### B.Tech in APPAREL PRODUCTION MANAGEMENT

**Syllabus**

#### COURSE STRUCTURE

**SECOND YEAR FIRST SEMESTER**

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>CONTACTS (PERIODS/WEEK)</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>L</td>
<td>T</td>
</tr>
<tr>
<td>1.</td>
<td>APM 301 Costumes and Apparel industry</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>APM 302 Fashion Design</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>3.</td>
<td>APM 303 Basics of Textile Manufacture</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>APM304 Textile Wet Processing I</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>APM305 Apparel production I</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>6.</td>
<td>TT306 Applied Mechanics</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>7.</td>
<td>TT307 Statistics</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total of Theory</td>
<td>21</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>CONTACTS (PERIODS/WEEK)</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>APM 391 Wet processing Lab I</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>APM392 Basic Apparel Production</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>APM393 Fashion Sketching, Drawing and Designing</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>11.</td>
<td>APM394 Computer Application Lab</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total of Practical</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Total of Semester</td>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>

#### SECOND YEAR SECOND SEMESTER

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>CONTACTS (PERIODS/WEEK)</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>L</td>
<td>T</td>
</tr>
<tr>
<td>1.</td>
<td>APM401 Apparel production II</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>APM402 Fabric Structure and Textile Testing</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>3.</td>
<td>APM403 Basics of Textile Manufacture II</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>APM404 Textile Wet Processing II</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>APM405 Basics of Apparel Production Process</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>6.</td>
<td>APM406 Pattern Making</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total of Theory</td>
<td>17</td>
<td>1</td>
</tr>
</tbody>
</table>
### B. PRACTICALS

<table>
<thead>
<tr>
<th></th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>APM491</td>
<td>Apparel Production Lab</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>APM492</td>
<td>Textile Testing and Fabric analysis Lab</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>APM493</td>
<td>Textile Wet processing Lab II</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>APM494</td>
<td>Pattern Making and Grading Lab</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>HU 491</td>
<td>Language laboratory / Report Writing</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Total of Practical**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**Total of Semester**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

### THIRD YEAR FIRST SEMESTER

#### THEORY

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>APM501 Apparel costing</td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>APM502 Garment production Machineries and Equipment</td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>APM503 Apparel production Control</td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>APM504 Fabric Garment and Finishing Care</td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>APM505 Quality Assurance in Apparel Industry</td>
<td>3</td>
<td>1</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

**Total of Theory**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
<td>1</td>
<td>16</td>
</tr>
</tbody>
</table>

#### B. PRACTICALS

<table>
<thead>
<tr>
<th></th>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>APM591</td>
<td>Fashion Design Lab</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>APM592</td>
<td>Garment construction and Lab</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>APM593</td>
<td>Apparel Machinery and Equipment Lab</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>APM594</td>
<td>Industrial Training</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Total of Practical**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
<td>12</td>
<td>8</td>
</tr>
</tbody>
</table>

**Total of Semester**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28</td>
<td>24</td>
</tr>
</tbody>
</table>
# B.Tech in APPAREL PRODUCTION MANAGEMENT

## Syllabus

### THIRD YEAR SECOND SEMESTER

#### A. THEORY

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>CONTACTS (PERIODS/WEEK)</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. APM601</td>
<td>Product Engineering and Plant Lay Out</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>2. APM602</td>
<td>CAD/CAM for Apparel Products</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3. APM603</td>
<td>Apparel Accessories And Surface Ornamentation</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4. APM604</td>
<td>Knitwear Technology</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>5. APM605</td>
<td>Operation Research</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>6. APM606</td>
<td>Industrial Management</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>7. APM607</td>
<td>Fashion Business</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total of Theory</strong></td>
<td></td>
<td></td>
<td>21</td>
<td>0</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>

#### B. PRACTICALS

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>CONTACTS (PERIODS/WEEK)</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. APM691</td>
<td>Apparel CAD lab</td>
<td></td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>9. APM692</td>
<td>Apparel designing And draping Lab</td>
<td></td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>10. TT693</td>
<td>Seminar</td>
<td></td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Total of Practical</strong></td>
<td></td>
<td></td>
<td>9</td>
<td>9</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Total of Semester</strong></td>
<td></td>
<td></td>
<td>30</td>
<td></td>
<td></td>
<td>27</td>
</tr>
</tbody>
</table>

### FOURTH YEAR FIRST SEMESTER

#### A. THEORY

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>CONTACTS (PERIODS/WEEK)</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. APM701</td>
<td>Information Technology in Apparel industry</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>2. APM702</td>
<td>Industrial Eng.</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3. APM703</td>
<td>Clothing Science</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4. APM704</td>
<td>Apparel Marketing and Merchandising</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>5. APM705</td>
<td>International Business &amp; Documentation</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>6. APM706</td>
<td>Design Concept Of Apparel Machinery and Equipment</td>
<td></td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total of Theory</strong></td>
<td></td>
<td></td>
<td>18</td>
<td>0</td>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

#### B. PRACTICALS

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>CONTACTS (PERIODS/WEEK)</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. APM791</td>
<td>Industrial Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>
## B.Tech in APPAREL PRODUCTION MANAGEMENT

### Syllabus

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>APM792</td>
<td>Seminar on Industrial Training</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>APM793</td>
<td>Minor Project</td>
<td>9</td>
<td>9</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>APM794</td>
<td>Information Technology in Garment Lab</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>Total of Practical</strong></td>
<td>12</td>
<td>12</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td></td>
<td><strong>Total of Semester</strong></td>
<td>30</td>
<td></td>
<td></td>
<td>31</td>
</tr>
</tbody>
</table>

### FOURTH YEAR SECOND SEMESTER

#### THEORY

<table>
<thead>
<tr>
<th>CODE</th>
<th>THEORY</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>HU801</td>
<td>Values and Ethics in Profession</td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>TT801</td>
<td>Energy Science</td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>APM802</td>
<td>Elective</td>
<td>3</td>
<td>0</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total of Theory</strong></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

#### B. PRACTICALS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>APM891</td>
<td>Assigned Project</td>
<td>12</td>
<td>12</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>APM881</td>
<td>Personality development</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>APM894</td>
<td>Comprehensive Viva-Voce</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total of Practical</strong></td>
<td></td>
<td></td>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

| Total of Semester | 24 |
|                   | 23 |
Details of Curriculum

English Language & Communication

Semester-III

Costumes and Apparel Industry (APM301)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Apparel industry – development of the industry through Industrial revolution, World war periods post war fashion developments.

The Apparel industry in India- Domestic Industry; Size of industry, nature of industry.

Export industry: size & nature of this industry

Sourcing and production centers: fabric dyeing, printing, finishing, trimmings and accessories

Promotional Organisation: AEPC, GEA, AHEA, CMAI etc. Their role in the promotion of garments exports Major domestic retailing/overseas retailing.

Auxiliary fashion Enterprises, Fashion Information service, Advertising & publicity Agencies

Costumes: Origin of costume-origin of clothing, growth dress out of painting, cutting & other methods, need for clothing, factors influencing costume changes.

Costume of India: Traditional costume different states of India, Accesories & ornaments used in India.

Costume of Far Eastern Countries: Costume of Pakistan, Sri Lanka, China, Mianamar, Thailand.

Costume of Egypt, Greece, And Rome, African Costumes

French Costumes: French Costumes during renaissance 1400-1600

English costumes: English Costume during Middle Ages.

American costumes: American costumes from 18th to 20th centuries

Reference Subjects:

Text Books & Articles


Fashion Design (APM302)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Fashion: Terminology, Cycle influence, Elements of fashion history of fashion

Fashion designers American, European & others, Fashion centers of the world

Basic Design: Types of Design- Mod board- Formation of mood board

Elements of Design: Introduction to element of design- line & direction, shape & form, size, colour, texture

Introducing element of design on apparels

Principles of design of costumes: Introduction to principles of design – balance, proportion, Emphasis-
Rhythm-Harmony- Introducing principle design on apparels.

Colour aspects of costumes : colour theory-primary-secondary-tertiary colour- Intermediate colour-colour scheme- colour dimension-Warm& cool colour-colour harmony
Illusion:illusion created by elements, principles &colour on apparel.

