

M.TECH. IN ENGINEERING EDUCATION

SCHEME OF STUDY AND EVALUATION FOR REGULAR AND MODULAR PROGRAMME

2010-11

Education and Educational Management Department,
National Institute of Technical Teachers' Training and Research,
Sector 26, Chandigarh – 160 019.

March, 2010

M.Tech. in Engineering Education (Regular) : Scheme of Study and Evaluation
2010 – 11

Note:

Code No. *	Course of Study	Study Scheme				Evaluation Scheme		
		L	T	P	Total hours	Theory	Sessional	Total
FIRST SEMESTER								
CORE SUBJECTS (COMPULSORY)								
MTE 6101	Psychology of Adult Learning	3	2	-	5	100	50	150
MTE 6102	Principles of Management	3	2	-	5	100	50	150
MTE 6103	Performance Evaluation	3	2	-	5	100	50	150
ELECTIVE SUBJECTS (TWO OF THE FOLLOWING)								
MTE 6104	Instructional Design	3	2	-	5	100	50	150
MTE 6105	Technical & Vocational Education System	3	2	-	5	100	50	150
MTE 6106	Media Design and Development	3	2	-	5	100	50	150
MTE 6107	Career Guidance	3	2	-	5	100	50	150
SECOND SEMESTER								
CORE SUBJECTS		3	2	-	5	100	50	150
MTE 6201	Human Resource Development and Training Methods	3	2	-	5	100	50	150
MTE 6202	Research Methodology	3	2	-	5	100	50	150
ELECTIVE SUBJECTS (THREE OF THE FOLLOWING)								
MTE 6203	Curriculum Development	3	2	-	5	100	50	150
MTE 6204	Multi-Media Design and Development	3		2	5	100	50	150
MTE 6205	Web-based Training	2	-	3	5	100	50	150
MTE 6206	Education Project Planning & Management	3	2	-	5	100	50	150
MTE 6207	Entrepreneurship Development	3	2	-	5	100	50	150
THIRD SEMESTER								
TWO ELECTIVE SUBJECTS AND PROJECT BASED THESIS WORK								
MTE 7101	Educational Technology	3	2	-	5	100	50	150
MTE 7102	Organisational Behaviour	3	2	-	5	100	50	150
MTE 7103	Technology Management	3	2	-	5	100	50	150
						VIVA		
MTE 7151	Preliminary Thesis Work	-	-	-	15	-	100	100
FOURTH SEMESTER						VIVA		
MTE 7251	Thesis Work	-	-	-	25	-	100	100

Note :

- A student is required to study 12 courses of study (5 Core and 7 Electives), Preliminary Based Thesis Work and Thesis Work.
- A student can opt for two courses of study (Electives) from the relevant ME Programme offered by the institute as per his/her specialization.
- Coding system is as per the existing rules of Panjab University, Chandigarh (vide their circular No. 8404-63/GM dated 27.07.2004)

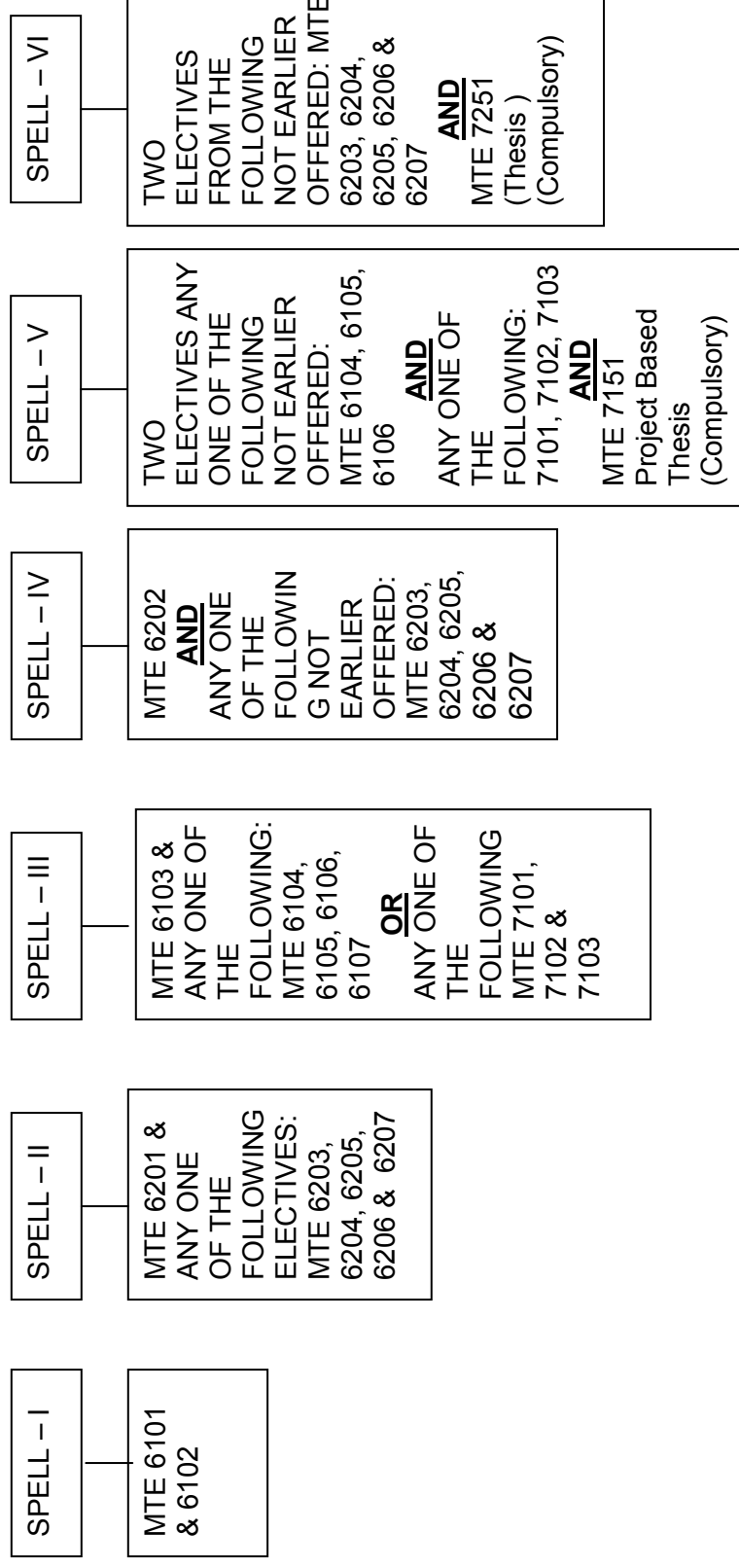
**M.Tech. in Engineering Education: Scheme of Study For Offerings
Modular Programme (2010-11)**

Code No. *	Course of Study	Study Scheme				Evaluation Scheme		
		L	T	P	Total hours	Theory	Sessional	Total
1.1 CORE COURSES OF STUDY (COMPULSORY)								
MTE 6101	Psychology of Adult Learning	3	2	-	5	100	50	150
MTE 6102	Principles of Management	3	2	-	5	100	50	150
MTE 6103	Performance Evaluation	3	2	-	5	100	50	150
MTE 6201	Human Resource Development and Training Methods	3	2	-	5	100	50	150
MTE 6202	Research Methodology	3	2	-	5	100	50	150
1.2 ELECTIVE COURSES OF STUDY								
MTE 6104	Instructional Design	3	2	-	5	100	50	150
MTE 6105	Technical & Vocational Education System	3	2	-	5	100	50	150
MTE 6106	Media Design and Development	3	2	-	5	100	50	150
MTE 6107	Career Guidance	3	2	-	5	100	50	150
MTE 6203	Curriculum Development	3	2	-	5	100	50	150
MTE 6204	Multi-Media Design and Development	3	-	2	5	100	50	150
MTE 6205	Web-based Training	2	-	3	5	100	50	150
MTE 6206	Education Project Planning & Management	3	2	-	5	100	50	150
MTE 6207	Entrepreneurship Development	3	2	-	5	100	50	150
MTE 7101	Educational Technology	3	2	-	5	100	50	150
MTE 7102	Organisational Behaviour	3	2	-	5	100	50	150
MTE 7103	Technology Management	3	2	-	5	100	50	150
						VIVA		
MTE 7151	PRELIMINARY THESIS WORK	-	-	-	15	-	100	100
MTE 7251	THESIS WORK	-	-	-	25	-	100	100

Note :

- A student is required to study 12 courses of study (5 Core and 7 Electives), Preliminary Based Thesis Work and Thesis Work .
- A student can opt for two courses of study from the relevant ME programme as per her/his area of specialization.
- Coding system is as per the existing rules of Panjab University, Chandgiarh (vide their Circular No. 8404-63/GM dated 27.07.2004.)

