Revised Syllabus of

(M.Text.(Textile Technology)  Sem –I & Sem.-IV )

To be introduced from the academic year 2010-11
(i.e. from June 2010 ) Onwards

(Subject to the modifications will be made from time to time)
M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-I
ADVANCES IN YARN MANUFACTURING TECHNOLOGY – I

Lectures : 3 hrs/week
Assignment : 1 hr/week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 marks


5) Auto levelling :- Concept and necessity. Types of auto levellers, their applications and evaluation.


Note: Term work for this subject will be based on above syllabus.

REFERENCE BOOKS :-

   Vol.VI - Man-made fibre spinning – W.Klein

2) Series publications of NCUTE Training Programs
3) 'Fundamentals of Spun Yarn Technology’ by Carl A. Lawrence.
4) ‘Spun Yarn Technology’ by Eric Oxtoby.
5) Yarn Production-Theoretical Aspects by P.Grosberg & C.Iype.
6) Textile Progress Series by Textile Institute,Manchester.
M. Text. Revised Syllabus (Textile Technology) Rev.w.e.f.July, 2010

M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-I
ADVANCES IN FABRIC MANUFACTURING TECHNOLOGY-I

Lectures : 3 hrs/week
Assignment : 1 hr/week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 marks

1) Technological significance in the design development of automatic winding machine with respect to unwinding accelerator, auto speed, yarn tensioners, various splicers, clearers & fault removal, contamination clearers, yarn guide drum & winding unit, length & diameter measurement etc.

2) Influence of winding process on yarn quality, package build. Various package quality for different application such as weaving, knitting, dyeing etc. Research articles based on unwinding yarn tension, yarn clearers, package build, speed & its variation, changes in yarn quality during winding.

3) Modern electronic control system & their role in optimizing quality & productivity. Techno-economical aspects of winding.

4) Technological significance in the design developments of beam and sectional warping machine with respect to creels, design, tensioners, drum design, Drive, geometrical aspects of machines. Modern Electronic control systems.

5) Influence of warping process on yarn quality, beam build. Research articles based on yarn tension, speed, beam build etc.

6) Technological significance in the design development of sizing machine with respect to creel saw box, pre-drying, drying, and headstock. Modern quality control systems such as temperature, size pick up, stretch control, moisture control, PLC Drive etc. Synthetic ingredients & their suitability.
7) Influence of process parameters on yarn quality and processing behaviour

8) Automation in sizing process, size recipe formulation & re-circulation. Modern electronic control systems. Research articles based on tension, stretch, size recipe & machine design etc.

9) **Knitting**: Study of design, functional and constructional aspects of different zones of circular knitting machines, such as yarn feeding zone, loop forming zone and fabric takedown zone. Effect of machine and material parameters on fabric quality. Geometrical aspects of knitting fabrics. Such as wale and coarse density, stitch length, Run in ratio, Tightness factor. Study of research articles on robbing back, yarn tension, Spiriality, dimensional stability, fibre fly generation, barriness, shrinkage, effect of yarn quality parameters, yarn lubrication, Prediction of fabric dimensional properties, effect of processing on fabric dimensional characteristics.

**Note:** Term work for this subject will be based on above syllabus.

**REFERENCE BOOKS :-**

1) Modern Preparation & Weaving Machinery by A. Ormerod.
2) Manual of Non Woven by Dr. Radko Krima.
3) Geotextiles by N.W.M. John.
4) Warp Sizing by J.B. Smith.
   Circular Knitting Technology – IIT, Delhi, Publication.
M.TEXT.(TEXTILE TECHNOLOGY) SEMESTER-I
THEORY OF TEXTILE STRUCTURE – I

Lectures : 3 hrs/week
Assignment : 1 hr/week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 marks

1. A brief review of fibre structure and morphology, Structures of different fibres and their effect on fibre properties.


Rupture behaviour of continuous filament yarns – Rupture behaviour of low and high twist yarn, extension of continuous filament yarn. Effect of permanent extension, buckling and migration on tensile behavior of continuous filament yarn.

8. Qualitative explanation of the strength of staple yarns. Traditional and modified approach of rupture behavior of staple yarn.