Figure/ Design Analysis : stout figure,slim figure,slender,narrow shoulder,broad shoulders,round shoulders,large bust,flat bust,large hips,large abdomen,short waist,long waist,sway back,large neck,short neck,large face,small face,square or broad face,round face,narrow pointed face,retrousse nose,proeminent nose,proeminent forehead,sharp angular features and large features.
Characteristics of a well dressed person- selection of fabrics,textiles,pattern&colour,Asthetic requirement for dress

Elements of apparels :women’s dress –style,fashion&fad- suitability to the individual factors in personality – Men’s dress- factors to consider,fabrics,coats,trousers,shirts,collars&pockets.
Accessory of design:neck ties,hats,over coats,hosiery & shoes,hair dressing

Planning wardrobes for different age groups:Helth nad comfort in dress,economy in dress. Fashion shows & Window display –importance survey on modern dress, study of current fashion trends,fashion forecasting-colour,fabrics,current fashion silhouettes,texture,designs seasons

Text books :
2.Laver J., costume and Fashion” Thames & Hudson 1995

BASICS OF TEXTILE MANUFACTURE –I (APM303)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction of textile fibers: Classification of textile fibres-Physical and chemical properties of fibres and their uses-cotton, jute, wool, silk, viscose, nylon, polyester, acrylic, polypropylene, introduction of microfibres-texturisation, definition, types, properties of textured yarn-its uses

Yarn manufacturing Process:ginning-objectives,types and process sequence,suitability of various gins to different staples of cotton

Objectives and process sequence – Blowroom, carding, Drawing, combing, simplex, ringframe

Objectives and process sequence-Rotor spinning, airjet spinning, friction spinning, comparison of yarn properties produced in the above processes.

Post spinning process: sequence of process-Doubling, cone winding, reeling-Ply yarn and single yarn characteristics

Yarn quality Requirements:yarn quality requirements for weaving and knitting. Imperfections and yarn faults-Package faults, causes & remedies.

Sewing thread manufacture: fibres used and essential quality particulars of svewing thread, process sequence and manufacturing details of sewing thread.

Text Books&Articles
TEXTILE WET PROCESSING –I (APM304)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>


Colour and chemistry of dyes, classification of dyes, brief principle of application on various fibres, measurement of fastness properties.

Dyeing methods of cellulosic fibre with direct, reactive, sulphur and vat dyes, dyeing of protein fibres with acid dyes, dyeing of synthetic fibres with acid, cationic and disperse dyes. Dyeing machines - hank dyeing, jigger dyeing, winch dyeing, denim dyeing and soft flow dyeing machines, pad-steam and pad-thermosol methods.

Text Books
5. Roy Choudhury A./K. “Modern Concept of Colour and Appearance” Science Publishers USA and Oxford & IBH, India.

APPAREL PRODUCTION –I (APM305)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Anatomy: proportion and disproportion of humane figure, figure types and variations- normal figures- measurements and its importance- Standard body measurements for children, ladies and gents. Sequence of taking body measurements for various age groups and sex - recording of measurements, standardisation of body measurements.


Style reading: Preparation of dress form and draping fabric for various garments- Advantages of draping-style reading of basic bodice, different types of collars, sleeves, cuffs and pockets.

Flat pattern techniques: Fitting and pattern alteration- fitting definition- principles of a good fit. Causes for poor fit, checking the fit of a garment, solving fitting problems in various garments- basic principles, fitting
B.Tech in APPAREL PRODUCTION MANAGEMENT

Syllabus

Pattern Alterations: Importance of altering patterns, principles of pattern alterations, common pattern alterations.
In a blouse, alteration of pattern for irregular figures.
Pattern Grading: Master grades—basic back grading—basic front grading—basic sleeve grading—basic collar grading—basic facing grading.
Grading of one piece collar and lapel—grading of set in sleeves—principles of grading full raglan sleeve—principles magyar sleeves.
Garments sizing and surveys: women’s grading increments reference-area commentaries—selecting a grading system.
Multi track grading: track grading—simplified two dimensional system—trouser grading—Jacket grading—shirt sizing and grading—Men’s waistcoat grading and size charts.

Textbooks:
Mary Mathews ‘Practical clothing construction’ Thomson & Co. Madras, 1974
Cock V. ‘Dress making simplified’ Blackwell science, 1987

APPLIED MECHANICS (TT306)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction to engineering materials: Engineering materials, requirements, classification, levels of structure, structure-property relationship in materials.
Crystal geometry and structure of solids: introduction, crystalline and non-crystalline states, inorganic solids, metals and alloys, ionic solids, structure of silica and silicates, idea of phase diagrams and transformations.
Elastic, anelastic and viscoelastic behaviour: elastic behaviour—idea of atomic model, idea of modulus as a parameter of design, rubber like elasticity anelastic behaviour—relaxation process, viscoelastic behaviour—introduction to spring dashpot model.
Plastic Deformation and Creep in crystalline materials: plastic deformation—review of stress-strain curves, plastic deformation by slip, idea of shear strength of perfect and real crystals, idea of stress to remove a dislocation.
Fractures: ductile fracture, brittle fracture, idea of ductile—brittle transition, methods of protection against fracture, fatigue fracture.
Heat treatment: Annealing, normalizing, critical cooling rate, hardenability, factors of hardenability, quench test and determination of hardenability.
Mechanics of machines: Introduction: revision of general concepts of mechanics, revision of basic concepts for translation, introduction to three dimensional dynamics of rigid bodies.
Mechanisms: a) Cam: cam with straight flank—roller ended follower, cam with curved flanks—flat ended follower, circular cam—flat and roller ended follower, spring force, reaction torque and equivalent mechanisms.
b) Crank effort diagrams: crank effort diagram, fluctuation of speed and energy.
c) Hook’s joint, velocity and acceleration, double Hook’s joint.
d) Belt drives and shoes brakes: centrifugal forces and driving tensions modification of V grooved pulley, initial tension, belt creep, external and internal shoe brake.
e) Toothed gearing: Spur gears, condition for transmission of constant velocity ratio, velocity of sliding, path of contact and contact ratio, interference, methods of avoiding interference, rack and pinion, internal teeth, helical gears, forces on bearing, equivalent spur wheel, spiral gears, gear ratio and center distance, worm and worm wheel, epicyclic gears.
f) Friction Clutches: plate clutch and centrifugal clutch.
g) Balancing: introduction, basic ideas.
h) Gyroscope: Introduction, gyroscopic couples, effect of gyroscopic couples, general case.

Reference: subjects: 1) Mechanical sciences (ME 101)
TEXT BOOKS
1) Theory of machines by Rattan,
2) Theory of Machines by Khurmi & Gupata
3) Material science and Engineering V.Ragavan

STATISTICS  (TT307)

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Introduction: What is statistics, definition of Variances and random variables-discrete and continuous variables.
Patterns in data: frequency distribution s cumulative frequency ,ogive, histogram and frequency polygon.
Measure of central tendency and dispersion :Mean median,mode,quartiles,range,mean deviation ,standard deviation ,coefficient of variation,calculation involving the use of frequency distribution.
Probability:Definition of probability, composed event,addition of two or more than two events, exhaustive event,mutually exclusive event, independent event,conditional probability.Baye’s theorem,weak law of large numbers and central limit theorem(without proof)
Some standard probability distributions :Expected value of a random variable,Bernoulis,s trial,distribution function,calculation of mean and variance of binomial distribution ,poisson distribution its mean and variance,density function ,normal distribution,normal approximation to binomial, standard normal distribution tables of normal distribution,curve fitting.
Sampling distribution:definition of population and sample,sampling distribution of mean and variance.
Inference concerning mean :Point estimation ,internal estimation ,Bayesian estimation ,test of hypothesis,null hypothesis,hypothesis concerning one mean and two means.
Inference concerning variances: The estimation of variances,hypothesis concerning one and two variances. Concept of analysis of variances:only introductory idea.
Simple nonparametric test.
Curve fitting: concept of two variables and their relation , regression line of regression ,the correlation coefficient- interpretation and significance, method of least square, normal equation.
Reference subjects:
1. Textile testing &Instruments I(TT305).2. Textile testing &Instruments II(TT405)

Text Books:

WET PROCESSING LAB-I  (APM391)
Practical
(All)
The following list is no way exhaustive. Additional laboratory work or experiments can be planned to consolidate the theoretical work and to emphasize the activities for doing rather than the knowing.
1. Desizing and scouring of cotton yarn/cloth
2. Bleaching of cotton yarn/cloth using hydrogen peroxide
3. Degumming of silk
4. Scouring and bleaching of jute
5. Colour measurement by spectrophotometer.