Fig. 1: Mode of Offering M.Tech. in Engineering Education on a Modular Basis.



Note:

- Fresh candidates during each spell will study the courses being offered in the running spell.
- A student is required to study 12 courses of study (5 Core & 7 elective subjects), Project Based Thesis Work and Thesis Work
- A student can opt for two courses of study (Electives) from the relevant ME Programme offered by the institute as per his/her specialization.
- Coding system is as per the existing rules of Panjab University, Chandigarh (vide their circular No. 8404-63/GM dated 27.07.2004)

ACADEMIC RULES

FOR M.TECH/ME REGULAR & MODULAR PROGRAMMES

1. Duration of Programmes

i) For Regular M.Tech/M.E Programmes

The normal duration of M.Tech/ME Programmes including Thesis will be 2 academic years (4 semesters). The maximum period of completion of the programme including Thesis shall be 4 academic years (8 semesters). 2 years (4 semester) extension in genuine hardship cases is allowed by the Vice-Chancellor of Panjab University, Chandigarh for submission of thesis.

ii) For Modular M.Tech/M.E. Programmes

The normal duration of Modular M.Tech/M.E Programmes including Thesis will be 3 academic years, (6 spells, each spell of 5 weeks duration including Saturdays & Sundays). The maximum period of completion of programme including Thesis shall be 6 academic years (12 spells). 2 years (4 spells) extension in genuine hardship cases is allowed by the Vice-Chancellor of Panjab University, Chandigarh for submission of thesis.

2. Number of Theory Papers allowed in a Semester/Spell

i) For M.Tech/M.E. Regular Programmes

All students will be required to qualify twelve theory papers during the course. No student will be allowed to qualify more than 5 papers at the end of first semester and not more than 10 papers (including the papers passed in the first semester) , at the end of second semester or first year. Two papers will be offered in the 3rd semester.

ii) For M.Tech/M.E. Modular Programmes

All students will be required to qualify 12 theory papers during the course. No student will be allowed to qualify more than two papers at the beginning of 2nd spell and not more than four papers (including the papers passed in the beginning of 2nd spell) at the beginning of 3rd spell and so on.

3. CONDITIONS FOR APPEARING IN END-SEMESTER EXAMINATION

i) Periodic Tests (for M.Tech/ME Regular Programmes)

Every student has to appear in two periodic tests as decided by the Institute and must qualify the same. There will be only one make-up test

for those students who are unable to appear in one or both mid-semester tests due to genuine reasons to the satisfaction of Coordinator.

Students, whose performance in the class-tests/sessionals is not satisfactory, are liable to be detained by the Director from appearing at the University Examinations. The detailed rules of the University Examinations are available at Panjab University, Chandigarh and all students are advised to get the latest copy for guidance and further information.

ii) **Periodic Tests (for M.Tech/ME Modular Programmes)**

Every student has to appear in one periodic test as decided by the Institute and must qualify the same. There will be only one make-up test for those students who are unable to appear in the test due to genuine reasons to the satisfaction of Coordinator.

Students whose performance in the test/sessional is not satisfactory, are liable to be detained by the Director from appearing at the University Examinations. The detailed rules of the University Examinations are available at Panjab University, Chandigarh and all students are advised to get the latest copy for guidance and further information.

4. **EXAMINATION AND RESULT (For M.Tech/ME Programmes both Regular and Modular)**

- Minimum marks to pass examination: 50% in the sessional in each subject and 40% in each theory paper. Both the theory and sessional marks will be considered independent of each other. Aggregate pass percentage will be 50% in each subject.
- Weightage in each subject 50 marks : Sessional
 100 marks : Final theory examination
- The students who obtain in first attempt 75% or more of the aggregate marks in both theory and sessionals and also if the thesis has been adjudged to merit distinction are awarded **First Division with Distinction**. If the thesis has not been adjudged to merit distinction then the students are awarded **first division**.
- The students who obtain 60% or less than 75% of the aggregate marks in all theory papers and the sessionals are awarded First Division.
- The students who obtain less than 60% of the aggregate marks in all the theory papers and the sessionals but not less than 40% in each theory paper and 50% in the sessionals will be awarded **Second Division**.

Preliminary Thesis/Thesis

Four neatly typed or printed copies of Thesis properly bound, shall be submitted to the University through Guide and Academic Cell of the institute.

MTE 6101 Psychology of Adult Learning

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Sr.No.	2006-2007
1.	Learning Theories Concept of Learning (Definition, Characteristics and process) and of theory. Theories based on mechanistic model of development (EL Thorndike, Ivon Pavlov, John B, Watson; Edwin R, Guthrie; Skinner's operant learning): Theories based on organismic model of development (Edward C, Tolman; Gestalt and Bruner). 10 Hrs.
2.	Theory of adult learning, Andragogy Theories of adult learning; contributions from social sciences and adult education. Andragogy Vs. Pedagogy, characteristics of Adult Learners. Andragogical theory of adult learning 10 Hrs
3.	Learning Cognitive Information Learning and organising new verbal information, Meaningful and rote learning; New concepts and existing conceptual structures 10 Hrs
4.	Learning Cognitive Strategies Cognitive Strategies – concept and strategies; The process and phases of problem solving; Reproductive and productive thinking; Plans and control of behaviour, Problem solving and set strategies for productive thought; 10 Hrs
5.	Learning Skills Nature of skill, Characteristics of skills, phases of skill acquisition/learning. Skilled and un-skilled performance; Hierarchical organisation of skills; closed-loop and open-loop control in skilled performance. Learning a skill: Information necessary for skill learning, knowledge of results and feedback; Transfer of training; The role of skill trainer 10 Hrs
6.	Social Learning Influence on social behaviour, social groups, Socialisation, Affiliation, values, Attitudes and Opinions, Inter-personal attraction; Exchange Theory Group Norms: Reference, Groups Group structure and processes, Group Cohesion; 9 Hrs

