Curriculum for One Year B.Ed. (Secondary) Programme

I. Background and Guiding Principles

At the time of preparation of this document, certain national documents were considered to provide a basis. They are:

1) National Curriculum Framework- 2005, NCERT, New Delhi
2) National Curriculum Framework for Teacher Education- 2010, NCTE, New Delhi
3) 2-Year B. Ed. Curriculum prepared by the NCERT, New Delhi
4) UGC guidelines for designing curricula for Choice Based Credit System of Higher Education

The following considerations about teacher education curriculum guided the present document:

- Need for reducing the theory load in the teacher education curriculum
- Reducing the gap between theory and practice, teacher education curriculum and school realities
- Rationalizing curricular areas of teacher education from the standpoint of knowledge domains of teachers viz., subject matter knowledge, pedagogical knowledge, pedagogical content knowledge and teaching performance
- Assessment to have a variety and continuity with scope for feedback and correction

This curriculum document is designed for ‘one year secondary teacher education programme’ consisting of two semesters of about 18 weeks each including admission, preparatory holidays and examination, assuming six working days in a week.

II. Courses of Study

Area A: Foundations of Education

A1 Education and Development
A2 Education: An Evolutionary Perspective
A3 Contemporary Issues & Concerns in Secondary Education

Area B: Pedagogical Knowledge

B1 Learner and Learning
B2 Teaching: Approaches and Strategies
B3 Assessment for Learning
B4 Learning Resources
B5 Classroom Organisation and Management
Area C: Pedagogical Content Knowledge
   C1 school subject-1
   C2 school subject-2

Area D: School Based Experiences
   D1 Initiatory School Experiences
   D2 Internship in Teaching

Area E: Add on Courses
   E1 Language Proficiency Workshop
   E2 ICT – Skill Development

(*Note: the courses E1 and E2 will be essentially through practical activities through workshops.)

III. Scheme of Study

<table>
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<th>Area</th>
<th>Credits</th>
<th>Contact Hrs.</th>
<th>Marks</th>
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<td>School Based Experiences</td>
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<td>D1 Initiatory School Experiences</td>
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*Note:
1. The courses E1 and E2 are viewed as pre-requisite courses for the programme and hence will be organized at the beginning of the programme through workshop mode and performance shall be graded on a five point scale.
2. One day per week may be earmarked for school based practical work identified under Course D1 and also the practical work mentioned under various courses.
V. General Objectives

The curriculum is designed to achieve the following general objectives of the B. Ed. programme:

1) The student teacher understands the central concepts, tools of inquiry, and structures of the disciplines and can create learning experiences that make these aspects of subject matter meaningful.

2) The student teacher understands how children learn and develop, how they differ in their approaches to learning and creates learning opportunities that are adapted to diverse learners and learning contexts.

3) The student teacher plans learning experiences that are based on learner’s existing proficiency, interests, experiences including misconceptions and errors; and an understanding of how students come to view, develop and make sense of subject matter contained in the learning experiences.

4) The student teacher uses knowledge of effective verbal, nonverbal and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

5) The student teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

6) The student teacher develops self identity as a teacher through school based experiences and reflective practices that continually evaluate the effects of his/her choices and actions.

VI. Modes of Learning Engagement

With a view to move away from theoretical discourses and lectures, the student teachers will be required to be engaged in various kinds of learning experiences. Every course in the teacher education programme provides specific engagements that are spelt out under each course. However, the nature of engagement of the student teachers will be of the following kinds.

**Lecture-Discussion Session:** The teacher educator provides a platform for review of experiences, develop insights into the disciplinary knowledge base and relate them to the school realities.

**Focused Reading and Reflection:** Student teachers would be led into focused readings on various themes with questions inviting reflections either individually or in small groups.

**Observation-Documentation-Analysis:** Simulated and real school/community experiences would be arranged for the student teachers to observe, document in the form of record/journal/diary and analyze with an intention to revisit their own understandings or develop new insights.
Seminar: Students will undertake thematic/topical study, prepare write-up and make seminar presentation followed by open-house discussion with a view to enhance their knowledge base and repertory of skills in the area of presentation.

Case Study: An in-depth and comprehensive study of a single or few cases would be taken up as per the guidelines provided and submit a study report.

School Based Practical: Observing an experienced practitioner, planning-implementing-receiving feedback from peers and supervisor and reflection on one’s own performance would influence development of insights, beliefs and attitudes necessary for a teacher. Learning experiences would be provided through several school based practicum for development of certain professional qualities and competencies. The conceptual and theoretical learning made under various courses would not transfer to the real classroom/school context unless one makes specific attempts at applying them in relevant contexts. The school based practical would also include opportunities for planning and implementation of learning experiences and strategies and reflecting on their appropriateness and effectiveness.