BASIC APPAREL PRODUCTION LAB  (APM392)
Practical
B.Tech in APPAREL PRODUCTION MANAGEMENT

Syllabus

1. Prepare basic patterns and do variations
2. Grade the basic patterns
3. Construct, finish and press the same using the drafted patterns
   1. Bodice
   2. Cuffs
   3. Sleeves.
   4. Yokes
   5. Pockets
   6. Collars
   7. Plackets
   8. Skirts

FASHION SKETCHING, DRAWING AND DESIGNING LAB (APM393)

Practical

(All)

Study of types and techniques of illustration
Study of basic anatomy.
Constant proportions – Children-Men and Women in Various poses
Drawing face and hairstyles.
Drawing arms and legs with accessories.
Creating various poses.
Design details – Silhouette and its types.
Drawing different types of necklines, collars, sleeves and cuffs.
Drawing blouses, skirts, pants and coats’
Costume drawing - Drawing the details on the anatomy - Sketching the fall of the fabric - Accessories
drawing. Sketching different types of garments and costumes with black pen, water color, sketching national
costitumes - traditional costumes of various states of India

COMPUTER APPLICATION LAB (APM394)

Practical

(All)

1. Simple work processing-learning to use differential size & types of fonts-line spacing-tables-
inserting pictures-editing-cut & paste.
2. Spread sheet processing-formulas for row-column-charts-inserting pictures-different forms-
worksheets-row header & column headers
3. Photoshop practices
4. Corel Draw-Garment Designing, styling, Alteration, coloring, Erasing, Painting etc
5. Auto CAD worksheets: Drawing aids and utility commands,
   entities, text, layers, inquiry, display, editing, hatching, isometric, dimension, block and
   assembly, scripts, DXF & IGES files.

SEMESTER-IV

APPAREL PRODUCTION –II (APM401)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Garment construction: Introduction to sewing machines-its parts-sewing machine control- common
problems and its remedies.
Stitches: Classification –constructive stitches-temporary and permanent stitches standards for good stitches.
Seams: definition, types of seams and seam finishes. their suitability and application in various garments.hem finish
Fullness: definition, methods of introducing fullness in garments-gathers, pleats, flares, flounces, smocking,tucks&darts,methods of controlling fullness.
Neck Finishes: definition of finishes, facing, binding, fitted facing, bias–true bias-joining bias strip
Collars: Definition, factors to be considered in designing collars, classification of collars-Ripped collar, Chinese collar, full roll collar, partial roll collar, square collar, Peter pan collar, shirt collar, scalloped collar, sailor collar, puritan collar, tie collar, turtle collar and shawl collar.
Pockets: Selection of pockets design, constructing pockets, patch-pockets, bound pocket, welt pocket, pocket in seam and front hip pocket.
Yoke: creating variety in yoke designs, preparing yokes,type yokes,attaching yokes.
Plackets: types of plackets-shirt placket,lapped seam, zipper placket, tailors placket,one piece placket,two piece placket, fly opening and zipper method.
Skirts: its type, adding fullness and controlling fullness, finishing skirts
Sleeves: Making and constructing sleeves-set in sleeves, sleeves with bodice style and sleeveless styles.

References:
2. Cock V.,’Dress Making Simplified’ Black science, 1987
7. Dangaji and desh panda ., ‘Basic process and clothing construction orient’ longnians,1970

FABRIC STRUCTURE AND TEXTILE TESTING (APM402)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Woven structures : Definition of design, draft-PegPlan- construction of Plain weave- its derivatives-Twill weave,-drill-Gabardine-Pointed twill-satin and sateen weaves-Honey comb-Huckaback, Construction particulars for cambric,voile,poplin,denim and chambray- Uses of these structured fabrics.
Fabrics :Strength testing-tensile strength-tearing strength-Bursting strength-Abrasion testing-pill testing
thickness-shirley Thickness tester-drape-drapemeter-Testing of shade variation –Testing colour fastness
washing fastness-Light-rubbing-Importance of these on Garments.
Computerized fabric inspection system-Tailorability of woven and knitted fabrics
Knitted fabric testing –loop length-course length-course length,GSM measurement of shrinkage.

Text Books :
B.Tech in APPAREL PRODUCTION MANAGEMENT

Syllabus


BASICS OF TEXTILE MANUFACTURE –II (APM403)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>


Basic introduction and objective of dobby, jacquard, shuttleless looms airjet looms, waterjet looms, rapier looms.

Introduction to knitting process: knitting, definition, classification, comparison of basic properties of woven and knitted fabrics.

Weft knitting-types: circular, flat-important features, cycle of operation in plain, jersey, rib and interlock

Introduction to jacquard machine

Warp knitting machine- important features of tricot, raschel, simplex, mélangé, raschel crochet machine

Introduction to nonwovens: sequence of process in manufacturing nonwovens-types of bonding-mechanical, chemical and thermal –uses

Textbooks

1. Ormerod A and Sondhelm W.S ‘Weaving Technology and operations ‘ the textile institute 1995

TEXTILE WET PROCESSING –II (APM404)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Printing of textiles: Difference between dyeing and printing- methods and styles of printing- printing of cellulosic fibres with pigment and reactive dyes, Silk and nylon with acid dyes, polyester with disperse dyes.

Methods of printing - screen printing- roller printing- rotary screen printing- - flock printing- - transfer printing- batik, tie and dye – steaming and curing.

Objective, classification of different finishing processes, principle, methods, advantages and disadvantages of different finishing processes including cross linking agents used for different substrates to impart crease recovery/easy care finish, anti shrink finishing, flame retarding/proothing, water repelling, rot and mildew proofing of wool, application of softeners, enzymatic softening, organdie finish, moth proofing of wool, antistatic finish.

Effluent treatment plant (ETP) Character of effluents from different textiles mills, chemicals and dyes creating pollution, causes of pollution, criteria in ETP, pollution treatment methods.

Textbooks

B.Tech in APPAREL PRODUCTION MANAGEMENT

Syllabus

5. Jacob Solinger, 'Apparel manufacturing Analysis' textile Book publisher, New york, 1988

BASICS OF APPAREL PRODUCTION PROCESS (APM405)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction to Apparel Industry: Apparel industry in India, Domestic industry, size of the industry, nature of the industry, its developments in recent years. Export industry: Size and nature of the industry.


Major fashion centres of the world: Brief introduction to world fashion centres- American, European, Japanese and Indian; Fashion houses and designers.

Retailing: Various types of retailers, Franchise retailing, private labels and others, department stores, specialty stores, chain retailers, mail order houses, shopping malls. Designer labels Vs Brands, Analysis of designers labels.

Licensing and franchising.

Design: Elements and principles of design: Line, colour and proportion emphasis. Design process: Designers' functions - Inspiration files, sketches, how to interpret designs, story Board / Fabric story; The design studio, sampling.

Fashion information services: Trend forecasting and auxiliary services. Forecasting trends: Purpose of forecasting services, how to use forecasting services. Fashion promotion and communications: Trade fairs, Fashion shows.

References:

PATTERN MAKING (APM406)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Measurement taking - size chart and meaning of sizes. Definition of various garment parts and positions.

Methods: Bespoke method and industrial method (using blocks) - basic block construction - block preparation and correction.

Pattern making by manipulation of dart - elementary and advanced dart manipulation. Manipulation as seen through existing suppression points (bust points), away from suppression points, as gathers or tucks, as multiple
darts. Methods: Slash and spread method, pivot method, difference between permanent pattern (draft) working
patterns and production patterns. Importance of drill hole marks in the darts; seam allowances and its importance.
Importance of notches: balance marks and grain lines.
Basic principles and methodologies used to draft standard size block patterns for men, women and kids wear -viz., shirts, pants, skirts, blouses, jackets, dresses etc.,
Construction of sleeve block - crown height and its relationship with the fit of garment. Introduction to Silhouettes of the sleeves. Sleeve variation - cap, regular shirtsleeve, bishop, Leg - O mutton, puff sleeve.
Cuffs and sleeve opening, sleeve plackets.
Collars: Set-in collars and collar variations- band collars, Peterpan, sailor, gent's shirt collar - one piece and two-piece collar, convertible collar.
Principles and technology of grading. Standard size block patterns - grading techniques for half-size and full-size patterns - Computer grading

References:

APPAREL PRODUCTION LAB (APM491)
Practical (All)
Using the drafted paper patterns construct,finish and press the following
1. Panties,jabla,romper,Aline frock
2. Brief and vest
   1. Sari petticoat sari blouse
   2. Salwar-Kameez
   3. Middy top and skirt,
   4. Lachas.