7.	Personality Differences and Cognitive Styles Individual differences and Adult Learning – Intelligence (concept, theories and individual differences); Personality (concept, theories and individual differences); cognitive style (convergent and divergent thinking; curriculum-bound and curriculum – free learners; Serialist and Holist approach to learning; Field dependence and learning, Impulsivity and reflectivity); Ageing & learning; Motivation (concept, types, approaches and techniques of motivation and its influence on learning); and self concept & its influence on learning. 11 Hrs
8.	Learning to learn Concept and Strategies (Concept Mapping, Brain Mapping, Pattern Matching, Mnemonics, The method of loci, imagery, elaboration and paraphrasing, SQ3R, Problem Solving and Time Management Skills 10 Hrs
9.	Theories of Instruction Gagne Hierarchical Theory, Ausubel Advance Organiser Theory and Bruner Cognitive Development theory 10 Hrs
	Practice Tasks <ul style="list-style-type: none"> • Developing learning structure for a course of study • Measurement of attitudes and discussion of results • Measurement of values and discussions of a results • Measurement of intelligence and discussion of results • Measurement of personality and discussion of results • Measurement of cognitive style and discussion of results • Measurement of motivation and discussion of results Measurement of self-concept and discussion of results.
	Recommended/Reference Books <ol style="list-style-type: none"> 1. Hurlock, EB (201), Personaility Developments, New Delhi:Tata McGraw-Hill 2. Knowles, Malcolm (1990). The Adult Learner – a neglected specie. Houston, London: Gulf Publishing Company,. 3. Lovell, R. Bernard (1987). Adult Learning, London & Sydney: Croom Helm. 4. Rogers, J (1973). Adult Learning. England: Penguin Education. 5. Gagne, Robert M. (1983). The Conditions of Learning. New York: Holt, Rinehart & winston. 6. Smith, MC & Pourchott, T (1998). Adult Learning & Development: Perspectives from Education Psychology’ Lawrence Erlbaum Associate Inc., 7. Seamon, JG & Keurick, DT (1992) Psychology. New Jersey, Prentie Hall, Englewood Cliffs 8. Tennant, M (1997). ‘Psychology of Adult Learning’ UK, Routledge.

Sr.No.	2006-2007
1.	<p>Introduction Importance: need of management in all types of organisations at all levels. Definition of management; its nature and characteristics Evaluation of management thought: Mechanistic approach: Contributions of Taylor and Fayol Humanistic approach: Hawthorne studies Elton Mayo's findings, Contingency approach: Concept and Significance</p> <p style="text-align: right;">10 Hrs</p>
2.	<p>Planning Importance of planning Nature and types of Plans Models of planning Strategic planning and management</p> <p style="text-align: right;">8 Hrs</p> <p>Organising Formal and informal organization Organisational division: the department Organisational levels and the span of management Structure and processes of organizing Organisational Line/staff authority empowerment and decentralization Delegation of authority</p> <p style="text-align: right;">10 Hrs</p> <p>Effective Organising</p> <p>Staffing Performance appraisal, and Career strategies</p> <p style="text-align: right;">7 Hrs</p>
4.	<p>Decision Making Concept, Types of Decisions – Programmed and Non-programmed, Routine and Non-Routine Decisions, Decision Making models – Classical, administrative and political Steps in Decision Making Increasing participation of employees in decision making – Vroom Jago Model, participative decision making</p> <p style="text-align: right;">10 Hrs</p>

5.	<p>Communication Importance and role of communication in organisations: Purposes of communication Communication process: Elements and Model, Flow of communication in an organization - Downward communications, Upward communication, Lateral/horizontal communication, Diagonal communication, Role of Formal/Informal, Verbal/Non-Verbal Communication: Barriers to Effective Communication; Increasing communication Effectiveness</p> <p style="text-align: right;">12 Hrs</p>
6.	<p>Motivation Concept and types of Motivation – Intrinsic and Extrinsic, Content Theories of Motivation – Maslow’s Need Hierarchy, Herzberg’s Two Factor Theory, McClelland Three Need Theory. Process Theories of Motivation: Vroom’s Expectancy Theory and Adam Equity Theory, Porter – Lawler Model Skinner’s Reinforcement Theory Integrated Model of Motivation (Robins)</p> <p style="text-align: right;">8 Hrs</p>
7.	<p>Leadership Nature of Leadership Leadership vs. Management – Position power, personal power, empowerment. Leadership Traits – Autocratic vs. democratic leaders, Behavioural approaches: Ohio’s State Studies, Michigan Studies, Leadership grid. Contingency Approach – Fiedler, Situational approach to Leadership</p> <p style="text-align: right;">10 Hrs</p>
8	<p>Managing Change in Organisational Development Manager as a Change Agent, Forces for Change, Resistance to change, Models of planned change, Techniques for managing change Concept and Models of OD Learning organization – Concept</p> <p style="text-align: right;">7 Hrs</p>
9.	<p>Methods and Techniques of Control Types of Controls: Feed Forward Concurrent and Feedback Controls and Steps in Control, Characteristics of effective controls Gantt of Bar Charts PERT AND CPM Network</p> <p style="margin-left: 300px;">} development and analysis of CPM</p> <p style="text-align: center;">Network</p> <p>Total Quality Management Techniques</p> <p style="text-align: right;">12 Hrs</p>

	<p>Practice Tasks</p> <p>The following practice tasks will be undertaken by students individually or in groups.</p> <ul style="list-style-type: none"> • Delineating the functions performed by managers at different levels i.e. Institute, Department and Directorates • Study of organizational structure of technical education at the Directorate or Polytechnic level and identify its strengths and weaknesses • Critical analysis of cases related to decision making, problem solving, motivation, leadership etc. • Determining self leadership style and motivational level <p>Planning, scheduling and controlling an educational project using bar charts and PERT/CPM</p>
	<p>Books Recommended/Reference Books</p> <ol style="list-style-type: none"> 1. Draft Richard 'Management' (Sixth Ed.), USA: The Dryden Press, 2000. 2. Koontz, H and Weihrich H, 'Essentials of Management', New Delhi: Mc.Graw Hill Publishing Company Ltd., 2005. 3. Megginson, LC, et al. Management Concepts and Applications, New York: Harper and Row Publishers 4. Robbins, SP. Management, UK: Prentice Hall 5. Stoner, JAF 'Management', Progressive Books, 2004.

MTE 6103 Performance Evaluation

L T P
3 2 -

Sr.No.	2006-2007
1.	Evaluation <ul style="list-style-type: none">• Concept: Meaning of terms test, Measurement and Evaluation• Types of Evaluation: Placement Evaluation, Formative and Summative evaluation, Diagnostic evaluation• Principles of Evaluation• Purposes of Evaluation• Norms and Criterion Referenced Measurement: Concept, Similarities and differences 6 Hrs
2.	Validity and Reliability <p>Concept and nature of reliability and validity</p> <ul style="list-style-type: none">• Relationship between reliability and validity• Types: Techniques of Measuring Reliability (Test/Re-test, Equivalent form, Test re-test with equivalent form, Split half and Kuder Richardson Coefficient alpha, including numerical problems)• Incremented Validity, Cross Validation, Correlation and Causation.• Approaches to Test Validation (Content related: Criterion related and Construct related evidence and concept of Face Validity)• Standard Error of Measurement and Concept of Reliability (Standard Error of Measurement and test interpretation including numerical problems)• Factors Influencing Validity/Reliability <p>Reliability of CRT: Percentage Consistency</p> 12, 15 Hrs
3.	Evaluation Techniques <ul style="list-style-type: none">• Nature and types of Evaluation Techniques• Techniques of Evaluation for various Learning outcomes (written tests, Performance tests, Oral Tests, Observational Techniques, Peer Appraisal (Sociometric technique) and Self/ Report Portfolios, Rubrics, online evaluation) 10 Hrs
4.	Construction of Tests <ul style="list-style-type: none">• Instructional Objectives: Need and Concept, Gronlund Approach for writing Instructional Objectives• Classification of Objectives: Cognitive Domain, Psychomotor Domain and knowledge of Affective Domain• Construction and scoring of Test Items: Guidelines for writing selection type (Alternate-choice, Matching Type, Multiple Choice, Assertion Reason Items) and supply type items (Essay and Short Answer), Advantages and Disadvantages• Correction for guessing and its numerical• Construction of Criterion Referenced Tests (CRT) and Construction of