**Note: Term work for this subject will be based on above syllabus.**

**REFERENCE BOOKS :-**

1. Fibre Science – Edited by J.M. Preston, Published by The Textile Institute, Manchester.
2. Cotton Testing by Steadman,
3. Physical Testing of Textiles by B.P. Saville
10. Textile Yarn by Martindale and Goswami.
M.TEXT.(TEXTILE TECHNOLOGY) SEMESTER-I
ADVANCED COMPUTER APPLICATIONS IN TEXTILES

Lectures : 3 hrs/week
Assignment : 1 hr/ week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 Marks

1) **Artificial Neural Networks :-**
   Biological Neuron & their artificial models, Models of artificial neural neuron, Neural processing, learning & adaptation, Neural Network learning rules, Multilayer feed forward networks, Generalised error back pro-projection training algorithm, application of ANN in textiles : Yarn strength prediction using ANN. Case study.

2) **E-Commerce :-**

3) **Introduction to ERP**
   Introduction to ERP, Basic ERP concepts, Justifying ERP Investments, RISK of ERP, Benefits of ERP.

4) **ERP and Technology**
   ERP and Related Technologies, Business Intelligence (BI), Business Process Reengineering (BPR), Product Life Cycle Management, Supply Chain Management (SCM), Customer Relationship Management (CRM).
5) SAP

Note: Term work for this subject will be based on above syllabus.

LIST REFERENCE BOOKS:-
1) Introduction to Artificial Neural Systems – J.M Zurada, Jaico Book.
2) E-Commerce – David Whiteley, TmH.
3) ERP Demystified - Alexis Leon, TMH
4) Enterprise Resource Planning – Alexis Leon, TMH.
5) Information Technology for Management,- Turban-McLean. Wetherbe
6) SAP R/3 SAP Architecture, Administration, Basis, ABAP Programming with MM and SD Modules – Dreamtech Press
M.TEXT.(TEXTILE TECHNOLOGY) SEMESTER-I

HIGH PERFORMANCE FIBRES (ELECTIVE-I)

Lectures : 3 hrs/week
Assignment : 1 hr/week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 Marks

**High performance fibres**: Introduction to High Performance Fibres.

Aramids: - Manufacturing, properties of fibres, and applications.

Gel spun high performance polyethylene fibres: - Manufacture, fibre characteristics and applications,

Carbon Fibres: Introduction, PAN and pitch based carbon fibres, physical properties and applications.

Glass Fibres: fibre manufacture, properties and Applications


Chemical resistant fibres and thermally resistant fibres: Chlorinated fibres: PVDC, Fluorinated Fibres: PTFE, PVF, PVDF & FEP, Poly (entheretherketones): PEEK, Poly (phenylene sulphide): PPS, Poly (enther imide) : PEI, semi-carbon fibres: oxidized acrylic, poly benzimidazole, PBI Polybenzoxazoles, PBO.

**Note**: Term work for this subject will be based on above syllabus.

**REFERENCE BOOKS**

1. High Performance Fibres by J. W. S. Hearle
2. Carbon Fibres by Donnet & Bansal
5. Kevlar Aramid Fibres by yang.
M.TEX.T.(TEXTILE TECHNOLOGY) SEMESTER-I

TECHNICAL TEXTILES (ELECTIVE-I)
Lectures : 3 hrs/week
Assignment : 1 hr/ week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 Marks

Overview of Technical Textiles: Classification, products, market overview and growth projections of technical textiles.

Automotive Textiles: Application of textiles in automobiles. Requirements of pneumatic tyres, airbags and belts. Their production and properties of textiles used in these applications.


Protective Textiles: Requirements of textiles used against fire, chemicals, ballistic, wind, rain. Interactions between protection and thermal comfort

Textiles in sports: Physiological comfort of sportswear. Types of textiles used in the manufacturing of sports textiles. Functional requirements of these textiles.


General Industrial Textiles: Textiles in Agriculture, Textile in Electronics, Banners and Flags, Textile Reinforced Products, Transport Bags and Sheets, Fabrics to Control Oil Spills, Canvas Covers and Tarpaulins, Ropes and Nets, Home and Office Furnishings, Miscellaneous Applications

Functional requirements and types of textiles used for paper making, medical agricultural, packaging and footwear.