TEXTILE TESTING AND FABRIC ANALYSIS LAB (APM492)
Practical (All)
Yarn testing:Count determination of sliver,roving and yarn
Single yarn/ply yarn twist testing
Single yarn/lea strength
Yarn eveness
Fabric testing:Fabric tesile/tearing strength;bursting strength,fabric abrasion resistance,drape, stiffness,crease recovery;
Fabric analysis:woven fabric analysis-weave –draft-peg plan
Warp particulars-materials warp-ends per inch-count,direction & amount of twist;crimp%,cover factor;weft particulars-material weft,picks per inch, count,direction&amount of twist,crimp%,cover factor,total cover factor
knitted fabric analysis- structure,wales/inch-coarse/inch-loop length,coarse/inch-loop length,coarse length,stich density-tightness factor;

TEXTILE WET PROCESSING LAB II (APM493)
Practical (All)
1. Dyeing of cotton yarn/fabric using direct dye
2. Dyeing of cotton yarn/fabric using cold brand and hot brand reactive dyes
3. Dyeing of cotton yarn/fabric using Vat and sulphur dyes
4. Dyeing of jute yarn using Direct and Reactive dyes
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

5. Dyeing of silk fabric using acid and basic dyes
6. Dyeing of wool using Metal complex and Reactive dyes
7. Dyeing of Cotton and silk fabrics using natural dyes
8. Dyeing of blended fabrics-PET/CO, VIS/PET
10. Printing of cotton fabric by Table Screen Method
11. Finishing of cotton fabric by a few temporary and durable methods

PATTERN MAKING AND GRADING LAB (APM494)
Draft The Paper Pattern And Do Grading For The Following:
1. Panties, jabla, romper, A-line frock
2. Brief and vest
3. Sari petticoat, sari blouse
4. Salwar-Kameez
5. Middy top and skirt,
7. Shirt, T-shirt
8. Double breasted coat, jacket
9. Sherwani
10. Pant, Bermudas

LANGUAGE LABORATORY/REPORT WRITING (HU491)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

1. Introduction: Introductory lecture is to be given to students so that they get a clear idea of syllabus and understand the need for having such a practice lab in the first place (3 hours)
2. Conversion practice: this is to be done on given situation topics. The students are also made to listen to pre-recorded cassettes produced by British council and also by the universities of Oxford and Cambridge (6 hours)
3. Group Discussions: The students are made to understand the difference between the language of conversion and group discussion. Strategies of such discussion are to teach to them. It is also helpful to use videocassettes produced by the UGC on topics like group-discussion. Afterwards, the class is divided into groups and the students have to discuss on given topics on current socio-economic-political-educational importance (12 hours)
4. Interview sessions: Students are taught the dos and don’ts of facing a successful interview. They then have to face rigorous practices of mock-interviews. There simulations of real life interview sessions where students have to face an interview panel (12 hours)
5. Presentations: The secrets of an effective presentation are taught to the students. Then each and every student has to make lab presentations with the help of the overhead projector using power point presentation and other audio-visual aids in the laboratory. They also have to face the question answer sessions at the end of their presentation (12 hours)
6. Testing sessions: Classes are also allotted to prepare the students for competitive examinations like TOEFL by making the students listen to specially produced CD cassettes of such examinations (3 hours)

The overall aim of this course is to inculcate a sense of confidence in the students and help them to become good communicators in their social as well as professional lives.

Text books and Articles:
1. Sharma - Business correspondence & report writing, TMH
2. Prasad - Group discussion & interview (with audio cassettes), TMH
3. Sashi Kumar - Spoken English (with cassette), TMH
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

SEMESTER-V

APPAREL COSTING  (APM501)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction to Cost Accounting: Responsibility accounting, uses of cost accounting, elements of cost, Direct material, Direct labour, factory overhead; cost of goods manufactured statements, cost behaviour patterns in the apparel industry—fixed variable, semi variable, job order for process costing; Accounting for factory overhead: Capacity level concepts, production and service departments direct and indirect costs over and under applied overhead, cost volume profit analysis; Break even analysis: Contribution margin, variable, cost ratio, marginal income; sales mix by garment style, effect of volume change, price/column analysis.

Apparel Marketing cost Analysis: Marketing cost accounting, marketing cost standards, variance analysis for marketing cost, effective variance, price variance.

Determining Pricing of apparel products: Price elasticity of demand and supply, sample costing—marginal revenue and marginal cost, cost plus pricing methods; Full cost pricing, conversion cost pricing differential cost pricing, variable cost pricing, derivation of cost of apparel products—woven/knits; The budgeting process: Budgeting principles for the apparel industry, fixed vs. variable budget, master budget, lamination of budgets any justification effort.

References:

GARMENT PRODUCTION MACHINERIES AND EQUIPMENT  (APM502)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction to spreading machines and cutting machines—types and functions; 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).

Major parts of sewing machinery and functions. Adjustment of major parts of Single needle lock stitch machine: 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. Sewing machine safety regulations.

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 Over lock: 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.

Work-aids and attachments, functions of pullers, guides and folders compensating presser feet—left, right, double; feller, hemmer etc. Collar turning machines, folding machinery, fusing and pressing machinery.

Computer controlled cutting, sewing, folding machinery.

References:
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus


APPAREL PRODUCTION CONTROL (APM503)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>


Operation sequence development: Garment breakdown with machine and attachment details, development of production grid for garment construction, development of production flowchart.

Bundle tickets: Guidelines for bundle ticket design, functions of bundle tickets, bundle ticket control.

Different manufacturing systems: Make through and Assembly line manufacturing - advantages and disadvantages.

Lay lot planning: Numerical exercises on lay lot planning to optimize cutting cost, bundling, ticketing and cutting room control formats.

Production Planning And Control: Capacity calculation for cutting, sewing and finishing. Determination of machine requirements for new factory.

Line balancing: Determination and allocation of manpower and, machine for balanced production in existing plant for a given target.

Quality In Product Development: Quality assurance during product development - methods to avoid problems during pattern making, garment construction and other areas. Inspection procedures. Work-study in garment industry - methods to control time and cost.

References:

FABRIC GARMENT AND FINISHING CARE (APM504)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>


Problems in conventional processing, awareness of banned dyes and chemicals- German ban, Eco-labels, natural dyes - history and backgrounds and applications. Eco friendly processing- desizing scouring, bleaching and dyeing. Alternative dyes and chemicals- structure- identification methods including chromatographic techniques.

Garment finishing: Chemicals and enzymes, crinkle effect, softening, acid wash, stone wash, enzyme wash-denim finishing, chemical and sand blasting.

Washing: Stone washing, acid washing, enzyme washing, bio polishing, emerisation, bleaching, laser fading and ozone fading.

Stain removal, selection of spotting chemicals, factors for spotting, dry cleanings, care labels, laundering equipment and procedures.

Pressing: reasons for pressing, pressing and fabric characteristics, pressing equipments, conditions and types of pressing Packaging and folding: criteria for packaging, packaging and folding, specifications and standards for packaging, materials and equipments used for packaging, considerations for packaging and...
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

folding
References:
10. Finishers and environment – Solutions, Textile institute, Manchester 1993

QUALITY ASSURANCE IN APPAREL INDUSTRY (APM505)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Design satisfaction tests.
Fabric specification - cloth defects - four point system - shrinkage potential.
Quality of trims and accessories. Defects in garments and their remedies - A, B and C zones in a garment with respect to defects.

References:

FASHION DESIGN LAB (APM591)
Practical (All)

1. Working with 3-D shapes
2. Introduction to drawing
3. Drawing figures to scale
4. Drawing ladies blouse and skirts and giving suitable colours
5. Drawing men's shirt and part and giving suitable colours
6. Drawing children's wear of individual choice and justify the color combination
7. Drawing ladies and men’s summer wear.
8. Drawing ladies and men’s winter wear
9. Drawing ladies and men’s casual wear

GARMENT CONSTRUCTION AND TESTING LAB (APM592)
Practical
(All)
List of experiments:
Using the drafted paper patterns construct, finish and press the following:
1. panties, jabla, romper, A-line frock
2. Brief and vest
3. Sari petticoat sari blouse
4. Salwar-Kameez
5. Middy top and skirt,
7. Shirt, T-shirt
8. Double breasted coat, jacket
9. Sherwani
10. Pant, Bermudas
11. Garment testing: seam strength, seam slippage, garment-checking procedure
12. Interlinings-Peel bond strength

APPAREL MACHINERY AND EQUIPMENT LAB (APM593)
Practical
(All)
1. Study Of The Hook Shuttle Assembly In Lock Stitch machine
2. Study of needle bar section in lock stitch machine.
3. Study Of The Mechanisms Of Over Lock And Give The Threading Procedures For Three Thread Machines
4. Study Of The Mechanisms Of Over Lock And Give The Threading Procedures For Three Thread Machines
5. Study Of The Hook Shuttle Assembly In Flat lock Machine
6. Study of the needle bar sections in flat lock machines
7. Study Of The Cutting And Sharpening Mechanisms In Straight Knife Cutting Machines
8. Study Of The Stitch Mechanisms, Gears And Button Fixing Machine And Set The Same Various Stitch Levels And Length In A Button Fixing Machine

INDUSTRIAL TRAINING (APM594)
PRACTICAL/FIELD WORK

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

1. Orientation of the garment factory, name and address, area and site details of the factory, nature of the construction of the factory, product range of the factory, rules and regulations of the factory
2. Manufacturing process followed by the factory, significance of the plant layout with respect to the manufacturing process, technical details of the manufacturing department,
3. Organizational setup, categorize the number of workers, employed department-wise, number of supervisory staff and general staff, yearly turnover.