	<p>Norms Referenced Tests (NRT)</p> <ul style="list-style-type: none"> • Evaluation of Practical work: Components and elements of Practical Work (Laboratory, Field, Drawing, Workshop and Project Work) • Construction of Performance (Practical) Tests <p style="text-align: right;">25 Hrs</p>
5.	<p>Item Analysis Concept, item Analysis of CRT and NRT, (Computation of Item Difficulty level, discrimination index and effectiveness of distracters) Item Banks: Concept and Benefit, Steps in its Construction Item Files: Concept</p> <p style="text-align: right;">4 Hrs</p>
6.	<p>Standardized Tests</p> <ul style="list-style-type: none"> • Concept, Characteristics of standardized tests, • Differences between standardized and classroom tests • Types of standardized tests (Nature and concept), Construction and selection of standardized tests <p style="text-align: right;">9 Hrs</p>
7.	<p>Interpretation of Test Scores</p> <ul style="list-style-type: none"> • Methods of Interpreting Test Scores: Criterion referenced Interpretation, Norm Referenced Interpretation) • Norms: Meaning, differences between norms and standards, judging adequacy of norms, local norms • Standard Scores: The normal curve and standard deviation unit, Types of Standard scores (z- scores, T-score, Normal curve Equivalent and Stannines) Percentile Ranks Comparison of Score System) <p style="text-align: right;">7 Hrs</p>
8.	<p>Credit based system of evaluation: Concept, Benefits, Features</p> <p style="text-align: right;">2 Hrs</p>
	<p>Practice Task</p> <ul style="list-style-type: none"> • Practice exercises on construction of test items, rating scales, checklists and observation schedules • Practice exercises on item analysis and computation of a reliability and validity of test papers • Planning and construction of written test and checking its validity and reliability • Planning and construction of skill test and checking its reliability and validity <p>Study administration and interpretation of the results of standardized achievement and aptitude tests</p>
	<p>Project Work Construct model sessional test papers for any one of the subjects being taught – Write instructional objectives for the topics to be included in test, Prepare table of Specification, Marking Scheme.</p> <p>Recommended/ Reference Books</p> <ol style="list-style-type: none"> 1. Assessment of Student Achievement Gronlund, Norman E, 208, Pearson Education (US)

	<ol style="list-style-type: none"> 2. Brown, FG (1976), Principles of Educational Psychological Testing Rinehart and Winston, NY. 3. Bloom, BS, Krathuohl, DR and Masia, BM (1971), Taxonomy of Educational Objectives, Book 2: Affective Domain, Longman Group Ltd., London. 4. Bloom, BS (1974) Taxonomy of Educational Objectives, Book 1: Cognitive Domain, Longman Group Ltd., London. 5. Classroom Assessment:What Teachers Need to know by W. James Popham, Allyn & Bacon, 207 ebay.com 6. Ebel, RL and Frisbie, DA (1991) , Essentials of Educational Measurement, New Delhi, Prentice Hall of India Pvt. Ltd., 7. Gronlund, NE and Linn RL, (1990) Measurement and Evaluation in Teaching, New York, Macmillan Publishing Company 8. Hopkins, KD Stanley, JC and Hopkins, BR, (1990) Educational and Psychological Measurement and Evaluation, USA, Allyn and Bacon 9. Salkind, Neil J (206) Tests and Measurement for People who Hate Tests and Measurement Sage Publications 10. Tuckman, BW, (1975) Measuring Educational Outcomes: Fundamentals of Testing, NY: Hardourt Brace Jovanvich Inc. 11. Wilson Bob (1997). The Systematic Design of Training Courses, Vol. I, Parthenon Publishing.
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MTE 6104 Instructional Design

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3 2 -

S.No	2006-07
1.	Systematic Approach to Instructional Design – System's Concept, Components of Instructional System, Steps in Systematic Approach to Instructional Design 10 Hrs
2.	Theories of Instruction – Salient features and implications of the theories of instruction Gagne Hierarchical Theory; Internal and External conditions of learning Bruner Cognitive Development Theory Ausubel Advance organiser Theory 12 Hrs
3.	Varieties of Learning and Conditions of Learning: Gagne Classifications 12 Hrs
4.	Instructional Objectives - Concept, Classification and Approaches to Writing Instructional Objectives 12 Hrs
5.	Task Analysis – Concept, Purposes and Procedure for Task Analysis. 10 Hrs
6.	Instructional Strategies – Methods and Media. Large group methods of Instruction, Small group methods of Instruction and Individualized Methods of Instruction, Media – Concept, Classification, Characteristics, Advantages and Disadvantages. 20 Hrs
7.	Planning for Classroom Instruction 8 Hrs
8.	Evaluating Learning Outcomes – Cognitive, Psychomotor and Affective 6 Hrs Practice Task <ul style="list-style-type: none"> • Task Analysis for a topic of study to identify different elements of knowledge, skills, theoretical structures. • General and specific instructional objectives at the course, topic and lesson level. • Planning alternate sequence of instruction for a subject of study • Planning instruction for a subject of study including the following: <ul style="list-style-type: none"> • Drawing precedent diagram • Structuring content • Designing learning experience • Designing performance assessment – Pre and Post test • Preparing lesson plans for the subjects

	<p>Recommended/Reference Books</p> <ol style="list-style-type: none"> 1. Gagne, RM and Briggs, LJ: Principles of Instructional Design. New York: Holt, Rinehart and Winston, Inc. Kemp, JE., The instructional design process, New York: Harper and Row Publishers 2. Sodhi, GS and Dutt, Sunil (2006) Essentials of Educational Technology. Patiala: Twenty First century publications
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MTE 6105 Technical and Vocational Education System

L	T	P
3	2	-

S.No	2006-07
1.	History of Technical and Vocational Education in India Developments National Policy on Education 12 Hrs
2.	Educational Organisation Educational System Technical and Vocational Sub-systems Apprenticeship Board, Functions and its act Articulation of Technical Teacher Training and Vocational Education Aims and Objectives of Different level of Technical Education 15 Hrs
3.	Policy, Planning and Administration Structural set up for policy making National, Regional, State Statutory and Advisory Bodies Policy Making Process Planning Administration, Control and Direction 15 Hrs
4.	Technical Education Growth and Development of Technical Education – Ancient India, Medieval India, Pre-independent India and Post-independent India. Vocational Education in India Status of Vocational Education 16 Hrs
5.	Major Issues and Challenges in Technical Education 8 Hrs
6.	World Bank Assisted Project for Technician Education and Technical Education Quality Improvement Programme. 10 Hrs
7.	Emerging Trends in Technical Education System – Curriculum, Management, Instructional Methods, Evaluation, Resources. 14 Hrs

	<p>Practice Tasks</p> <p>Historical development of Technical Education in India</p> <p>Organizational structure of technical and vocational articulation between different sub systems</p> <p>A study on</p> <ul style="list-style-type: none"> • Shortcoming of existing technical education system • Future expectations from technical education in view of changed socio-economic scenario;
	<p>Recommended/Reference Books</p> <ol style="list-style-type: none"> 1. Chandrakant LS: Polytechnic Education in India, Bombay, DB Tara Porevola Sons and Company (c.,1971), 2. Chandrakant LS: Sandwich Courses Revised: Study on Technical Institution – Industry Cooperation of Indian Setting, Indian Institute of Management, Bangalore, 1982. 3. India, Ministry of Human Resource Development, National Policy on Education- 1986. 4. India, Ministry of Human Resource Development : National Policy on Education – 1986L: Programme of Action 5. UNESCO, Studies in Technical and Vocational Education, United Kingdom, Germany, USA and Japan. <p>Technical Education in Independent India, 1947 – 1977, AICTE 1999.</p>