Workshop: A series of learning experiences in a given performance area would be provided in the form of workshop engaging them in modeling-practice-feedback sequence with a view to develop specified competencies required for a teacher

VII. Modes of Assessment

Pre-service teacher education programme provides inputs that are to be internalized through an active process of assimilation and accommodation. Hence, assessment needs to be formative and summative, quantitative and qualitative by nature. The modes of assessment would consist of

- **Written tests and assignments** for assessing conceptual understandings and clarity
- **Products** of planning and preparation activities such as lesson plan, unit plan, assessment tools, and learning resources.
- **Observation** of teaching performance using schedules and rating scales, both in simulated and real classroom contexts, for assessing performance skills and competencies
- **Records/Reports/Reflective Journals and Diaries** maintained by the student teacher of their school based experiences and project work related to different courses
- **Seminar presentations** for assessing ability to review, record, reorganize and present their work on thematic/topical study
- **Laboratory journals/ Activity records** for assessing ability to plan and implement laboratory activities on subject specific skills under various pedagogical content courses
- **Observation** of the student teachers in various contexts of teacher education such as their participation in seminar, professional attitudes and dispositions

VIII. Scheme of Assessment
In view of the varied nature of the different courses of study, differential procedures for assessment need to be visualized. This has been shown in the weightage for formative and summative assessments.

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IV. SYLLABUS FOR VARIOUS COURSES UNDER ONE YEAR SECONDARY TEACHER EDUCATION PROGRAMME (B.ED.)

Area A: FOUNDATIONS OF EDUCATION

Course A1: Education and Development

Course Objectives
1. To understand the relationship between Education and individual and National Development.
2. To examine the influences of political and policy decisions on Education and its aims, content and procedures.
3. To understand how Education derives its relevance from socio cultural contexts and critically reflect on the influence of education on quality of life.
4. To analyze the social context of education and its bearing upon school system.
5. To examine the changing emphases on Education in the context of Globalization, Liberalization and Privatization.

Unit-1: Education for National Development
- National development –meaning, scope and different view points
- Education as a development indicator, and enhancer of development indicators
- Role of education in ensuring sustainable development,
- A review of the initiatives for educational development in India over decades
- The perspective of education for national development in the NCF-2005

Unit-2: Emerging Interface between Political Process & Education
- Education as a key area of public policy- relevance, essentiality
The National and State Education Policies and their formulation- political decision making process; relationship between constitutional provisions and educational policies- Right to Education
Implementation of an educational policy- political will and effort, macro level requirements; action plans and programme guidelines as tools for implementation and essentiality of political support; State and Centrally Sponsored Schemes of Education
Research and feedback for policy analysis and planning
Financial supplementation: grant-in-aid and developmental grants for implementing educational policy- the role of planning commission

Unit-3: Education and Economic Development
Education for economic development- its meaning and nature
Education as development of human resource: Education for Employability - academic concerns in education, Consumer driven educational programmes
Quality of life as an outcome of education,
Education as an investment
Privatization, private initiative, and liberalization in education

Unit-4: Education and Individual Development
Education for development of individual capabilities, enhancement of quality of life, and proactive participation in the socio-political-economic-cultural context
Education and Actualization of individual aspirations
Education for development of responsible citizens
Education and development of life skills: preparation of individuals for the 21st century

Unit-5: Education and Socio-cultural Context
Education as an instrument of social change- influence of education on society, family and their practices
Socio-cultural influences on the aims and organization of education
Social acceptability of educational policy and practice
Impingement of cultural history on education
Emerging trends in societies and their repercussions on education: globalization and internationalization of education

Sessional work
Analyse writings on analysis of education-development interface and make presentations
Group discussions, debates and dialogue on the themes
Presentations on National educational policies
Preparation of reports on the state and centrally sponsored schemes of education

References
Govt. of India (1992). Programme of Action (NPE). Min of HRD.
Seventh All India School Education Survey, NCERT: New Delhi. 2002