SEMESTER-VI

PRODUCT ENGINEERING AND PLANT LAYOUT (APM601)

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B.Tech in APPAREL PRODUCTION MANAGEMENT

Syllabus

Product analysis: Relationship between quality and construction of sewn product geometric principles of draping, drafting and industrial patterns product specifications.

Production control and Engineering: Industrial engineering concepts - Development and application of standard data for pre-costing and factory scheduling - Basic production systems - production control charts.

Manufacturing Information system: Systems and procedures.

Production Management analysis: Analysis of techniques for material utilization and cutting of raw materials for all types of sewn products principles and methods of costing, evaluation of equipment for examining, spreading, cutting, marking and ticketing - solution of production problems in spreading, cutting and cost control.

Plant Layout Definition - Types of production layout, criteria for evaluation of a plant layout, determining minimum space requirement, calculation grid, plant size location, Basic production line layout, Government regulations for plant layout.

Time and motion study: General approach for making a time and motion study, preliminary data for time and motion study sheet; sewing work study, Principles of work cycle timing methods, objectives of time study, statistical approaches - statistical calculation of time study- operator efficiency distributions.

Evaluating motion study data - Principles for improving sewing and pressing operations.

References:

CAD/CAM FOR APPAREL PRODUCTS  (APM602)

Introduction to computer: Introduction to computer - concepts of CAD / CAM. CAM in Garment Manufacturing. Complete pattern design system in preparation for grading, marker making and pattern manipulation.

Computerized production pattern making: Computerized production pattern making - Hardware, software and system programming to produce a sample production pattern. Computer aided production planning in Garment Manufacturing: Computer aided manipulation of pattern pieces to create individual styles.

Operation of garment CAD software. Computer used for purchase, inventory control and sales, computerization in quality control and production control.

Introduction to finite scheduling concept and fast react software. Creating product and order planning, updating.

Eliminate late deliveries - General set up, allowances and matrices - Analyzing loan balancing in different departments - control mechanisms - critical path and time tables.

Cam Computer controlled machinery for garment manufacturing - automated layout planning by various techniques -

References:

APPAREL ACCESSORIES AND SURFACE ORNAMENTATION (APM603)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Trimmings and decorations; Definition need, types
Fasteners: types, suitability to garments - methods of stitching.
Surface decorations: Bias tubing - method of making - application on suitable garments, fringes, tassels, pompon, sequence, beads, mirror work
Applique - varieties - method of application
Inter lining: types and methods attachments
Embroidery: Basic principles of hand embroidery, machine embroidery - running, cording, satin, long and short, granite, eyelet, cutwork, monogram shoes, hosiery, hand bags and hats: definition, types & material used, nature of children, men's and women's hosiery.
Jewellery: types – fine & costume jewellery.

References:

KNITWEAR TECHNOLOGY (APM604)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction: comparison between knitted and woven fabrics. Warp knitting and weft knitting, knitting needles.
Fundamentals of formation of knit, tuck and float stitches. Basic knitted structures and their production i.e., plain, rib, interlock and purl. Quality of yarn required for knitting. Yarn preparation for knitting.
Circular knitting: Circular knitting production of various weft knitted structures needle control in circular knitting machines. Factors affecting the formation of loop, effect of loop length and shape on fabric.
properties, faults in knitted fabrics, causes and remedies, production calculation.
Flat knitting: basic principles; elements of flat knitting machines, different types of flat knitting machines-manual, mechanical and computer controlled knitting machines, production of various fabric designs with flat knitting machines.
Warp knitting: warp knitting fundamentals, machine classification, preparation of yarn for warp knitting.
Types of yarns used for winter garments: quality specification, quality requirements of fabrics for winter garments.
Type of circular sweater strip machines, production techniques for sweaters.
Fully fashioned sweaters description, knitting of slipovers-cardigans, control defects in full fashioned knitting, production of full fashioned sleeves on v-bed flat machines.
Cut and sew sweaters: cutting techniques, cutting machines-operating difficulties and Remedies, sewing of sweater-strips, types of stitches and seams used in sweaters, common sewing defects and its remedies, pressing of sweaters-open buck, steam press, body form stem press.

Text Book:

References:
5. A study on quality of knit wears that are being made by knitting industry'-SITRA publication 1990

OPERATION RESEARCH (APM605)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Linear Programming Formulation of LP problem; Solution of LP problem by graphical method, simplex method.
Transportation problem: Northwest corner rule, inspection method, Vogel Approximation method.
Application of optimality test.
Inventory Control: ABC analysis, Fixation of inventory level, EOQ (Wilson's Formula), Problems related to above theoretical aspects.
PERT / CPM Drawing of CPM and PERT networks, finding critical path, Project cost control, determining the value of z-variate in the case of PERT networks, S.D, variances etc.
Game theory: Rule of Saddle point determination, Rule of dominance, Mixed strategy approach, Graphical Approach, Problems related to above theoretical aspects.

References:
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus


INDUSTRIAL MANAGEMENT  (APM606)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Principles of management: Planning, organizing, staffing, coordination, direction and controlling-organisational structure, management by objective, management by crisis, management by exception, Delphi technique.

Personal management: nature, scope, objective and importance of personal management, present status, role and profile of a good personnel manager, planning and procurement of manpower-manpower planning-recruitment and selection-job description and specification-tools selection-application, tests and interview techniques.

Employee communication: Channels, media, forms and barriers of communication. How to make communication effective, employee motivation in theory and practice.

Job change: transfer and promotion-layoff and retrenchment, dismissal and discharge-job enlargement and job enrichment.

Growth of trade unions in India and its problems: Structure and leadership of trade unions, multiplicity, politisation and inter and in trade union rivalry. Registration and recognition of trade unions-collective and productivity bargaining.

Handling of grievances: causes and detection-open door policy-model grievance procedures-responsibility and behaviour in handling grievances, management of discipline-changing concept of discipline, disciplinary action and punishment-principles of natural justice-disciplinary procedure and domestic enquiry.


Equitable wage structure-Internal and external wage inequities-job analysis and job evaluation.


Workers participation in management.govt. scheme-how to make it a success.

References:

FASHION BUSINESS  (APM607)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>


The environment of fashion: demographics and psychographics-economic factors-sociological factors-
psychological factors-implications of environmental influences.
The movement of fashion: the cycling of fashion—stages of fashion cycle-consumer buying and the fashion
cycle-factors influencing fashion movement-recurring fashions-planning the apparel fashion game-pieces
and the rules of the game—predicting the movement of fashion.
The leader of fashion: birth of fashion—the designer’s role-types of designer’s-insight & intuition-source of
design inspiration — manufactures and the retailer’s role—fashion influence and theories of adoption—
Implication for merchandising-fashion leader’s & follower’s
Business of fashion: Scope of fashion business-forms of business ownership-business growth & expansion
Children’s/men’s/women’s apparel industries accessories: history of the apparel industry-merchandising &
marketing activities-market center-industry trends.
Domestic fashion markets: market center-Mart-market weeks-trade shows-the development of regional
fashion center’s trends
Retailing in fashion merchandising & formation: history development of fashion retailing—types of
retailer’s fashion merchandise-fashion advertising-Visual merchandising.
E-commerce in Apparel industry—ERP, EDI

References:
1. Laine Stone, Jean Samples, ‘Fashion merchandising- An introduction ‘Mc-grawHill
   Book Co.1985
2. Easey M(ed),’Fashion marketing’ Blackwell sciences, 1994
3. Taarnow, Guerreiro & Judelio,’Inside the fashion Business’ 1995

APPAREL CAD LAB (APM691)
Practical
(All)
List of experiments:
1. points-lines-notch orientation & tools
2. operation of points & lines function
3. operation of notches, orientation and tools
4. operation of modification function
5. Grading the patterns for different sizes
6. creating of patterns from spec sheet for woven garment
7. creating of patterns from spec sheet for knitted garment
8. marker planning-efficiency for knitted & garment style

Design a pattern, grading and marker planning using CAD for the following garments
1. Men’s shirt
2. men’s T-shirt
3. Ladies—Nightwear
4. Pants.
5. Skirt and Top
6. Marker planning for plain, corduroy, jeans, stripe, pencil stripe, plaids, checks, design one way, two way,
different width.
7. Marker efficiency calculations, lay lot planning

APPAREL DESIGNING AND DRAPING LAB (APM692)
Practical
(All)
List of experiments
1. Design garments on the following themes and drape the same dummies’
2. Nature themes
3. Historic theme
4. Color theme
5. Line theme
6. Step-up style theme
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

SEMINAR (APM693)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Each student will deliver a lecture on a topic of his/her own choice. He/she must submit a synopsis of the said topic at least one week before the scheduled date to the coordinator. He/she has to submit at least two seminars during the semester and one seminar at the end of semester.

