AU/FT/IP/ME/TX- 501 - Entrepreneurship and Management Concepts

Unit-I: **System Concepts:** Types, definition & characteristics; supra & subsystems, key component; boundary & interface complexity; feedback (pull) & feed forward (push) controls, open flexibleadaptive system, computer as closed system, law of requisite variety; system coupling, stresses and entropy; functional & cross functional system; Steven Alter's nine element work system model and its comparison with IPO (input-processing-output) model, structure and performance of work systems leading to customer delight.

Unit-II: **Management:** Importance, definition and functions; schools of theories, knowledge driven learning organization and e-business; environment, uncertainty and adaptability; corporate culture, difficulties and levels of planning, BCG matrix, SWOT analysis, steps in decision making, structured and unstructured decision; dimensions of organizations, size/specialization, behavior formalization, authority centralization, departmentalization, span and line of control, technology and Minzberg organization typology, line, staff & matrix organization, coordination by task force, business process reengineering and process of change management, HR planning placement and training, MIS; attitudes and personality trait, overlap and differences between leader & manager, leadership grid, motivation, Maslow's need hierarchy and Herzberg two factor theory, expectation theory, learning process, team work and stress management.

Unit-III: **Marketing:** Importance, definition, core concepts of need want and demand, exchange & relationships, product value, cost and satisfaction (goods and services) marketing environment; selling, marketing and societal marketing concepts; four P's, product, price, placement, promotion; consumer, business and industrial market, market targeting, advertising, publicity, CRM and market research. **Finance:** Nature and scope, forms of business ownerships, balance sheet, profit and loss account, fund flow and cash flow statements, breakeven point (BEP) and financial ratio analysis, pay-back period, NPV and capital budgeting.

Unit-IV: Productivity and Operations: Productivity and standard of living, types of productivity, operations (goods and services) Vs project management, production processes and layouts, steps in method improvement, time measurement, rating and various allowances; standard time and its utility, predetermined motion and time method, concepts of product and process specification, TQM, cost of quality, introduction to lean manufacturing (JIT), QFD, TPM & six sigma quality.

Unit V: Entrepreneurship: Definition and concepts, characteristics, comparison with manager, classification, theories of entrepreneur, socio, economic, cultural and psychological; entrepreneur traits and behavior, roles in economic growth, employment, social stability, export promotion and indigenization, creating a venture, opportunity analysis competitive and technical factors, sources of funds, entrepreneur development program.

References:
1- Daft R; The new era of management; Cengage.
2- Bhat Anil, Arya kumar; Management: Principles ,Processes Practices; Oxford higher edu.
3- Agrawal RD; Principles of Organization.
4- Davis & Olson; Management Information System; TMH.
5- Steven Alter; Information systems, Pearson, www.stevenalter.com
6- Kotler P; Marketing management;
7- Khan, Jain; Financial Management;
8- ILO; Work study; ILO.
9- Mohanty SK; Fundamental of Entrepreneurship; PHI.
10- Kuratko, Hoolgetts; Entrepreneurship; Theory Process practice; Cengage.

TX- 502 – Fabric Manufacturing-II

Unit I Dobby shedding scope and uses, negative and positive dobbies, working Principles of Keighley, staubli, Cross-border dobbies, modern electronics dobbies; Preparation of pattern lattices and methods for preparation of punch cards in modern dobbies.

Unit II Jacquard shedding, coarse pitch and fine pitch jacquard, working principle of single cylinder single lift and double cylinder double lift jacquards , cross-border Jacquard, Vincenzi jacquard and Vardol jacquards, Modern electronic jacquards and different principles in the preparation of pattern cards. Leno and inverted hook jacquards. Various types of harness tie-ups and their uses, pressure and scale harness , casting out of harness, figuring capacity.

Unit III Continuous type take up motion, Direct type take–up Motions, Shirley, Sulzer- Ruti take up motions and calculations related to them and estimation of periodicities, modern take-up motions.

Unit IV Concept of weft monitoring by side and centre weft fork, warp protecting motion, loose reed, fast reed and electromagnetic system, warp easing motion.