Course A2: Education: An Evolutionary Perspective

Course objectives
The student teachers will be able to

- analyze and understand educational concepts, their premises and contexts that are unique to education.
- understand and appreciate the nature and the purpose of education, their practical ramifications in the school context.
- analyze the philosophical reflections and educational thoughts of great Educational thinkers
- understand the nature of knowledge in Education and its contribution to status of education as a discipline and interdisciplinary in nature
- inquire into the roles of teacher, school and the community in the changing perspectives of pedagogy
- appreciate the historical development of education as a system and its evolving structures
- examine the concerns and issues related to education system
- understand the importance of systemic reforms in achieving quality education

Unit -1: Education as an evolving concept

Meaning of education: ancient to present- education as an organized, institutionalized, formal and state sponsored activity
Concepts in education and their changing connotations: school, curriculum, teacher, learner, teaching, learning, instruction, freedom, autonomy and control in relation to the child and teacher
Shifts in process of education: Knowledge giving, didactic and constructivist interpretations
Expansion in modes of education: face-to-face (tutorial, small group, large group) to distant
modes of education: oral/aural to digital; individualized and group based

Unit-2: Aims of education
Aims of education: Historicity of aims of education
Changing aims of Education in the context of globalization
Sources of Aims of Education: Educational aims as derived from the Constitution of India
Influence of aims of education on the curriculum and transactional strategies
Ideas of educational thinkers such as Gandhi, Tagore, Aurobindo, Dewey, Krishnamurthy,
Friere and Illich

Unit-3: Evolving Knowledge base in Education
Nature of knowledge in education: concepts, statements, educational viewpoints,
metaphors and theories. Emerging K base in education
Differences between information, knowledge, belief, and opinion
Interfaces with cognate disciplines such as physical, natural and social sciences

Unit-4: Learning Environment: the changing scenario
Changes in Teacher roles, learner participation, knowledge emphasis, learning resources
and physical space
Shift in pedagogy: Knowledge focused to teacher focused to learner focused learning
environment
Shift in learning environments: Unimodal to multi-mediated, school based to community
linked, and real to virtual learning environments. The open-distance learning environment

Unit-5: Systems & structures in school education
Education as a system: meaning and nature
Evolution of educational network over the past two centuries (1800s to 21st century): a
brief overview of historical development of learning systems that resulted in the present
network of schools.
Differentiation of educational structures: stage wise; stream wise;
Role of state-centre: need for a national system of education
Predominant concerns of the education system—co ordination, quality assurance and
feasibility
Systemic reforms in education: meaning and need. Demands from the secondary education
system upon achieving universal elementary education

Sessional Work
1) Student teachers are required to read at least two books listed below and discuss in groups
the aspects of education evolving as presented in them; critically examine the extent to
which the process of differentiation and diversification in education have raised concerns
about its quality and relevance in the present changing times. After discussions, students
document their understanding in lucid manner as a term paper.
References

Hirst. Paul, Knowledge and curriculum

Course A3: Contemporary Concerns and Issues in Secondary Education

Course Objectives

The student teacher will be able to

Understand the importance of universalisation of secondary education and the constitutional provisions for realizing it
Examine the issues and concerns related to universalisation of secondary education
Analyse the strategies used for realization UEE and the outcomes of their implementation.
Realize the need and importance of equity and equality in education and the constitutional provisions for it.
Identify the various causes for inequality in schooling
Realize the importance of Right to Education and the provisions made for realizing it.
Understand the importance of indicators, standards and strategies for enhancement of quality in secondary schools
Understand the need and importance of education for peace and the national and international efforts towards it.
Examine the issues and concerns related to global and local environmental crisis
Explores the strategies for sensitizing the learners towards environmental conservation
Understand the Action measures taken for Environmental Conservation and its sustainability at the international level.
Explore the school curriculum for integrating environmental concerns

**Unit-1: Universalisation of Secondary Education**

- Constitutional provisions
- Policies and programmes for realizing the constitutional obligations
- Right to education and its implications for universalisation of secondary education (USE)
- Impact of realizing the UEE on secondary education: access, enrolment, participation and achievement; status of USE
- USE: issues and concerns
- Lessons from implementation of UEE
- Strategies for realization of targets

**Unit-2: Equity & Equality in Education**

- Meaning of Equality of Educational Opportunities, provision and outcomes; constitutional provisions for ensuring equity
- Nature and forms of inequality including dominant and minor groups, gender
- Inequality in schooling: public-private schools; Rural-urban-tribal schools, and differential school systems – schools for education of the challenged

**Unit-3: Quality in education**

- What is ‘quality education’?
- Indicators of quality: related to learning environment, Student Outcomes
- Outcome improvement through: Setting standards for performance; supporting inputs known to improve achievement, Adopting flexible strategies for the acquisition and use of inputs, and Monitoring performance.
- Enhancement of quality in secondary schools