Note: Term work for this subject will be based on above syllabus.
REFERENCE BOOKS

1. The Textile Institute Advances in Fibre Science by S. K. Mukhopadhya
2. Textile Fibres: Developments & Innovations Vol. 2 by V. K. Kothari
3. S. Adanur “Wellington Sears Handbook of Industrial textiles”,
M.TEXT.(TEXTILE TECHNOLOGY) SEMESTER-I

SEMINAR - I

Practical : 1 hr/ week
Term Work : 50 Marks
Subject Total : 50 Marks

Seminar-I should be based on the literature survey on any topic relevant to textile technology (should be helpful for selecting a probable title of dissertation). Each student has to prepare a write up of about 15 pages of “A4” size sheets and submit it in duplicate as the term work. The student has to deliver a seminar talk in front of the faculty members of the department and his/her classmates. The faculty members, based on the quality of the work and preparation and understanding of the candidate, shall do an assessment of the seminar internally – jointly.

Some marks should be reserved for the attendance of the student in the seminars of the others students.
M. TEXT.(TEXTILE TECHNOLOGY) SEMESTER-II
ADVANCES IN YARN MANUFACTURING TECHNOLOGY – II

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2) Yarn Conditioning – Concepts and theory of yarn conditioning at lower temperatures. Study of effect of yarn conditioning on yarn properties and processing behaviour. Design principles of various yarn conditioning machines used in the industry.


6) Texturising – Critical evaluation of different texturising system – Significance of developments in false twist and air texturising technologies. Factors influencing the properties of false twist & air textured yarns.

Note: Term work for this subject will be based on above syllabus.

REFERENCE BOOKS:-
   Vol.VI - Man-made fibre spinning – W.Klein
2) Series publications of NCUTE Training Programs.
3) Textile Progress Series by Textile Institute, Manchester
4) Fundamentals of Spun Yarn Technology by Carl A. Lawrence
5) Yarn Production-Theoretical Aspects by P.Grosberg & C.Iype.
6) Yarn Texturising Technology by Hearle.
M. Text. (Textile Technology) Semester-II
Advances in Fabric Manufacturing Technology-II

Lectures : 3 hrs/week
Assignment : 1 hr/week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 marks

1. Limitation of shuttle loom with respect to loom speed, picking, shuttle checking, sley motion, energy consumption.
3. Theory of weft insertion by rapiers, developments in rapier heads, positive, rapiers, developments in rapier drives, developments in rapier weaving.
4. Theory of weft insertion in air and water jet picking, developments in machine design, nozzles.
5. Design developments in high speed shedding devices, cam, doby and jacquard motions, developments in cam beat-up.
6. Developments in warp let off and take-up motions, motorized electronic take-up & let off.


Note: Term work for this subject will be based on above syllabus.

Reference Books:
1) Weaving Technology & Operation by Allan Ormerod.
2) Shuttleless Weaving Machines by – Svaty.
3) Principles of Weaving by Robinson & Marks.
4) Weaving Handbook - Sulzer publication
5) Handbook of Technical Textiles
M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-II
THEORY OF TEXTILE STRUCTURE – II

Lectures : 3 hrs/week  
Assignment : 1 hr/week  
Theory Paper : 100 Marks  
Term Work : 50 Marks  
Subject Total : 150 marks

1. Uniformity characteristics of yarn – methods of measurement – types of irregularities-factors affecting irregularity-measurement of yarn imperfection and faults – mechanical, material and other factors affecting yarn irregularity, imperfection and faults.

2. Yarn Engineering – Translation of fibre properties in to your properties in case of single component spun yarn and blended yarns- Prediction of yarn strength from fibre properties using different techniques.

3. Fabric geometry – The geometrical properties of plain cloths – Pierce geometry of woven cloth – The geometry of jammed condition – geometry & non-plain fabrics, structure of non woven fabrics and it’s relation to end use behavior.


6. The buckling of fabrics – buckling of elastic materials, more complex forms of buckling. Compressional resilience – terms and definitions, significance, factors influencing compressional resilience, measurement of compressional resilience.


**Note:** Term work for this subject will be based on above syllabus.

**REFERENCE BOOKS:-**

1. Physical Testing of Textiles by B.P. Saville
5. Mario Bona – Textile Quality (Euratex Series).
6. Testing & Quality Management by Dr.V.K. Kothari (IIT-Delhi)
M. Text. Revised Syllabus (Textile Technology) Rev.w.e.f.July, 2010

M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-II
STATISTICS FOR TEXTILE MILL MANAGEMENT

Lectures : 3 hrs. / Week
Assignment : 1 hr. / Week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 marks

1. Multivariate data & its analysis:
   Multiple and partial correlation, measures of Multiple and partial correlation, Examples for the data with three variables only.
   Multiple regression, planes of regression, Examples for the data with three variables only.