References:
1) Bannerjee NN Dr; Weaving Vol. II;
2) Aswani K T; Fancy Weaving;
3) Marks & Robinson; Principle of Weaving;
4) NCUTE; Woven Fabric Production II, 1st Ed Dobby, Jacquar; NCUTE Publication (2002)
5) Talukdar MK et al; Weaving – Machines, Mechanisms and Management;
6) Booth JE; Textile Mathematics – Vol.III;
7) Fox; Mechanism of Weaving;
8) BTRA; Loom Shed; BTRA Silver Jubilee Monograph Series;
9) Hasmukharai B; Fabric Forming;
10) Joshi Hiren, Gauri; Electronic Controls for Textile Machines; NCUTE Pub.(2003)
11) Allan Ormerod, Walter S. Sondheln; Weaving – Tech. & Operations;

Suggested list of experiments(Pl. expand it):
1) Weaving Practical; Detailed study of dobby, jacquard and different monitoring systems.
2) Dismantle and refit a climax dobby with proper setting and timing.
3) Dobby pegging for a 16 heals design.
4) Dismantle and refit a weft fork mechanism with proper setting and timing.
5) Dismantle and refit fast reed mechanism with proper setting and timing.
6) Dismantle and refit loose reed mechanism with proper setting and timing.
7) Dismantle and refit Ruti-B positive let - off mechanism with proper setting and timing.
8) Dismantle and refit jacquard with proper setting and timing.

TX- 503 – Measurement & Control

Unit-I: Basic Concepts of Measurement: General measurement system; variables, parameters, noise and interference, replication and repetition; Calibration: Static calibration, dynamic calibration, static sensitivity, range, accuracy, precision and bias errors, sequential and random tests; Presenting data: Rectangular coordinate format, semi-log, full-log formats. Measurement System Behavior: General model for a dynamic measurement system and its special cases: zero order, first order, and second order system, determination of time constant and settling time, phase linearity.

Unit-II: Statistics and uncertainty Analysis: Least square regression analysis and data outlier detection; Normal distribution and concept of standard deviation of the mean in finite data set. Measurement errors; error sources: calibration, data acquisition, data reduction; Design stage uncertainty analysis; combining elemental errors; Bias & Precision errors; Error propagation, Higher order uncertainty analysis.

Unit-III: Temperature Measurement: Temperature standards, Temperature scales; Thermometry based on thermal expansion: Liquid in glass thermometers, Bimetallic Thermometers; Electrical resistance thermometry: Resistance Temperature Detectors, Thermistors; Thermoelectric Temperature Measurement: Temperature measurement with thermocouples, standards. Pressure and Velocity Measurement: Relative pressure scales, pressure reference instruments, barometer, manometer, deadweight tester, pressure gauges and transducers, total and static pressure measurement in moving fluids
Flow measurement: Pressure differential meters: Orifice meter, Venturi meter; rota meter.

Unit-IV Digital instruments: Advantages of digital instruments, Over analog instruments, DAAD conversion, Digital voltmeter, Ramp type DVM, Integrating DVM, successive approximation DVM, Displays (LED, LCD and seven segment etc.), (Instruments used in computer controlled instrumentation, RS232C and IEEE 488, GPIB electrical interface, Interfacing transducers to electronic control).

Unit-V: Introduction to control systems: Examples of control systems. Open loop and closed loop control. Transfer function, impulse response function, block diagram of closed loop system, block diagram reduction, modeling of mechanical systems, modeling of electrical systems, signal flow graphs, modeling of fluid systems, liquid level systems, hydraulic systems, modeling of thermal systems. Transient and steady state response analyses: First order systems, unit step and unit impulse response of first order systems, second order systems, unit step and unit impulse response of second order systems, transient response specifications.

References:
1. Nakra BC and Chaudhry KK; Instrumentation Measurement and Analysis; TMH
2. Turner JD and Hill M; Instrumrntation for Engineers and scientist; Oxford higher Ed
3. Richard S. et al; Theory and Design for Mechanical Measurements, 3e John Wiley & Sons
4. Katsuhiko Ogata; Modern Control Engineering; 4e Pearson Education, New Delhi
5. Gopa M; Control Systems Principles and Design, 2e Tata McGraw Hill, New Delhi.
6. Buckwith and Buck; Mechanical Measurements.
7. Swahney; Metrology and Instrumentation

List of experiments (Pl. expand it)
1. Calibration of various instruments
2. Measurement by mechanical instruments, temperature, pressure, flow…
3. Measurement by electrical and electronic instruments, thermocouple RTD..
4. Study of dp-cell, transducers, digital instruments…

TX- 504 – Fabric Structure & Design – I

Unit 1 Fabric classification, Weave notation and weave repeat, Introduction to design, drafting and peg-plan systems and their relationship, Plain weave and its derivatives e.g. warp rib, weft rib and hopsack/ matt.