**Unit-4: Peace Education**

- Peace as a dynamic Social Reality
- Relevance of Peace: national and international contexts
- Dangers to Social Security: terrorism, war, natural calamities and impact on quality of life
- Peace context: conditions for promotion of peace, UNESCO’s concerns on Peace and Understanding
- Role of education in promotion of peace: implications for pedagogy
- Teacher role in promoting peace

**Unit-5: Education for Conservation of Environment**

- Conservation of environment- an imminent need
- Need for sensitizing learners towards concerns of environmental conservation
Integration of environmental concerns in curriculum
Role of teacher in promoting conservation

Sessional Activities

Presentation on the reports and policies on USE
Analysis of school curriculum for integrating environmental concerns
Conduct surveys of various educational contexts (e.g. Schools of different kinds) to identify various forms of inequality.
Individual or group projects to visualize feasible school-based strategies for contributing to ‘peace’ and ‘environmental conservation’
One sessional test

References

NCERT (1993). Teacher and Education in Emerging Indian Society, New Delhi
Govt. of India (1992). Programme of Action (NPE). Min of HRD.
MacMillan, New Delhi.
Seventh All India School Education Survey, NCERT: New Delhi. 2002
UNESCO’s report on Education for sustainable development.
Ministry of Law and Justice (2009) Right to Education. Govt of India
Govt of India (1992) Report of Core group on value orientation to education, Planning commission
Area B: PEDAGOGICAL KNOWLEDGE

Course B1 Learner and Learning

Course Objectives
Upon completion of the course, student teachers will be able to
- Develop an understanding about the impact/influence of socio cultural context in shaping human development, especially with respect to the Indian context;
- Develop an understanding of dimensions and stages of human development and developmental tasks
- Understand the range of cognitive capacities among learners
- Reflect on their own implicit understanding of the nature and kinds of learning
- Gain an understanding of different theoretical perspectives on learning
- Appreciate the critical role of learner differences and contexts in making meanings, and draw out implications for schools and teachers

Unit 1 Nature of the Learner: Child and Adolescent
Learner as a developing individual; a psycho-social entity; stages of development
Developmental characteristics of a child and an adolescent: physical, cognitive, social, emotional, moral and language; their interrelationships
Developmental tasks of childhood and adolescence and their implications
Factors influencing development such as heredity, nutrition, child-rearing practices, siblings and peers

Unit 2 Understanding Differences between Learners
Differences between individual learners: multiple intelligence, learning style, self-concept, self esteem, attitude, aptitude, skills and competencies, interest, values, locus of control and personality
Understanding differently abled learners: slow learners and dyslexic learners
Methods of assessing individual differences: tests, observation, rating scales, self-reports
Catering to individual differences: grouping, individualizing instruction, guidance and counseling, bridge courses, enrichment activities and clubs

Unit 3 Understanding Learning
Nature of learning: learning as a process and learning as an outcome
Types of learning: factual, associations, conceptual, procedural, generalizations, principles and rules, attitudes, values and skills
An exploration of the theoretical positions on each of the above types of learning
Pedagogic principles for organizing learning: behaviouristic, cognitivistic, and humanistic
A critical analysis of the relevance and applicability of various learning theories for different kinds of learning situations

Unit 4 Factors Influencing Learning
Biological and hereditary factors influencing learning
Factors related to the subject matter content and learning material
Factors related to the method of learning
Factors influencing remembering and forgetting, conceptual organization and reorganization, scaffolding
Attention, motivation and readiness as factors influencing scholastic learning
Role of the teacher and school in addressing various factors influencing learning: a few strategies

**Unit 5 Organizing learning: Issues and Concerns**

Individual versus group learning: issues and concerns with respect to organizing learning in a classroom such as study habits, self-learning and learning to learn skills
Organizing learning in heterogeneous classroom groups – socio economic background, abilities and giftedness, interest
The issue of media influences on learning – role of parents and teachers
Paradigms for organizing learning: teacher centric, subject centric and learner centric

**Sessional Work**
The following activities are only suggestive. The teacher educator can formulate more activities
Critical analysis of classroom instruction in the light of the understandings developed in Units 2 & 3
Any one experiment on learning – division of attention, memory, transfer of learning
Case study of a learner with behaviour problem/talented child/a LD child/a slow learner/a disadvantaged child
Study of intelligence of at least 5 school children and relating it with achievement and other background factors

