stitching of Men's Formal shirt
5. Study of SOP for Trouser measurement.
6. Tech- pack preparation for Men's formal trouser.
7. Prepare pattern for Men's Formal trouser.
8. Stitching of Men's Formal trouser.
9. Prepare cost sheet for stitched formal shirt.
10. Prepare cost sheet for stitched formal trouser.
11. Adopt pattern of formal shirt for variations in shirt.
12. Adopt pattern of formal trouser for variations in trouser.

## Reference:

1. Laboratory Manual prepared by the Department of Fashion Technology, 2020

**COs/POs/PSOs Mapping**

| COs | Program Outcomes (POs) | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| **1** | 3 | 3 | - | - | 2 | - | - | - | 2 | 2 | - | - | 2 | - | - |
| **2** | 3 | 3 | - | - | 2 | - | - | - | 2 | 2 | - | - | 2 | - | - |
| **3** | 3 | 3 | - | - | 2 | - | - | - | 2 | 2 | - | - | 2 | - | - |
| **4** | 3 | 2 | - | - | 2 | - | - | - | 2 | 2 | - | - | 2 | - | - |
| **5** | 3 | 2 | - | - | 2 | - | - | - | 2 | 2 | - | - | 2 | - | - |