Unit 2 Twill weave its different types and derivatives e.g., pointed, curved, broken, elongated, transposed, fancy and cork-screw, Satin and sateen weave regular and rregular.

Unit 3 Diamond, Honeycomb ordinary honeycomb and brighton honeycomb, Mockleno, Huck-aback, crepe weave, different types of bed ford cord, welt and pique.

Unit 4 Twill angle and yarn twist angle, Effect of yarn twist direction on the prominency of twill lines in the fabric, Reed and heald count systems and related calculations.

Unit 5 Color and weave effects stripes and checks.

References:
1. Grosicki; Watsons' Textile Design & Color.
2. Nisbet; Grammar of Textile Design.
3. Klibbe; Structural Fabric Design.
4. Murphy WS; Textile Weaving & Design.
5. Mary Humphries Fabric Glossary.

List of Experiments (Pl. expand it):

FABRIC ANALYSIS PRACTICAL
Basic principles of woven fabric analysis and estimation of data for cloth production, Recognition of fabrics and yarns and material used in their construction, Weave analysis of basic fabrics (plain, Twill, Satin and their derivatives), Putting the design on graph paper and preparation of drafting and peg plan, Color and weave analysis of yarn dyed verities of fabrics, Study of sett, cover-factor, count and weight calculations for basic fabrics.

Suggested Instructional strategies
Fabrics should be shown at the time of discussion on a particular design.
Experiments
Analysis of the following fabrics of different varieties
a) Plain   b) Twill   c) Broken Twill   d) Herringbone Twill
e) Satin   f) Diamond.

TX- 505 – Textile Testing-I

Unit I Introduction to textile testing, aim and scope, sampling techniques, general requirements, squaring, cut squaring and zoning methods for sampling, sampling techniques for yarns and fabrics, presentation and interpretation of test data, control charts, introduction to standard deviation, coefficient of variance(CV).

Unit II Humidity and moisture in textile, terms and definitions, measurement of atmospheric condition, regain–humidity relation in textile, measurement of regain and principle of operation of equipments, concept of correct invoice weight and official regain, factors affecting the regain of textile material, Hydrophilic properties–terms and definitions related to swelling, man-made fibre testing like linear density, spin finish, strength, elongation, crimp.

Unit III Fibre testing– measurements of fibre length, fibre fineness and fibre strength, maturity of cotton and its measurement, measurement of trash content. latest methods of fibre testing e.g. HVI, LVI, fibro-graph, auto-span and AFIS, Nep testing of cotton, fibre quality index.
Yarn testing– measurement of yarn count by different methods, measurement of twist of single and plied yarns based on various principles, Yarn hairiness, classify faults, principle of textured and continuous filament yarn testing.

References:
1. Booth JE; Principle of Textile Testing;
2. Grover EB and Hamby DS; Handbook of Textile Testing & Quality Control;
3. Kothari VK; Progress in Textiles Science and Tech-Vol.1, Testing & Quality Mgt;
4. BTRA; Identification & Analysis of Textile fibre;
5. Angappan P and Gopalakrishnan R; Textile Testing;

List of Experiments (Pl. expand it):
Determination of trash content of cotton fibres, fibre length, fibre strength, fibre fineness, maturity ratio and moisture content, testing of yarn for appearance, count and twist
1. Trash analysis of the cotton fibre
2. Fibre fineness testing
3. Fibre maturity testing
4. Fibre length testing by Bear sorter method
5. Measurement of the span length by fibrograph method
6. Strength of the fibre by Stelometer
7. Roving, silver Hank Count by Cut and Weight Method
8. Yarn Count measurement
9. Yarn diameter and packing factor
10. Twist of the single and double yarn measurement
11. Yarn Board Appearance Tester.
12. Yarn imperfection testing.