**References**
Patricia A. Alexander, Philip H. Winne (2006) Handbook of Educational Psychology
Sarangapani M. Padma(2003.), *Constructing School Knowledge :An Ethnography of learning in an Indian Village*, Sage Publication
Course B2 Teaching: Approaches and Strategies

Course Objectives
On completion of the course the student teacher will be able to
- Demonstrate his/her understanding of the role of a teacher at different phases of instruction
- Write instructional objectives teaching of a topic
- Demonstrate his/her understanding of different skills and their role in effective teaching
- Use instructional skills effectively

Unit 1 Understanding Teaching
Teaching as a planned activity – elements of planning
- Assumptions underlying teaching and their influence on the planning for teaching
- Phases of teaching: pre-active, interactive and post-active.
- Proficiency in teaching: meaning and place of awareness, skills, competencies and commitment
- The general and subject related skills and competencies required in teaching
- Impact of one’s own socialization processes, awareness of one’s own shifting identities as ‘student’, ‘adult’, and ‘student teacher’, and their influences on ‘becoming a teacher’
- Teacher’s professional identity- what does it entail?
- An analysis of teacher roles and functions in the three phases: pre-active phase – visualizing; decision-making on outcomes, preparing and organization; interactive phase - facilitating and managing learning; post-active phase – assessment of learning outcomes, reflecting on pre-active, interactive and post-active processes

Unit 2 Pre-active Phase of Teaching
An analysis of teacher roles and functions in the pre-active phase – visualizing; decision-making on outcomes, preparing and organization
- Visualizing: the learner and learner readiness characteristics, the subject matter content and their interlinkages, the learning resources, approaches/strategies
- Decision-making on outcomes: establishing general instructional goals, specification of objectives and standards for learning, allocation of instructional time for various activities/tasks – instructional time as a variable in learning
- Decision-making on instructional approaches and strategies: Expository or Inquiry, Individualized or Small Group or Whole Class – Skills required for learner engagement in the context of the strategy decided,
- Preparing for instruction: identifying and selecting available learning resources or developing required learning resource
- Preparation of a Plan: Unit Plan and Lesson Plan

Unit 3: Interactive Phase of Teaching – Strategies of Teaching
An analysis of teacher roles and functions in the interactive phase - facilitating and managing learning;
Expository Strategy as approach to teaching for understanding: Presentation-discussion-
demonstration, the Advance Organizer Model;
Inquiry Strategy as approach to teaching thinking skills and construction of knowledge:
Concept Attainment/ Concept Formation, Inductive Thinking, Problem Based
Learning/Project Based Learning;

Unit 4: Interactive Phase of Teaching – Approaches and Skills of Teaching
Approaches to Organizing Learning - Approaches to Individualized Instruction: Computer
Managed Instruction, Programmed Instruction, and Learning Activity Packages; Approaches
to Small Group and Whole Group Instruction: Cooperative and Collaborative approaches to
learning, Brainstorming, Role Play and Dramatization, Group Discussion, Simulation and
Games, Debate, Quiz and Seminar
Instructional Skills: Structuring, Soliciting and Reacting, Verbal and Non verbal, Feedback
and Reinforcement, Discourse, Demonstration and Modeling

Unit 5: Post-active Phase of Teaching
An analysis of teacher roles and functions in the post-active phase: evaluation of pupil
learning, evaluation and generating feedback on all three phases of teaching
Using learner achievement as a feedback for evaluating teacher/ teaching effectiveness:
Reflection on appropriateness and sufficiency of planning and implementation activities of
a teacher
Reflection and appraisal for professional development in teaching: self-reflection,
observation and feedback by peers, analysis of teaching using media, appraisal by students
Understanding teacher as a professional: expectations and responsibilities of a teacher,
teacher as an autonomous functionary and a member of a community of professionals-
balancing personal aspirations and professional pressures, developing an ‘identity’ as a
teacher.

Seasonal Work
Study of instructional practices with reference to use of classroom skills
Classification of instructional objectives of a lesson under domains and levels
Writing instructional objectives for different content categories
Identifying skills incorporated in a lesson plan and judging their appropriateness and
adequacy
Practice of skills in a simulated situation

References
of Educational Objective Handbook 1, Cognitive Domain, Handbook 2, Affective Domain,
Longman London
Buch, M B and Santharam M R (1972) Communication in Classroom, CASE, Faculty of Ed. &
Psy. M S Univ. Baroda
New Delhi
Passi, B K (1976) Becoming better teacher Micro-teaching Approach, Sahitya Mudranalaya, Aahmedabad
Sharma, R A (1983) Technology of Teaching; International Publishing House, Meerut
Singh, L C Microteaching: Theory and Practical, National Psychological Corporation, Agra