2. Analysis of Variance:
   One-way analysis of variance, mathematical model, ANOVA table & examples.
   Two-way analysis of variance one observation per cell & with m observation per cell, Mathematical models, ANOVA tables & examples.

3. Design of Experiments:
   Basic Designs: CRD & examples as one-way, RBD & examples as two-way. LSD & examples of LSD.

4. Factorial Experiments:
   $2^n$ factorial experiments: Introduction, Analysis of $2^n$ factorial experiments. Examples for $2^n$ factorial experiments.
   Introduction of $3^n$ and higher order factorial experiments.( No examples)
   Introduction of fractional factorial experiments.( No examples)
   Introduction of response surface designs (No examples)
   Taguchi techniques for reduction and optimization in design of experiments (No examples)
5. Linear programming Problem:
   Introduction, formulation of LPP, graphical and simplex methods for
   finding solutions of LPP. Examples.

6. Transportation Problem:
   Introduction, methods for finding initial and optimum solutions of
   transportation problem. Examples.

7. Assignment problem:

8. Network Analysis:
   Programme Evaluation and Review Techniques (PERT): Introduction,
   Slack time critical path, Probability of completion of projects.
   Examples.
   Critical path method (CPM): Introduction, Time estimates, Floats,
   Critical path. Examples.

Note: Term work for this subject will be based on above syllabus.

REFERENCE BOOKS:-
1) Modern Elementary Statistics by J. Fruend.
2) Mathematical Statistics by J. Fruend.
3) Probability & Statistics for engineers by Johnson.
4) Applied Statistics & probability for engineers by Montgomery.
5) Experimental Designs by Cochran & Cox.
6) Design of Experiments by Montgomery.
M. Text. Revised Syllabus (Textile Technology) Rev.w.e.f.July, 2010

M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-II
PROJECT PREPARATION, APPRAISAL & IMPLEMENTATION
(ELECTIVE-II)

Lectures : 3 hrs/week
Assignment : 1 hr/week
Theory Paper : 100 Marks
Term Work : 50 Marks
Subject Total : 150 marks

1) Overview – Capital expenditure, Phase of capital budgeting, Project development cycle, Objectives of investment, decision-making, Risk & return.

2) Identification of investment opportunities – Governmental regulatory framework – Generation & screening of project ideas – Project identifications for an existing company.


6) Time value of money – Future value of single amount, Future value of an annuity –Present value of single amount – Present value of an annuity.

8) Appraisal criteria – Urgency, Pay back period – Accounting, Debt service coverage ratio, Rate of Return, Net present value – Internal rate of return – Annual capital charge – Investment appraisal in practice.


10) Project implementation – Forms of project organization – Project planning – project control – Human aspects of project management – Pre-requisites for successful project implementation.

Note: Term work for this subject will be based on above syllabus.

REFERENCE BOOKS :-
2) Goal Directed Project Management by E.S. Andersen, K.V. Grude & Tor Hang, Coopers & Cybranl Publication.
M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-II

MANAGEMENT OF TEXTILE PRODUCTION (ELECTIVE-II)

Lectures : 3 hrs/week  
Assignment : 1 hr/week  
Theory Paper : 100 Marks  
Term Work : 50 Marks  
Subject Total : 150 marks


**Material management:** Role of material management techniques, purchase management, acceptance sampling and inspection, vendor rating system, inventory management.

**Production, planning and control:** types of production systems and problems of planning and control, product section design, process planning, forecasting, planning of batch, mass and job shop system. Machine balancing. Layout and material handling. Machine assignment and allocation of jobs. Maintenance management: maintenance concepts, maintenance strategies, maintenance planning. Productivity and improvement techniques.

**Quality management:** Introduction to TPM/TQM, concepts of value and quality assurance, total quality control, quality circles, ISO 9000. Marketing management: fundamental of industrial marketing, industrial buyer behaviour model.

**Marketing:** systems selling, role of service, marketing planning and marketing strategies, market research.

**Enterprise resource planning:** Role of information in managerial decision making, information needs for various levels of management, decision makers, management information system, resource monitoring and control. Product mix. Case studies.