S.No	2009-10	
1.	Instructional Media - Concept, Types (Dales' Cone of Experience, Print & Non-print, Projected & Non-projected), Selection and uses; Preliminary planning and designing of media	20 HRS
2.(a)	Design and Development of Print Material: <ul style="list-style-type: none"> • Text book • Laboratory/Workshop Manuals • Instructional Sheets • Teacher/student Handbook • Self learning Modules • Information Brochure 	20 HRS
(b)	Design and Development of Non-Print Material: <ul style="list-style-type: none"> • Charts/graphs, photographs and Models • Slides/Film-strips • Overhead Transparencies • Video Films • Power-point presentations • Multimedia packages • Computer Assisted Instruction 	20 HRS
©	Evaluation of Media (both Print and Non-Print Material as above in 2(a) and 2(b) : Criteria and Preparation of Checklists/Rating Scales	10 HRS
3.	Operation and Maintenance of: <ul style="list-style-type: none"> • Overhead Projector • Slide/Film-strip Projector • LCD Projector • Digital Cameras • Scanners • Photocopiers 	10 HRS
4.	Project Work: Design and Development of : A Multimedia package (CAI) for two topics OR Video Film on topic OR Self learning modules for three topics	

	Practice Task <ul style="list-style-type: none"> • Design and preparation of different media instructional for a given learning situation • Practice in script writing and production of video film • Practice on the use of hardware • Practice exercise on photography 	
	Recommended/Referenced Books <ol style="list-style-type: none"> 1. Dale, Edgar (1961) Audio Visual Methods in Teaching New York; Holt Rinehard and Winston. 2. Brown, JW: Lewis, RB and Harclerod, FF (1985), AV Instruction – Technology Media and Methods, New York: Mc Graw Hill Book Company 3. Sodhi, GS and Dutt, S.(1998, 2006) Essentials of Educational Technology Patiala: Twenty first Century Publications 4. Wittich, WA and Shuller, CF. Instructional Technology – its nature and use, New York : Harper & Row Publishers 5. Kemp, JE and Smellie, DC; Planning, Producing and Using Media’. New York Harper & Tow Publishers 6. Sampath, K et al. (1981)Introduction to Educational Technology’. New Delhi: Sterling Publishers Pvt. Ltd., 	

MTE 6107 : CAREER GUIDANCE

L T P

3 2 -

S.No	2007
1	Career Development – Concept, Stages in Career Development and Theories of Career Development 10 Hrs
2.	Career Guidance – Concept, Purposes and Need for Career Guidance 10 Hrs
3.	Self Awareness – Concept, Sources of Collecting Information and Purposes of Self Awareness 10 Hrs
4.	Career Information – Educational and Vocational – Need Sources of Information, Techniques of Collecting and Disseminating Information 12 Hrs
5.	Counselling – Concept, Purposes, Steps in Conducting Counselling Interviews, Skills in Counselling 10 Hrs
6.	Providing Job Placement Services – Student Development Activities, Job Development Activities and Maintenance Activities. 10 Hrs
7.	Developing Job Seeking Skills – Writing Cover Letters and Resume, Appearing in Job Interviews, Participating/Leading Group Discussions 12 Hrs
8.	Development of Generic Skills among Students – Communication, Creativity, Team Building, Decision Making, Time Management 10 Hrs
9.	Evaluation of Career Guidance Programme. 6 Hrs
	Practice Task: <ul style="list-style-type: none"> Identifying needs for Career Guidance in Technical Institutes. Designing Career Guidance Programme for Technical Institutes Practice in Conducting Counselling Interviews Practice in administration, scoring and interpretation of psychological tests – intelligence, interest, aptitude, self-concept etc
	Recommended/Reference Books <ol style="list-style-type: none"> Herr, EL and Cramer, SH. Vocational Guidance and Career Development in the Schools : Towards a Systems Approach, USA : Houghton Mifflin Co. Ivey, Allen E and Ivey, MB International Interviewing and Counselling : Facilitating Client Development in a Multicultural Society : USA : Brooks/Cole Publishing Co.

	<ol style="list-style-type: none"> 3. Rogers, Carl R, Client Centered Therapy, UK : Amazon Book Co., 4. Kidd, JM Understanding Career Counselling Theory, Research & Practice, 2006 ND:Sage Publications 5. Gothard, Bill Career Guidance in Context. ND: Sage Publications 2001 6. Shertzer, B and Stone, SC . Fundamentals of Counselling, Boston : Houghton Mifflin Co. 7. Thorpe, Edgar, Winning at Interview, New Delhi : Wheeler Publishing 8. Esbroeck, RV `Career Guidance and Counselling for Life Long Learning in a Global Economy, Chapter 3, 2005. 9. Gibson, RL and Mitchell, MH, `Introduction to Guidance`, New York, Macmillan Publishing Co. Inc., 1981, pp. 211 – 259, 1981. 10. Gillie, S and Isenhour, MG, `The Educational, Social, and Economic Value of Informed and Considered Career Decisions`, America's Career Resource Network Association – Research Based Policy Guidance, 2003 11. Isaacson, Lee, E. `Career Information in Counselling and Career Development` Fourth Ed., Boston; Allyn and Bacon, Inc., pp. 33 – 66, 1986. 12. Pietrofesa, JJ et al, `Guidance: An Introduction` Chicago: Rand McNally College Publishing Co., 1980, pp. 337 – 366.
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MTE 6201 Human Resource Development and Training Methods

L	T	P
3	2	-

S.No	2006-07
1.	Introduction to Human Resource Development Evolution: Pre-industrial. Industrial and Information age Mission and Purpose Components of HRD HRD problems and issues related to Indian Industry and technical education HRD in the context of new industrial policy. 10½ Hrs
2.	Stages of HRD Initial or Induction Training Training for job-related/professional development Training for horizontal and vertical mobility of employees 10½ Hrs
3.	Training & Training Strategies Training: Concept, Assumptions – prevailing and alternative, Phases in training, Modalities of training, drawbacks in existing systems of training, benefits of training, Six goals content and process orientation. 18 Hrs
4.	Training Methods Off-the-Job Training Methods – Lecture, seminar, brain storming, case study, role play, projects, group discussions On-the-Job Training Methods – Coaching, counseling, mentoring, reflective practices, subject groups, observing classes of seniors/experts etc. Characteristics, merits and demerits of training methods 16½ Hrs
5.	Developing Group and Climate Social process: Three facets, Indicators of group development, the training climate: personal and interpersonal dimensions 7½ Hrs
6.	Evaluation of Training Concept, Purposes, types and issues in evaluation; Steps in designing evaluation of training 10½ Hrs
7.	Systematic Approach to Design of Training Programme: Concept of system, benefits of systematic approach to design of training programme, steps in systematic approach – need analysis, task analysis, entry behaviour analysis, resource and constraints analysis, analysis of goals and objectives, Synthesis of criterion tests, synthesis of contents, synthesis of training methods and media, implementation of training, assessment of trainees' performance, evaluation of training, improvement in training. 16½ Hrs

	<p>Practice Tasks</p> <ul style="list-style-type: none"> • Design tools for need assessment for HRD in polytechnic education/industry • Identify training needs of working professionals in polytechnic education/industry • Design appropriate HRD programmes for needs already identified. • Design tool for evaluating HRD programmes. • Case Studies of HRD
	<p>REFERENCE/RECOMMENDED BOOKS</p> <ol style="list-style-type: none"> 1. Arya, PP and Tandon, BB, 'Human Resource Development', New Delhi: Deep and Deep Publications, 2008 (3rd revised edition) 2. Awasthappa, K, 'Human Resource and Personnel Management', New Delhi: Tata Mc.Graw Hill Pub. Co. Ltd., 2005. 3. Bohlanda, GW and Snell, Scott A Managing Human Resources (15th edition) Sourth-Western Cengage Learning 2010 4. Lynton, RP and Pareek, Udai, 'Training for Organisational Transformation', New Delhi: Sage Publications, 2000. (Part I and II) 5. Lynton, RP and Pareek, Udai 'Training for Development' ND:Sage Publication, 2009 6. Mager, RF and Pipe Peter 'HRD Training and Development' (Vol. 1 – 6) Mumbai: JAICO Pub. House, 1999 7. Werner, JM and De Simone, RL 'Human Resource Development' 5 ed.,South Western CENGAGE Learning, 2009 8. Wilson Bob (1997). The Systematic Design of Training Courses. Vol I, Parthenon Publishing. 9. Sims, RR, 'Reinventing Training and Development' USA : Quorum Books, 1998.