Course B3 Assessment and Evaluation

Course Objectives:
The student teachers will be able to
- Understand the nature of assessment and evaluation and their role in teaching-learning process.
- Understand the perspectives of different schools of learning on learning assessment
- Realise the need for school based and authentic assessment
- Examine the contextual roles of different forms of assessment in schools
- Understand the different dimensions of learning and the related assessment procedures, tools and techniques
- Develop assessment tasks and tools to assess learners performance
- Analyse, manage, and interpret assessment data
- Analyse the reporting procedures of learners performance in schools
- Develop indicators to assess learners performance on different types of tasks
- Examine the issues and concerns of assessment and evaluation practices in schools
- Understand the policy perspectives on examinations and evaluation and their implementation practices
- Traces the technology bases assessment practices and other trends at the international level

Unit 1: Perspectives on Assessment and Evaluation
Meaning of Assessment, Measurement, Tests, Examination, Appraisal, and Evaluation and their interrelationships
Difference between ‘true ability’ and ‘observed ability’, Principles of assessment and evaluation,
Behaviorist, Cognitivist and Constructivist Perspectives
Purposes of Assessment: Prognostic, Monitoring of Learning, Providing Feedback, Promotion, Placement, Certification, Grading and Diagnostic
Classification of assessment: based on purpose (prognostic, formative, diagnostic and summative) scope (teacher made, standardized), attribute measured (achievement, aptitude, attitude, etc.), nature of information gathered (qualitative, quantitative), mode of response (oral and written; selection and supply), nature of interpretation (norm referenced, criterion referenced) and context (internal, external)
Need for continuous and comprehensive assessment
School based assessment; Authentic assessment

**Unit 2: Assessment of Learning**

Dimensions of learning: cognitive, affective and performance

Assessment of cognitive learning: types and levels of cognitive learning: understanding and application; thinking skills – convergent, divergent, critical, problem solving, and decision making; items and procedures for their assessment

Assessment of affective learning: attitude and values, interest, self-concept; items and procedures for their assessment

Assessment of Performance: tools and techniques for assessment of skills

Grading: Concept, Types and Application: indicators for grading; CBSE and State evolved indicators

**Unit 3: Assessment for Learning**

Assessment information as an input for learning, metacognition and development – need for continuous, formative and diagnostic assessment

Use of Projects, Assignments, Work sheets, Practical work, Performance based activities, Seminars and Reports as assessment devices

Developing Performance Tasks (Subject Specific)

Assessment of Group Processes - Collaborative/Cooperative Learning and Social skills

Portfolio Assessment – its meaning, scope and uses; Planning, development and assessment

Self, Peer and Teacher Assessments

**Unit 4: Planning, Construction, Implementation and Reporting of assessment**

Consideration of what and why to assess (content and objectives)

Differentiation between instructional, learning and assessment objectives

Stating of Assessment Objectives - Need for integrated objectives.

Deciding on the nature and form of assessment - oral tests and written tests; open book examination; weightage to content, objectives, allocation of time; Preparation of a blueprint

Construction/selection of items; Guidelines for construction of test items

Assembling the test items; Guidelines for administration

Scoring procedure – manual and electronic; Development of Rubrics

Analysis and Interpretation of Students’ Performance

Processing test performance: calculation of percentages; central tendency measures; graphical representations; and interpreting performance

Item response analysis

Role of Feedback in Improving Learning, and Learners’ Development

Ascertaining student needs, identifying student interests and feeding forward for improving learning

Reporting Student Performance – content and formats; Progress reports, Cumulative records, Profiles, and Open house
Using feedback for reporting to different stakeholders – students, parents, and administrators

Use of Feedback for teachers’ self-improvement

**Unit 5: Issues, Concerns and Trends in Assessment and Evaluation**

Existing Practices: Unit tests, half-yearly and annual examinations, semester system, Board examinations and Entrance tests, State and National achievement surveys

Management of assessment and examinations, Use of question bank

Issues and Problems: Marking Vs Grading, Non-detention policy, Objectivity Vs Subjectivity, Impact of entrance test and public examination on teaching and learning – the menace of coaching

Policy perspectives on examinations and evaluation: Recommendations in National Policies of Education and curriculum frameworks

Trends in assessment and evaluation: Online examination, Computer-based examination and other technology based examinations