SEMESTER-VII

INFORMATION TECHNOLOGY IN APPAREL INDUSTRY (APM701)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Data base management system: Data processing-Database Management system fundamentals-database design concepts.
Telecommunication: Introduction to Telecommunications-Computer networks-Communication system-Distributed system.
Internet & intranet: Internet & world Wide Web-electronic mail-Intranets
Multimedia & Virtual Reality: Introduction to multimedia-multimedia tools-introduction to Virtual reality.
Application of IT: Electronic commerce-Hypermedia-data warehouses and data marts-Data mining-Online analytical Processing (OLAP)-geographic information system(GIS)-computer in Business & Industry-Computers in home-computers in Education & Training-Computers in Entertainment, Science, medicine and engineering

References:
2. Dennis P. Curtin "Information Technology", Tata McGraw hill Pvt Ltd 1999
Windows office XP/MSOFFICE/MSACCESS/

INDUSTRIAL ENGINEERING (APM702)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction: History, development and scope of industrial engineering - role of industrial engineers concepts and definition of productivity and standard of living - causes for low productivity measurement in apparel industry
Work Study: Concepts of basic work content and added work content - Method Study - Process charts and symbols -flow charts-flow diagram-operation analysis-motion economy-design of work plan layout-stop watch procedure-standard data-use of time study in wage incentive levelling - concepts of value engineering and BPR.
Concept Of Performance Rating: Relaxation and other allowances and standard time- Element sheets-methods and mathematical models for assessing work, norms in textile industries including minimum cost
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

Allocation, line balancing.

Plant Layout: The purpose and importance of facility design, Types of layout problems, Stable Vs. Changing products and styles, plant location.

General Plant Patterns: Process, Product, Groups, Basic Flow patterns

Preliminary Analysis: Steps in planning a plant layout, Product Analysis, Parts list, Assembly chart, Grid.


Machinery, Manpower And Space Requirements: Factors for selecting machinery and space requirements, Calculation of number of machines required, manpower planning- selection and training - learning curve- Ergonomics aspects in apparel industry- Calculation of building space requirements, Balancing production lines.

Relationship Of Activities To Physical Plant Services: Types of activity- Stores, Health, Safety, Feeding, Convenience related services. The activity relationship chart.

Operation And Work Area Planning: Work area planning, Templates, Aisle Development.

Materials Handling: Objective of materials handling, Methods of classifying materials and handling equipments. Descriptions and characteristics of material handling equipment specialised material handling equipment related to the apparel industry, Drafting techniques, plant measurement methods.

REFERENCES

CLOTHING SCIENCE (APM703)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Fabric appearance: fibre structure, selection of fibre, yarn structure, yarn structure and fabric construction; their effect on fabric appearance. Study of properties such as pilling, fastness and luster.

Comfort: the effect of fibre properties, yarn structure and fabric construction on the fabric properties such as drapability, air permeability, moisture absorption, bending rigidity, sheerness, selection of fibres and yarn structure and its effect on comfort properties effect of fabric construction

Durability: study of tensile strength, tearing strength, bursting strength with respect to fibre properties, yarn structure and fabric design.

Fabric as protection: Easy care the fibre properties and chemical treatments that decide the fabric properties such as crease recovery, shrinkability, pilling formation.

Fabric engineering: for given end use, designing of fabric from selection fibre, type of yarn manufacture, fabric design to finishing treatments.

References:

APPAREL MARKETING AND MERCHANDISING (APM704)
Organization of the Apparel Business: Introduction to apparel industry - organization of the apparel industry types of exporters Business concepts applied to the apparel industry - International trade.


Merchandising: Definition of merchandising - functions of merchandising division - Role and responsibilities of a merchandiser - different types of buyers - Communications with the buyers - awareness of current market trends – product development - line planning - line presentation.


References:

International Business & Documentation (APM705)

Export marketing of Apparel, global scene, Prospects For India Apparel in Overseas market, globalization GATT & WTO Multi fibre Agreement and Bilateral Textile agreements signed by India with importing quota countries. NAFTA, AGOA:
Govt of India’s export entitlement policy on garment exports.
AEPC’s role in the administration of export entitlement policy.
Export promotional activities of AEPC Facilities available for garment exporters. Cash compensatory support.
Duty drawback, Export finance through banks. Export credit guarantee corporation Export-Import Bank, Market Development Assistance; 1005 export oriented scheme of the Govt. of India; Free Trade Zones; How to start a garment Exporting company; Export contracts; Documents connected with exports; exchange control regulation relating to exports.

References
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

DESIGN CONCEPT OF APPAREL MACHINERY AND EQUIPMENTS (APM706)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Design concept of knives in cutting machine- selection of knives-straight, rotary, band knives, Grinding and cooling systems in cutting machines.
Yarn tensioning device in single chain lock stitching and flat lock stitching machines,
Application of electronic control systems in sewing machines Design concept of Button holing machines, Button fixing machines, Finishing machineries, auto folding, press buck, auto packing mechanisms

References:
1. Solinger Jacob’ Apparel Manufacturing Analysis’ Clumbia boblin Media, 1988
2. Harold carr & Barbara Lathon’ The technology of clothing manufacture’, Black well sciences, 1996
5. Manual of Revo Industrial sewing machines corporation Ltd

INDUSTRIAL TRAINING (APM791)

Practical/Fieldwork

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Maintenance schedule followed machine-wise/department-wise, preventive maintenance program for different departments, organisational details of maintenance department.
2. Details of ancillary equipment, machinery audit in different sections, knowledge of the working principle, production rates and efficiencies of the machine available in the department.
3. Details of quality control/quality assurance program followed in the factory, instrument available in the quality control section and/or process control used in the factory, on-line quality control system.
4. Pollution control measure/environmental engineering practices adopted by the factory, equipment/devices used by the factory to control the noise, safety measures taken by the factory to prevent accidents and hazards.
5. Preparation of factory report for day-to-day work, authenticated by a responsible person (not below the level of shift-in-charge).

SEMINAR ON INDUSTRIAL TRAINING (APM792)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Each student will deliver a lecture on his/her training only. He/she must submit a synopsis of the training at least one week before the scheduled date to the coordinator. He/she has to submit one seminar at the end of semester.

MINOR PROJECT (APM793)
In this semester, students are required to define the problem, analyse potential causes, identify possible solutions, select the best solution, develop an action plan, submit a written report and present the initial progress of the work in a seminar for assessment as per university norms.

SEMMESTER-VIII

VALUES AND ETHICS OF PROFESSION-(HU 801)

1) Science, Technology And Engineering As Knowledge And As Social And Professional Activities
   Effects Of Technological Growth:
   Rapid Technological Growth And Depletion Of Resources. Reports Of The Club Of Rome.
   Limits Of Growth; Sustainable Development
   Energy Crisis; Renewable Energy Resources
   Environmental Degradation And Pollution. Eco-Friendly Technologies. Environmental Regulations.
   Environmental Ethics Appropriate Technology Movement Of Schumacher: Later Developments
   Technology And Developing Nations. Problems Of Technology Transfer. Technology Assessment, Impact
   Impact Of Assembly Line And Automation. Human Centered Technology
2) Ethics of Profession Engineering profession: Ethical issues in Engineering practice. Conflicts between
   business demands and professional ideals. Social and ethical responsibilities of Technologists. Codes of
   professional ethics. Whistle blowing and beyond. Case studies.
3) Profession and Human Values Value Crisis in contemporary society
   Nature of values: Value Spectrum of a ‘good’ life Psychological values: Integrated personality; mental
   health Societal values: The modern search for a ‘good’ society, justice, democracy, secularism, rule of
   law; values in Indian Constitution, Aesthetic values: Perception and enjoyment of beauty, simplicity,
   clarity
   Moral and ethical values: Nature of moral judgments; canons of ethics; ethics of virtue; ethics of duty; ethics of responsibility

References / Books:
1. Stephen H.Unger, Controlling Technology : Ethics and the Responsible Engineers, John
   Wiley & Sons, New York, 1994 ( 2 nd Ed)
3. A.N.Tripathi, Human Values in the Engineering Profession, Monograph published by IIM,
   Calcutta, 1996.