MTE 6202 Research Methodology

L	T	P
3	2	-

S.No	2006-07
1.	Introduction to Educational Research Concept, types – basic, applied and action, Need for educational research 6 Hrs
2.	Reviewing Literature Need, Sources – Primary and Secondary, Purposes of Review, Scope of Review, steps in conducting review. 6 Hrs
3.	Identifying and defining research problem Locating, analysing stating and evaluating problem. Generating different types of hypotheses and evaluating them. 8 Hrs
4.	Methods of Research Descriptive research design - survey, case study, content analysis, Ex-post Facto Research , Correlational and Experimental Research 20 Hrs
5.	Sampling Techniques Concept of population and sample' sampling techniques - simple random sampling, stratified random sampling, systematic sampling and cluster sampling, snow ball sampling, purposive sampling, quota sampling techniques. determining size of sample. 10 Hrs
6.	Design and development of measuring instruments , Tests, questionnaires, checklists, observation schedules, evaluating research instruments, selecting a standardized test. 12 Hrs
7.	Procedure of data collection Aspects of data collection, coding data for analysis 6 Hrs
8.	Statistical Methods of Analysis Descriptive statistics: Meaning, graphical representations, mean, range and standard deviation, characteristics and uses of normal curve. Inferential statistics: t-test, Chi-square tests, correlation (rank difference and product moment), ANOVA (one way) Selecting appropriate methods. 14 Hrs
9.	Procedure for writing a research proposal Purpose, types and components of research proposal. 4 Hrs

10	<p>Procedure for writing a research report Audiences and types of research reports, Format of research report and journal articles.</p> <p style="text-align: right;">4 Hrs</p>
11	<p>Strategies for evaluating, Research disseminating and utilising research – An Overview</p> <p>Practice Tasks</p> <ul style="list-style-type: none"> • Define a research problem in polytechnic education/industry after studying problem situation and literature • Given the purpose, objectives of research, write hypotheses • Select research designs for the given research objectives • Identify the measuring instruments for the given research objectives/hypotheses • Identify the appropriate statistical methods of analysis for the given research proposal. • Critically analyse the given research reports on various aspects such as hypothesis, design, measuring tools, statistical analysis, interpretation etc. to identify the gaps or weaknesses in the study. <p>REFERENCE/RECOMMENDED BOOKS</p> <ol style="list-style-type: none"> 1. Borg, W and Gall, M. Educational Research: An Introduction, New York, Longman.2003 2. Burke, J & Larry, Christensen, Educational Research : Quantitative, Qualitative and Mixed Approaches ND: Sage Pub, 2008 3. Brings, RJ and Coleman, M ‘Research Methods in Educational Leadership and Management’ ND:Sage Pub., 2007 4. Cohen, L. Educational Research in Classrooms and Schools ! A Manual of Materials and Methods NY: Harper and Row Publishers.2000 5. CPSC: Developing Skills in Technician Education Research Modules 1 to 11 Singapore, Colombo Plan Staff College for Technician Education 6. Drew, CJ ‘ Designing and Conducting Research in Education’ ND:Sage Pub., 2008 7. Garrett, HE and Woodworth, RS. Statistics in Psychology and Education, Educational Research, Bombay: Vakils Fetter and Simons Ltd. 2003 8. Gopalan, NG, 2010 Encyclopaedia of Research in methodology in management studies: ND Anmol Pub., 2009 (Vol. I & II) 9. Gay, LR, Educational Research, Ohio: Charles E. Merrill Publishing Company2000 10. Oliver, Paul Understanding the Research Process. ND:Sage Publications, 2010 11. Wiersma William Research Methods in Education – An Introduction London, Allyn and Bacon, Inc.2000

S.No	2006-07
1.	Technical Education in India <ul style="list-style-type: none"> - Introduction - Organizational Structure at National and State Level - Examination and Certification Systems, Accreditation 6 Hrs
2.	Technical Education in Response to Future Manpower Requirements <ul style="list-style-type: none"> - Introduction - Pattern of Technical Manpower - Education and Training Needs for Organised and Un-organised Sectors - Planning Considerations - Educational Implications 4 Hrs.
3.	Curriculum Development – An Overview <ul style="list-style-type: none"> - Concept of curriculum and syllabus - Curriculum rationale by Ralph Tyler (1950) and Hilda Taba (1962) - Stages of curriculum development process - Models of curriculum development based on various approaches – Subject specialization, individual needs and social demand, their comparative strengths and weaknesses - Schematic representation of various models - Stakeholders of curriculum development, their perceptions and role 12 Hrs
4.	Need Analysis or Planning Stage <ul style="list-style-type: none"> - Introduction - Factors influencing curriculum decisions - Need analysis surveys - Areas of employment - Assessing current and future manpower needs and its forecast - Tools for conducting need analysis surveys – questionnaires, interviews, observation etc. 12 Hrs.

5.	Curriculum Design <ul style="list-style-type: none"> - Concept of curriculum design and fundamental components of design - Identification of objectives of curriculum - Data sources for curriculum design-based on students, subjects and society - Characteristics of an ideal curriculum for technical education programme - Various approaches in curriculum design – scientific, DACUM, Delphi, skill based, competency based, problem based, value based, thinking curriculum etc. - Norms and standards for space, infrastructure, equipment, libraries, computer centre, teaching staff, etc. - Various modes of curriculum offering e.g. fixed and linear, flexible, sandwich etc. 16 Hrs.
6.	Curriculum Implementation <ul style="list-style-type: none"> - Factors influencing effective curriculum implementation - Monitoring of curriculum implementation - Curriculum implementation and Teaching-Learning (TL) process - Different contexts of curriculum implementation viz. class room, laboratory, library and field experiences and objectives of every context within overall curriculum objectives - Role of academic planning for effective implementation - Instructional strategies, relative merits and demerits - Student evaluation – formative and summative - Mode of delivery: formal, non-formal, distance, e-learning, Technology enhanced learning etc. 14 Hrs.
7.	Curriculum Evaluation <ul style="list-style-type: none"> - Concept of curriculum evaluation – definition and purpose - Curriculum evaluation – approaches and models - Decision facilitation model – CIPP Model of curriculum evaluation, historical perspective, block diagram, purpose, aspects to be evaluated and respondents - Planning and execution of curriculum evaluation including time frame 14 Hrs.
8.	Aspects of Quality Improvement in Technical Education <ul style="list-style-type: none"> - Networking with industry and among the institutions - Training and re-training of faculty and staff - Development of IT enabled Teaching-Learning - Establishing State Implementation Monitoring Cell under the State Boards of Technical Education - Training and placement cell, career guidance counseling, R&D cell,