Standards based assessment – international practices

**Sessional Work**

Planning of an achievement test
Planning of other assessment tools
School visits followed by presentation on evaluation practices in schools
Data processing and interpretation of any achievement test of school students
Presentation of papers on issues and concerns / trends in assessment and evaluation
Presentation of papers on examination and evaluation policies
One sessional test

**References**


Course B4 Learning Resources

Course Objectives:
On completion of the course, the student teacher will be able to
- Understand teaching as a process of communication and be aware of various resources available for making it effective
- Prepare and use appropriate instructional material for effective classroom transaction
- Design and develop an ICT integrated learning resource
- Critically reflect on the suitability of learning resources planned in teaching-learning
- Organise learning with active participation of learners - individually and in groups

Unit 1 Learning, Communication and Experience

Concept, components and types of communication, Classroom communication – an analysis of its facilitative and inhibitive nature
Role of media in communication process, teaching as interpersonal communication, a reflection on the factors of communication affecting learning and learner
Communicating through learning experiences – nature and role in effectiveness of teaching-learning.
Learning resources and the nature of experiences provided by them – extent of concreteness and directness of experiences provided through different media.
The nature of teacher student communication: verbal and non verbal

Unit 2 Learning Resources for Classroom Teaching

Meaning, purpose, steps in development, guidelines for use, and criteria of judging quality of the following resources
Print Resources: resources for communicating verbal experiences - text book, work book, case study and self instructional material
Audio Resources: resources for communicating audio experiences - educational radio broadcast and audio programmes – an analysis of their formats, strengths and limitations
Visual Resources: Resources for communicating visual experiences –
Non projected visual Resources: graph, map chart, poster, models and material – nature of experiences provided by them, their making and possibilities of using them as learning resources
Media selection, utilization and integration into teaching and learning – learning resources for different pedagogies: a classification of learning resources based on teaching objectives.

**Unit 3**  **Resources for Promoting Self Learning and Learning to Learn Skills**


Ways and means of promoting self-learning: organization, merits and demerits of Computer Assisted Instruction, personalized system of instruction, self-paced activity, learning activity packages, learning centers, mini courses, modular instruction, and programmed instruction.

Designing a self-learning material: principles and steps

Learning to learn skills – an analysis and teacher’s role in promoting them

**Unit 4**  **Classroom Learning Community as Learning Resource**

Learning as a social cultural process

Learning group as a resource for learning – understanding dynamics of a group, zone of proximal development

Variety of ways of organizing learning in groups - Meaning, scope, advantages and guidelines

Teacher’s role in building learning communities in a classroom through promotion of common goals, partnership, shared leadership, co-evolving and co-learning

Cooperation and competition as processes in group learning: possibilities in organizing co-operative and collaborative learning, peer coaching

Assessment of group learning

**Unit 5**  **Technology-enhanced Learning Resources**

ICT and Multimedia as technology-enhanced communication devices in teaching-learning: a comparative review of various learning resources

Interactive white board – its features and advantages

Computer as a learning resource for presentation, documentation, word processing, evaluation. Animation and other visual presentation options on a computer

Internet as an Information Resource. Evaluating information resources on the Internet

Emerging Internet trends and technologies for facilitating learning

Designing and Developing Technology-enhanced Learning Material

Changing roles and competencies of a teacher in technology enhanced learning

**Sessional Work**

Preparation of at least three teaching-learning resources from those mentioned in Unit 2

Planning and preparation of an ICT integrated presentation for secondary level

Identification and use of an internet resource for learning at the secondary level

Critical analysis of an existing learning resource

**References**


Internet Resources:
E learning India Website - http://elearning-india.com/

Course B5 Classroom Organisation and Management

Course Objectives
To enable students to
Understand importance of classroom management
Describe approaches to classroom management
Understand ways of preventing problems in managing a classroom
List physical resources and describe how to maintain them
Explain the role of teachers and the principal in ensuring a vibrant school climate

Unit 1 Classroom Organisation
Meaning of classroom organization – purposes. Concept of a smart classroom
Seating arrangements for various purposes
Display area and chalk board – other facilities such as OHP and Multimedia in a classroom
Characteristics of School climate – conducive, learner friendly, inclusive, vibrant, Relation between school policy and school climate

Unit 2 Physical Facilities in a School
Physical resources in a school - physical space (building) with adequate classroom space, adequate furniture, learning resources such as the labs, library, sports field, and staff rooms, rest rooms, etc.
Management of physical resources - Cleanliness, appropriate use of each with an intent or schedule
Streamlining ways of using the facilities: coordination, sharing