ENERGY SCIENCE (TT801)

1. Introduction – sources of energy, classification of energy sources, quality and concentration of an energy
   source, characteristics temperature
2. Conventional energy sources: coal, oil, gas
3. Non-conventional sources of energy: biogas, geothermal, solar, nuclear, wind, and hydel
4. Energy conservation: basic principles, thermal insulation in conservation, conservation through control,
   electric energy conservation in building-heating and lighting, energy efficient motors, tariff and power
   factor improvement in power system
5. Energy conservation in industry (textile and similar): different gadgets, machines, equipments,
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

transportation, material handling
6. Energy auditing: basic principles, utility, and case studies,

Text books and Articles:
1. Decentralised Energy-options and Technology edited by N.K. Bansal,
2. RAS, Sectoral energy demand in India, regional energy Development Programme, Planning Commission, Govt.of India, New Delhi.

ASSIGNED PROJECT II (APM891)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>12</td>
<td>8</td>
</tr>
</tbody>
</table>

In this semester, students are required to present a dissertation reporting all the aspects of the work and defend the reports in a seminar arranged for the purpose of final assessment as per university norms.

PERSONALITY DEVELOPMENT (APM881)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Communication effectiveness, formal and informal communication ability, inter personal skills and rapport, the art of listening, role expectation, role ambiguity and conflict, written communication, presentations capability, general personality test. etc.

COMPREHENSIVE VIVA-VOCE (APM894)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

ELECTIVES

A. TOTAL QUALITY MANAGEMENT (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

B. KNITTING TECHNOLOGY (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

C. MARKETING RESEARCH AND ADVERTISING (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

D. INDUSTRIAL CLOTHING (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

E. HOME TEXTILES (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

F. ENTREPRENEURSHIP (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

G. SUPPLY CHAIN MANAGEMENT AND LOGISTICS (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

H. APPAREL PRODUCT DEVELOPMENT (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

I. INTELLIGENT GARMENTS (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

J. APPAREL WORK MEASUREMENT (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

K. STRATEGIC MARKETING (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus

L. FASHION COMMUNICATION

(APM802)

L T P C
3 0 0 3

M. ENTREPRENEURSHIP DEVELOPMENT

(TT802)

L T P C
3 0 0 3

N. FASHION PHOTOGRAPHY

(APM802)

L T P C
3 0 0 3

O. PROTECTIVE GARMENTS

(APM802)

L T P C
3 0 0 3

TOTAL QUALITY MANAGEMENT

(APM802)

L T P C
3 0 0 3

Introduction

Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs - Analysis
Techniques for Quality Costs, Basic concepts of Total Quality Management, Historical Review,
Principles of TQM, Leadership – Concepts, Role of Senior Management, Quality Council,
Quality Statements, Strategic Planning, Deming Philosophy, Barriers to TQM Implementation.
TQM principles
Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality,
Customer Retention, Employee Involvement – Motivation, Empowerment, Teams, Recognition
and Reward, Performance Appraisal, Benefits, Continuous Process Improvement – Juran Trilogy,
PDSA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection,
Supplier Rating, Relationship Development, Performance Measures – Basic Concepts, Strategy,
Performance Measure.
Statistical process control (SPC)
The seven tools of quality, Statistical Fundamentals – Measures of central Tendency and
Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes,
Process capability, Concept of six sigma, New seven Management tools.
TQM tools
Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment
(QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total
Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages of FMEA.
Quality systems
Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements,
 Implementation of Quality System, Documentation, Quality Auditing, QS 9000, ISO 14000 – Concept, Requirements and Benefits.

Text book:
   (Indian reprint 2002).

References:

KNITTING TECHNOLOGY (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Weft Knitting: Single Jersey machine - Basic knitting elements - Types and functions - Knitting cycle Cam system - Three way technique to develop designs - Knit, tuck, miss - Effect of stitches on fabric properties. Single Jersey - Derivatives and ornamentation.
Circular Rib Knitting Machine - Basic knitting elements - Types and functions - Knitting cycle Fabric characteristics and derivatives.
Purl Knitting Machine: Knitting elements - Types and functions - Knitting cycle - Fabric characteristics and derivatives.
Interlock Knitting Machine: Knitting elements - Types and functions - Knitting cycle - Dial Cylinder timings - Fabric characteristics and derivatives.
Flat Knitting: Cam system - Knitting action yarn feeding, direct and indirect racking mechanism. Storage and positive feed devices and their importance.
Special types knitting machines - Terry knitting, socks knitting.
Maintenance of weft knitting machines.
Modem developments in weft knitting.
Warp Knitting:
Lapping variations - Tricot - Raschel- Two needle bar raschel and simplex machine. Tricot and Raschel machine - Pattern wheels and pattern chains - Basic stitches - Notations - Single bar, two bar, multi bar machines, types of threading, production of nets, curtains, heavy fabrics, elasticized fabrics.

References:

REFERENCES:

MARKETING RESEARCH AND ADVERTISING (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
</table>

33
Marketing Research: Introduction to Marketing Research - A preview of Marketing Research Research and Marketing decisions, design, implementation and control of the marketing research projects. Basics Of Sampling And Measurements: Sampling, concepts of measurements. Collection Of Data: Information collection - Survey research, questionnaire design, interviewing, observation, panels attitude measurements, experimentation. Analysis Of Data: Data preparation and summarization, data analysis, multivariable techniques in marketing research. Research Results: Applications, presentation and ethics - Market analysis and forecasting, presentation of research results. Social and ethical issues in Marketing Research Advertising: The background of advertising and its social implications - a framework of advertising, history of advertising - Advertising and the economy, advertising and society, control of advertising. The Organization Of Advertising: The advertising department - Manufacturers - media and retailers - The Advertising agency. Advertising Management: Advertising and marketing planning, the opportunity for advertising Advertising and marketing mix, sales promotion, the advertising expenditure, advertising and consumer behavior, marketing intelligence, evaluation advertising effecter, the marketing plan - An example. Different Kinds Of Advertising: Retail advertising - Direct mail advertising, industrial advertising, and international advertising. Advertising Media Planning And Selection: Advertising media planning, newspapers, consumer magazines, firm publications and business publication, television, radio, out of home media, other media a!1d the media plan - example: Advertising Creativity: Averting and the creative process, advertising copy, layout, story boards and arts, print and broadcast, creativity - example Non Commercial Advertising And Branding References:

INDUSTRIAL CLOTHING (APM802)

Introduction: Clothing for soldiers. Fire service personnel, workshop robes - Low weight and bulk - Durability requirements Requirement of protection against high intensity. Thermal radiation and flame resistance. Requirement of insulation and moisture - Vapour permeability - Requirements of ballistic protection. low heat stress Requirements for barriers for chemical war fare agents - Wind proof ness requirements. Waterproof ness requirements. insect proof ness requirements, snow shedding properties of clothing.
Uniforms: Hospital textiles: Gowns for operating staffs, theatre masks, non-woven swabs, post operation dress, warp knitted breathable laminated polyester fabrics.

REFERENCES:

HOME TEXTILES (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Introduction To Textile Furnishings; Definition - Different types of furnishings materials Woven and non-woven - factors affecting selection of home furnishings.
Floor Coverings: Hard floor coverings, resilient floor coverings, soft floor coverings, rugs, cushion and pads - Use and care.
Wall Coverings: Types- Use and care.
Home Decoration: Draperies - Choice of fabrics - Calculating the amount of material needed - Different types of doors and windows - Their applications - Curtains - Types of curtains. Method of finishing draperies Tucks or pleats.
Uses of drapery rods, hooks, tape rings and pins.
Living Room Furnishings: Sofa covers - Wall hangers - Cushion - Cushion covers - Upholsteries Bolster and bolster covers.
Kitchen Linens: Definitions - Types of kitchen linens - Dish cloth - Hand towels - Fridge cover - Fridge handle cover - Mixie cover - Grinder cover - Their use and care.
Table Linen: Definitions, types - Table linens - Table mats - Table cloth - Hand towels - Selection - Use and care.
Recent Trends In Home Furnishings.

REFERENCE

JOURNALS:
1. Clothesline.
2. The Indian Textile Journal.
3. Colourage.