	<p>consultancy, community services etc.</p> <ul style="list-style-type: none"> - Autonomy – its strategic advantages and disadvantages - Current live issues - stress management, time management, value education, work culture etc. <p style="text-align: right;">12 Hrs.</p>
	<p>Practice Tasks</p> <ul style="list-style-type: none"> - Analysis of manpower assessment studies made by NTMIS to identify suitable programmes of study for technician engineers - Job analysis and activity analysis of specific categories of technician engineers working in the industry - Curriculum design of a Technical Education - Technician engineer programme with details of curriculum structure, course content, learning experience and resource requirement - Strategic planning and organization of resources for effective implementation of a curriculum of a technician engineer programme - Evaluation of a technician programme with due focus on its internal and external validity - A study of the norms and standards for physical facilities for the effective implementation of a technician education programme
	<p>Recommended/Reference Books</p> <ol style="list-style-type: none"> 1. Alberty, HB and Alberty, EJ, Reorganizing the High School Curriculum, New Delhi Light and Life Publishers 2. CPSC, Manila: Aspects of Curriculum Design 3. Doll Ronald C. Curriculum Improvement 1992. Allyn & Bacon Toronto 4. Finch Curtis, R. and Grunkilton John,R.,(1989); Curriculum Development in Vocational and Technical Education-Planning, Content and Implementation; Allyn and Bacon, Inc; Boston, USA 5. Glatthorn, Allan A Boschee, Floyd and Whitehead, Bruce, M (2009) Curriculum Leadership:Strategies for Development and Implementation Second Edition, Sage Publications 6. Hamidi, MB and Ravishankar, S., Curriculum Development and Educational Technology: New Delhi, Sterling Publishers Pvt. Ltd. 7. Hass, G, Bondi, J and Wiles, J., Curriculum Planning – A New Approach, Boston: Allyn and Bacon, Inc. 8. Taba, Hilda, Curriculum Development – Theory and Practice. Harcourt, Brace and World 9. Romiszowski, Designing Instructional System, Kogan Page, London 10. Tanner D and Tanner L, Curriculum Development; MacMillan Publishing Company, New York 11. Thomas W. Hewitt (2006) Understanding and Shaping Curriculum What We Teach and Why, Sage Publications 12. Towney, D., Curriculum Evaluation Today: Trends and Implications, MacMillan Education Ltd., London.

MTE 6204 Multimedia Design and Development**L T P****3 - 2**

Sr.No.	2006 – 07
	<ul style="list-style-type: none">• Introduction to Multimedia – Concept & Components of multimedia, evolution, current state, and future of multimedia design. 10 Hrs• System Components – Converging technologies, functions and sub-systems. 10 Hrs• Multimedia Platform – PCs, multimedia hardware, systems software, future directions. 10 Hrs• Developmental tools – Developing applications, commercial tools, standards 10 Hrs• Images – Image capture and compression. 10 Hrs• Audio – Audio capture and compression 10 Hrs• Video – Video capture and compression 10 Hrs• Storage for media 10 Hrs• Evaluation of multimedia packages 10 Hrs <p>Practice Task</p> <ul style="list-style-type: none">• Practice in Adobe Photoshop, Flash-Basic, web site design, animation, digital video editing, motion graphics and digital effects <p>Project Work</p> <p>Development of multimedia package for a selected unit from the subject of teaching.</p> <p>References/Books recommended</p> <ol style="list-style-type: none">1. Jeffcoate Judith, Multimedia in Practice, Prentice Hall of India Pvt. Ltd., 20032. NIIT, Interactive Communication through Multimedia. Prentice Hall of India Pvt. Ltd., 2004

MTE 6205 Web Based Training

L T P
2 3

S.No	Contents
1	Introduction to Web based Training and Web Essentials: <ul style="list-style-type: none">• Origins• Internet Addresses• Domain Names• Web Browser• Web Server• URL MIME, HTTP Protocol• Overview of Client-side, Server side and scripting language• Search Engines• Advantages and Disadvantages of WBT 12 Hrs
2.	Approach to Web Based Training and Building E-Content <ul style="list-style-type: none">• Markup Language<ul style="list-style-type: none">- Basic Syntax- Image Formats- Hypertext links- Lists, tables- Form- Frames• Cascading style sheets• Data base Access through Web• Alternatives to WBT• Technology Standards• Metaphor 12 Hrs
3.	Course Frame Work -Information to learners, registration of learners, run the course (Welcome Page, Biographies of Learners, Roster Page, Course Home Page, Learner Home Page, Syllabus Page and Teachers' Guide), Needed Resources (course resource page, search the net page, text book description, class project), gather feedback, add access mechanism 12 Hrs
4.	Organize Learning Sequence – Lesson Structure (classical tutorial, activity centered, learner customized, knowledge paced, exploratory, generalized lesson), Creating Building Blocks for lessons and Designing Learning Sequence. 12 Hrs
5	Activate Learning -Learning activity (Web cast, presentation sequence, drill and practice, scavenger hunt, guided research, guided analysis, team design, brain storming, case study, role playing scenario, virtual laboratory, group critique), converting classroom activities into web based activity. 12 Hrs

6.	Simulation: Classification, Terminology, Physical and Interactive Simulation, Computer Simulation, Digital Life Cycle Simulation, Simulation and Games Role Play Simulation for Teaching and Learning <p style="text-align: right;">10 Hrs</p>
7.	Web Based Test and Exercise Learning <ul style="list-style-type: none"> • Planning • Grading • Feedback • Evaluation • Selecting Type of question and sequencing <ul style="list-style-type: none"> - True/False - Multiple choice - Text input - Matching – List - Click-in-picture - Drag-and-Drop - Simulation - Fill-in-the blanks • Monitor Results and Improve Testing. <p style="text-align: right;">10 Hrs</p>
7.	Planning and Promote Collaboration <ul style="list-style-type: none"> • Collaboration Mechanisms and Issues (E.mail, Discussion Groups, Chat, White Board, Screen Sharing, Response Pads, Audio Conferencing, Video Conferencing) • Moderate Discussion Groups <p style="text-align: right;">10 Hrs</p>
8.	Virtual Classrooms- and Digital Library <ul style="list-style-type: none"> • Concepts and Consideration for virtual classroom • Conduct live events • Digital libraries and E-Repository • File formats • OCR • Convert Print to Digital Content • Metadata creation • Collection Building with GLI (GSDL) <p style="text-align: right;">10 Hrs</p>

Practical

1. Build online Web based Tutorials
2. Build online Exam
3. Build digital library using GSDL or D space
4. Convert Print Material to Digital Material
5. Develop online Discussion for using CMS
6. Develop Web casts
 - a. Adobe Suite CS3 or latest
 - b. Demo-Guilder Professional 6.0 or above
 - c. Quick-builder Professional 6.0 or above
7. Develop on-line form for the registration of learners

References

- 1) Horton, Williams Designing Web Based Training. John Wiley and sons, 2003
- 2) Khan, Badrul Web Based Training. Educational technology Publication, 2000
- 3) Kevin K Fiedler Web Based training. Southwest Research Institute, 1999

MTE 6206 Education Project Planning and Management

L	T	P
2		3

S.No	Contents	2009-10
1	Introduction Education Project: Need, Concept and Characteristic, Rules for Managing Projects	12 Hrs
2.	Project Initiation Phase Identification of project, Specifying goals and objectives of a project, Identifying risks and constraints, Building project team	16 Hrs
3.	Project Planning Phase Breakdown of Tasks (checkpoints, activities, relationship, time estimates); Project Scheduling: Bar Charts, PERT/CPM, Resource Planning; Budget (Recurring and Non-recurring); Project Proposal	23 Hrs.
4.	Project Implementation Phase Directing People individually and as a team; Reinforcing commitment and excitement of the project team Keeping everyone connected with the project Build agreement Empower yourself and others and Encourage risk taking and creativity	24 Hrs
5.	Monitoring and Evaluation Monitoring – Concept, types and Controls, Characteristics Evaluation – Formative and summative Evaluation of projects	15 Hrs
Practice Task 1. Identification of a project in an education setting and preparing a project proposal 2. Preparation of bar charts, PERT/CPM Network for given education project 3. Evolving criteria for evaluation of education project		
Reference Sunny and Kim Bake, 'Project Management (The Complete Idiots Guide)', New Delhi – Prentice Hall of India Pvt Ltd., 1998.		