**Note:** Term work for this subject will be based on above syllabus.

**Reference Books**

M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-II

SEMINAR - II

Practical : 1 hr/ week
Term Work : 50 Marks
Subject Total : 50 Marks

Seminar - II shall be based on tentative topic on dissertation such as review paper on some specific well defined area/specialized stream of Textile Technology. Each student has to prepare a write up of about 15 pages of “A4” size sheets and submit it in duplicate as the term work. The student has to deliver a seminar talk in front of the faculty members of the department and his/her classmates. The faculty members, based on the quality of the work and preparation and understanding of the candidate, shall do an assessment of the seminar internally – jointly. Some marks should be reserved for the attendance of the student in the seminars of the others students.
M. Text. Revised Syllabus (Textile Technology) Rev.w.e.f. July, 2010

M.TEXT. (TEXTILE TECHNOLOGY) SEMESTER-III

SEMINAR - III

Practical : 1 hr/ week
Term Work : 50 Marks
Subject Total : 50 Marks

Seminar – III shall be based on the work carried out for dissertation. This may cover the point right from various areas considered and analysis, the relevance feasibility and scope of work for finally selected topic, alternative solution and appropriate solution. Each student has to prepare a write up of about 20 pages of “A4” size sheets and submit it in duplicate as the term work. The student has to deliver a seminar talk in front of the faculty members of the department and his classmates. The faculty members of the department shall do an assessment, based on the quality of the work and preparation and understanding of the candidate. Some marks should be reserved for the attendance of the student in the seminars of the others students.
M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-III

DISSERTATION

Practical : 4 hrs/ week
Term Work : 100 Marks
Subject Total : 100 Marks

The term work under this, submitted by the student shall include –
1. Work diary maintained by the student and counter signed by his guide.
2. The contents of work diary shall reflect the efforts taken by candidate for
   (a) Searching the suitable project work
   (b) Visits to different factories or organizations
   (c) Brief report of journals and various papers referred
   (d) Brief report of web sites seen for project work
   (e) The brief of feasibility studies carried to come to final conclusion
   (f) Rough sketches
   (g) Design calculation etc. etc. carried by the student.

The student has to make a presentation in front of panel of experts in addition to guide as decided by department head.
M. TEXT. (TEXTILE TECHNOLOGY) SEMESTER-IV

SEMINAR - IV

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Seminar – IV shall be based on the progress of the dissertation work carried out. This may cover the various practicals / survey work done. Each student has to prepare a write up of about 20 pages of “A4” size sheets and submit it in duplicate as the term work. The student has to deliver a seminar talk in front of the faculty members of the department and his classmates. The faculty members of the department shall do an assessment, based on the quality of the work and preparation and understanding of the candidate. Some marks should be reserved for the attendance of the student in the seminars of the others students.
M.TEXT.(TEXTILE TECHNOLOGY) SEMESTER-IV

DISSERTATION

- Practical : 4 hrs/ week
- Term Work : 50 Marks
- Oral Exam. : 200 Marks
- Subject Total : 250 Marks

The dissertation submitted by the student on topic already approved by university authorities on the basis of initial synopsis submitted by the candidate shall be according to following guidelines – Format of dissertation report – The dissertation work report shall be typed with double space on A4 bond paper. The total number of pages shall not be more than 150 and not less than 60. Figures, graphs, annexures etc. be added as per requirement. The report should be written in the following format.

1. Title page
2. Certificate
3. Acknowledgement
4. Index
5. Abstract
6. Introduction
7. Literature survey
8. Plan of work
9. Results and discussions
10. Conclusions
11. References
12. Annexure
### M.TEXT.- T.T. (TEXTILE TECHNOLOGY) SEMESTER-I

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<th>SR. NO.</th>
<th>COURSE</th>
<th>PRE-REVISED SUBJECTS</th>
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<td>4.</td>
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### M.TEXT.- T.T. (TEXTILE TECHNOLOGY) SEMESTER-II

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<td>1.</td>
<td>M.Text.(TT)</td>
<td>Advances in Yarn Manufacturing Technology-II</td>
<td>II</td>
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<td>2.</td>
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<td>M.Text.(TT)</td>
<td>Project Preparation, Appraisal &amp; Implementation</td>
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<td>M.Text.(TT)</td>
<td>Seminar-II</td>
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### M.TEXT.- T.T. (TEXTILE TECHNOLOGY) SEMESTER-III

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### M.TEXT.- T.T. (TEXTILE TECHNOLOGY) SEMESTER-IV

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<td>Seminar-IV</td>
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