ENTREPRENEURSHIP (APM802)
B.Tech in APPAREL PRODUCTION MANAGEMENT  
Syllabus

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Need, Scope And Characteristics Of Entrepreneurship: Social scheme for Entrepreneurs, exposure to demand based, resource based, service based, import substitute and export promotion industries. Identification of opportunities.
Market Survey Techniques: Need, scope and approaches for project formulation, criteria for principles for product selection development, structure of project report, choice of technology, plant and equipment.
Institutions, Financial Procedure And Financial Incentives: Financial ratios and significance, books of accounts, financial statements and funds follow analysis.
Energy Requirements And Utilization: Resource management, men, machine and material, critical path method (CPM) - Program Evaluation Review Techniques (PERT) as planning tools for establishing SSI.
Techno Economic Feasibility Of The Project: Plant layout and processes planning for the product, quality control/ quality assurance and testing of products, costing sand pricing.
Elements Of Marketing And Sales Management: Nature of product and market strategy, -packing and advertising, after sale service, social responsibility and business ethics
Important Provisions Of Factory Act: Sales of good act, partnership act, income tax, sales tax and excise rules, licensing, registration, municipal by laws and insurance coverage.
Dilution Control, Creativity And Innovation: Problem solving approach, Strength, Weakness, Opportunity and Threat (SWOT) techniques, management of self and understanding human behavior, coping with uncertainties, stress management, positive reinforcement.

REFERENCES:

SUPPLY CHAIN MANAGEMENT AND LOGISTICS (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Logistics: Scope, elements and system, Need for logistic engineering. Meaning of Logistics - Reliability factors, Maintainability factors, Supply support factors, Transportation, Packaging and handling factors, Test and support equipment factors, Organization factors, Facility factors, Software factors, technical data, information system factors, Availability factors, Economic factors, Effective ness factors - in an Apparel Industry - Importance of Supply Chain Flows, Supply Chain relationships - channel structure, economics of distribution, channel relationships. Integrated logistics service providers (Third Party Alliance)
Planning Demand and Supply in a Supply Chain: Demand forecasting in a Supply Chain, Aggregate
Planning, Planning Supply & Demand in a Supply Chain: managing predictable variability. Managing Economies of Scale in a Supply Chain: Cycle inventory, Managing Uncertainty in a Supply Chain: Safety Inventory
Role Of It In Supply Chain: Supply Chain Information Technology in practice. Co-ordinating a Supply Chain and the role of e-business: lack of Supply Chain co-ordination and the Bullwhip effect, Obstacles to coordination in a Supply Chain, Managerial Levers to Achieve co-ordination, EDI. Building Strategic Partnerships & Trust within a Supply Chain. The impact of E-business in a Supply Chain, value of E-business in different industries, setting up e-business in practice.
Global Logistics: Logistics in a Global economy, views of Global logistics, Global Operating levels, Interlinked Global economy, Global Supply Chain.
Just-in-time & Quick Response Logistics

REFERENCES:

APPAREL PRODUCT DEVELOPMENT (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Fashions Triangle Of Balance - Building of the first design ideas - planning to costing - line building - from spec to samples - production selling - three seasons.

REFERENCES:

INTELLIGENT GARMENTS (APM802)
Introduction To Smart Textiles: Smart properties - structural, aesthetic, functional and their advantages.

Smart Textile Materials: Smart Viscose fiber, Nano fibers, Photoadaptive fibers, Chameleon fibers, Conductive fibers - properties of above fibers and their applications in textiles and apparels. Surface structured silk and wool - special effects. Encapsulation technique in production of intelligent fibers. Shape memory polymers - Thermo sensitivity, other chemical properties.


Speciality Finishes: Softening - handle variation, elastic soft handle. Resin finishing - crease free effects. Emerising and raising - special effects and designs.

Intelligent Wears:
- Comfort Wear: Thermo wear to give warmth, multilayer sweater with thermal insulation. Smart Viscose, trousers/ shirts - cotton look and feel; viscose intimate apparels for silken feel and comfort; viscose lycra knits for fashion and comfort.
- Active Wear Sports Wear: Breathe thermo wear, anti sweat apparel, sports underwear, anti drag swim wear, athletes wear with pressure receptors, temperature controlled garment, liquid insulated garment, hitech cooling vest, energy expenditure wear, futuristic jogging suit.
- Medical Wear: Antimicrobial resistant wear, anti cellulites panty hose, undergarment for catheters, life shirts, ceramic coated health care apparels


REFERENCES:

APPAREL WORK MEASUREMENT_ (APM802)

Operation Analysis: Objectives - classification of a worker's behaviour- observation methods - work sampling procedures - rough standard for the number of observation times - allowance rate - explanation of the points to be improved - exercises on operation analysis.


B.Tech in APPAREL PRODUCTION MANAGEMENT
Syllabus


REFERENCES:

STRATEGIC MARKETING  (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Marketing Strategy And Planning: Strategic vision, finding competitive advantage, Business strategy, corporate mission, business composition, corporate strategy; Strategy Analysis, Analyzing current strategies, Generic strategies, Strategic issues, developing strategy plan for each business.

REFERENCES:

FASHION COMMUNICATION  (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Essentials Of Fashion Communication: Introducing Communication - objective, media, types barriers and principles.
The Inwards Of Communication: Communication as coding and decoding - roots of misunderstanding - original message - reconstructed message - non verbal symbols - seven communication road blocks.
The Written Mode - The Body language of business letters. Business letters -the winning tone - smart e-mail
Spoken Mode: telephonic and teleconferencing Effective Business presentations, Meeting without yawns. Communicating Across Cultures.
ENTREPRENEURSHIP DEVELOPMENT  (TT802 )

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Creativity and innovation and their Commercialization (Lecture: 1 hour)
   What is creativity? What is innovation? Example of creativity that leads to innovation. The commercialization of creative and innovative ideas. Trends in technology development.

2. Entrepreneurship: An Overview (Lecture: 3 hour)
   Definition of an entrepreneur Entrepreneurship Management And Ownership, Contrast entrepreneurship with management, Entrepreneur: Their Characteristics, Role of an entrepreneur in Industrial development. Starting A New Business, Business Planning/ Strategic Planning And Strategic Management, Site Selection And Layout

3. Establishing New Venture (Lecture:8 hour)

4. The Business Plan Development (Lecture: 4 hours)

5. Enterprise Management; (Lecture: 5 hour)
   Identify mechanisms of and requirements for growth of a venture, Describe effective organizational structures, Discuss the operational challenges for entrepreneurs, Review alternative operations strategies for adapting an organization to changes in the marketplace, Differentiate entrepreneurial and traditional corporate career paths, Organizational structure relevant to small organization, Procedures involved in the management of man, machine, material and methods of production and operation.

6. Financing Business (Lecture: 4 hours)
   Type of capital, importance of financial management in context to small scale industry, Sources of Debt Financing, Sources of Equity Financing, Financial Controls

7. Marketing Products (Lecture: 2 hours)
   Creating the Marketing Plan, Pricing for Profit, Creative Advertising and Promotion.

8. Indian Entrepreneurship and Case Studies (Lecture: 4 hours)
   Overview and analysis of successful entrepreneurs (such as Jamshedji Tata, G.D. Birla, Aditya Birla, Dirubhai Ambani, Azim Premji etc.), Discussion of Indian business environment
Text Book and Articles:

24. WebCafe: Ernst & Young, "Guide to Producing a Business Plan"

FASHION PHOTOGRAPHY (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Camera Definition- Part of Camera Classification and types of camera- Applications
Disadvantages.
Outdoor Photography Needs - Lighting Techniques Methods and Equipments.,
Comparison of Outdoor Photography by with Indoor photography.
Photography Techniques and Equipment for different fields -Modelling- Newspaper -Magazines - Occasions -Fashion Shows,

REFERENCES

PROTECTIVE GARMENTS (APM802)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
Selection of fibres -suitability and properties of high performance fibres for various protective clothing-
chemical composition and physical structure, characteristics and working of various fibres according to
different end uses like thermal protection, ballistic protection, anti microbial protection, protection against
cold etc.
Yarn & fabric (knitted, woven & non-woven) parameters-their method of production- . effect of structure
on their performance- use of composite materials in yarn and fabric formation used for protective end uses.
Chemical finishes for protective garments:Use of coated fabrics - different type of finishes like fire
retardant finishes, for different textile materials, water repellent finishes, anti microbial finishes. Chemical
finishes against radiation and chemicals - Method of application of those finishes Protective finishes for
health
Garment Construction:Method of construction of garments according to various protective end uses like
protection against cold, ballistic protection, Use of different fabric types (knitted, woven, and nonwoven),
coated/ laminated in different places. Use of interlining & composites. 3D structures. Hi-tech textiles -
wearable electronics. Protective garments for industrial and apparel end uses.
Evaluation of protective fabrics
Desirable properties of protective textiles- method of testing for thermal protective performance, abrasion
& wear resistance, Evaluation of resistance to mildew, ageing, sunlight, chemical, electrostatic and
electrical resistivity, impact properties. ASTM standards for protective garments.
REFERENCES