MTE 6207 Entrepreneurship Development

L	T	P
3	2	-

Sr.No.	2006-2007
1.	<p>Nature and Scope of Entrepreneurship - Need and Philosophy of entrepreneurship Characteristics of an entrepreneur; Entrepreneur vs. Self-employment; Intrapreneuring; Role of entrepreneurship in Indian economy, Entrepreneurship and innovation; Indian values and entrepreneurship</p> <p style="text-align: right;">10 Hrs</p>
2.	<p>Entrepreneurial Support System -Three Tiers of Entrepreneurial Support System; Assistance from National level Organisations like SIDO, NSIC, SIDBI, IFCI, IDBI, ICICI, NRDC etc. Assistance from State level organizations like DOI, DIC, SSIE, SISI, SFCs, Commercial Banks etc; Special schemes for technical entrepreneurs and women. Incubation Centres , Awareness camps</p> <p style="text-align: right;">10 Hrs</p>
3.	<p>Product Identification – Identification of Opportunities, Consideration for product selection; Exposure to demand based, resource based, service based, import substitute, export promotion, trading and consultancy ventures.</p> <p style="text-align: right;">10 Hrs</p>
4.	<p>Entrepreneurial Motivation Training - Programme clarity – sharing expectations and unfreezing and refreezing; Data collection about self 'Who am I' write up. Introduction to need system and motivational pattern of entrepreneur (conceptualizing entrepreneurial skills and behaviour). Risk taking behaviour, hope of success, fear of failure, learning from feedback (Ring Toss Game). Through entrepreneurial camps &Incubation centres</p> <p>Analyzing motive strengths, locating achievements imageries, intensity of motive (Analyzing TAT stories, group and individual level). Personal efficacy, defining, individual life goal, its linkages to entrepreneurship, locus and control, conceptualizing entrepreneurial values.</p> <p>Planning and goal setting, help and resource use, creativity and divergent thinking, confidence building learning from feedback (Business Games and Exercises).</p> <p>Achievement Planning (APO) Games Tolerance to ambiguities and Commitment to entrepreneurial goal (Interaction with successful entrepreneurs). Leadership and Influencing abilities, guidance and help (Block Building Exercises, role playing exercises). Entrepreneurial goal setting, sharing entrepreneurial goal, devising clarity in terms of enterprise building.</p> <p style="text-align: right;">15Hrs</p>

5.	<p>Project Formulation Process – Preparing list of relevant projects; Process of selecting a project and zeroing on different projects for potential entrepreneurs. Steps in planning a small scale industry. Techno-economic feasibility analysis of projects.</p> <p>Structure of a project report.</p> <p>Analysis of sample project report. Preparation of final project report.</p> <p>Product design and development 15 Hrs</p>
6.	<p>Rules and Regulations – Licensing and registration procedures; Appreciation of important provisions of Factory Act, Shop and Commercial Establishment Act, Negotiable Instrument Act, Sales of Goods Act, Partnership Act, and other Commercial and Labour Laws. Planning Income tax, Sales tax and Excise rules, Municipal bye-laws and Insurance coverage. 15 Hrs</p>
7.	<p>Planning of Small and Medium Enterprises</p> <p>Production Management – Production Planning and Scheduling; Materials Management; Inventory management; Technology selection, transfer and management.</p> <p>Accounting and Financial Management – Working capital management; Principles of Book keeping Books of accounts, Financial statements, Funds flow analysis, sources and uses of funds.</p> <p>Marketing Perspectives – Relevance of Marketing for entrepreneurship; Product planning; Pricing decision; Place policies; Advertising and sales policies; Market survey and Demand estimation for selected projects.</p> <p>Personnel Management and Industrial Relations – Procurement, Development, Compensation, Integration, Maintenance functions; Leadership, Communication and Motivation skills. 15 Hrs</p>
	<p>Practice Task:</p> <ul style="list-style-type: none"> - Visit to small and medium enterprises and interacting with entrepreneurs. - Visit to support agencies and gathering relevant entrepreneurial information. - Gathering information about viable projects identified by support agencies. - Preparation of preliminary project report. - Preparation of detailed project report. - Calculation of important financial ratios so as to ascertain techno-economic feasibility of the proposed venture. - To prepare and deliver class seminars on industrial and commercial legislation.

	<p>Recommended/Reference Books</p> <ol style="list-style-type: none"> 1. Gupta, CB and Srinivasan, NP; Entrepreneurial Development, New Delhi, Sultan Chand & Sons. 2. Gupta C.B. and Srinivasan N.P; 'Entrepreneurial Development', M/S Sultan Chand and Sons, 23, Darya Ganj, New Delhi-110002. 3. Khanna S.S, 'Entrepreneurial Development', M/S S Chand and Company Ltd., Ram Nagar, New Delhi-110055 4. Marc J. Dollinger, Entrepreneurship – Strategies and Resources, Pearson Education Ptg., Ltd., Indian Branch 482 F.I.E. Patparganj, Delhi-110092, India 5. Pareek, Udai and Rao T.V. :Developing Motivation through Experiencing, New Oxford and IBH Publishing Cop. Pvt. Ltd., New Delhi. 6. Rathore, BS and Dhameja SK: Entrepreneurship in the 21st Century, Rawat Publications, Jaipur. 7. Rathore BS; and Saini; 'Entrepreneurship Development', M/S S Chand & Company, Nai Saria, Delhi 8. Rathore, BS and Saini JS: A Handbook of Entrepreneurship, Aapga Publications, Panchkula. 9. Saini, JS and Dhameja SK: Entrepreneurship and Small Business, Rawat Publications, Jaipur and New Delhi. 10. Sharma DD, Dhameja, SK and Gurjar BR: Entrepreneurship, Strategic Management and Globalisation, Rawat Publications, Jaipur. 11. Srivastava S.B., 'A Practical Guide to Industrial Entrepreneurs', M/S Sultan Chand and Sons, 23, Darya Ganj, New Delhi-110002. 12. Sharma DD and Saini, JS : Enterprise Edge, Rawat Publications, Jaipur. 13. Sharma DD and others: Training Modules on Entrepreneurship Development
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Sr.No.	2005-2006
1.	Concept of Educational Technology, approaches and process of Education Technology. 10Hrs
2.	Teaching/instruction – Phases/operation of teaching; Learning – concept, types of learning/conditions and principles of teaching – learning. 10Hrs
3.	Models of teaching : concept and fundamental elements; Basic teaching model, Bruner, Taba and Ausubel’s models of teaching. 10Hrs
4.	Developing Instructional packages : task analysis – concept and procedure; instructional objectives; concept, need, Bloom’s Taxonomy, Mager and Gronlund approach for writing objectives; developing different types of packages – audio packages (radio, tape recorded instruction), video packages (TV, films and video – recorded instruction) and multi – media packages (informational technology packages including CAI, media convergent packages); utilizing and anchoring different media. 24Hrs
6.	Instructional Methods – lecture, demonstration, project, seminar, tutorials, group discussion; concept mapping, self instructional modules. 10Hrs
7.	Improving teaching – Micro-teaching, simulation and analyzing teacher behaviour by Flander’s ten category system. 8Hrs
8.	Assessment of student performance – concept, types and process of evaluation 10Hrs
9.	Action Research in teaching. 8Hrs
	PRACTICE TASK Writing Instructional Objectives, Developing Instructional Packages.
	SUGGESTED BOOKS Joyee, B and Weil, (1997), Models of Teaching, New Delhi, Prentice Hall of India Pvt. Ltd. Pereival, F and Ellington, H (1984). A handbook of Educational Technology, London Kogan Page Ltd. Sampath, K. et al (1992), Introduction to Educational Technology, New Delhi, Sterling Publishers Pvt. Ltd. Skinner, BF (1968). Technology of Teaching, New York, Maredth Corporation. Sodhi, GS and Dutt, Sunil (1995), Teaching Learning – A Process Approach Chandigarh, Publishers Sodhi, GS and Dutt, Sunil (2006) Essentials of Educational Technology. Patiala: Twenty First century publications