Unit 3 School Environment- Teacher Role
School as an institution with an environment of its own
Leadership style of the headmaster and its influence on teacher role performance
Visualize the requirements- procure, maintain and replenish with support of authorities
Teacher self assessment and accountability – importance of feedback
Factors affecting school environment - goodwill, acceptance, belongingness, openness, orderliness, and access, both among teachers and between teachers and students
Promoting self-esteem among students
Team work and transparency in functioning among teachers

Unit 4 Classroom Management
Classroom management – concept, need and approaches
Roles of students in a classroom – leader, follower and non participant
Role of a teacher in classroom management – relationship between leadership styles of a teacher and classroom discipline
Managing behavior problems in a classroom – Preventative, Supportive and Corrective.
Common mistakes in classroom behavior management. Establishment of routines, rules and procedures
Punishment and its legal implications – the rights of a child
Time management in a classroom – allocated time versus engaged time

Unit 5 Mechanisms for coordinated functioning in school
Planning: annual and long term; annual school calendar
Day to day schedules- time table, notifications, announcements
Monitoring for coordinated functioning: allotment, autonomy and accountability (internal and external)
Staff Meetings: forum for sharing, review and further planning
Regular, documentation of events and activities
Approaches to professional development of teachers in a school
Mechanisms that promote and hinder school-community and teacher-parent relationship

Sessional Work
Practice of various approaches to classroom management in simulated group work
Through small group work find out the various school systems in India and their relevance of the varied school systems
Review the school time-table planning and its effectiveness towards attaining academic expectations laid by National Curriculum Framework
Preparation of a plan of action to be implemented during the next three years for improving a functioning of school
Project work on analyzing good and weak points of school management in private, Government, large sized and small sized classroom

References
Bagley, Classroom Management, New York: Macmillan
Area C: PEDAGOGICAL CONTENT KNOWLEDGE

Course C1 and C2

Note: The courses for different pedagogical content knowledge will have to be worked out on the basis of the suggested course for Pedagogy of Mathematics presented below. The course structure for different subject specific pedagogy courses could suitably be developed under a combination of the following themes as illustrated in the Pedagogy of Mathematics course.

- Nature of the Subject
- Nature of Learning the Subject
- Curriculum Reforms in the Subject
- Planning for Organising Learning in the Subject
- Strategies for Learning Various Kinds of Subject Matter Contents
- Assessment of Learning in the Subject
- Learning Resources and their Organisation
- Contextual Issues in Learning the Subject Matter Content
- Research and Development in Teaching and Learning the Subject
- Professional Development of the Teacher of the Subject

Course C1: Pedagogy of Mathematics

Course Objectives
Upon completion of the course the students will have

understanding of the characteristics of Mathematical language and its role in Science
understanding of the nature of axiomatic method and mathematical proof
knowledge about aims and general objectives of teaching secondary school mathematics
ability to state specific objectives in behavioural terms with reference to concepts and generalizations
ability to teach different kinds of mathematical knowledge consistent with the logic of the subject
ability to evaluate learning of concepts and generalization
ability to identify difficulties in learning concepts and generalization and provide suitable remedial instruction
understanding of mathematical proof in the context of secondary school mathematics
understanding of nature, importance and strategies of problem-solving
ability to teach proof of theorem and solution of problem to develop relevant skills
ability to evaluate understanding of proof of a theorem and problem-solving skills.
understand the characteristics of and strategies for teaching exceptional children in mathematics
prepare and evaluate instructional materials in mathematics
appreciate the need for continuing education of mathematics teachers.

Course Content

Unit 1: Foundations of Mathematics Education

Nature of Mathematics
Meaning and dimensions of mathematics- the historical, scientific, language, artistic, recreational, activity and tool; the nature of mathematical propositions, mathematical proof, structure and logic, axiomatic method, history of mathematics with special emphasis on Indian mathematics

Learning of Mathematics
Perspectives on the psychology of learning and teaching of Mathematics- constructivism and enactivism, constructivism and a Vygotskian perspective, Zone of Proximal Development, Cognitive guided instruction, Cognitive apprenticeship, critical and realistic mathematics education, The van Hiele levels of geometric thinking, constructivism and spatial learning, cognitive modeling in spatial learning; implications for teaching

Curriculum Reforms in School Mathematics
Rationale, objectives, principles, designs and materials produced in the recent curricular reforms at the National and State levels and their critical appraisal

Need for Standards for school mathematics, Analysis of the aims and general objectives of teaching mathematics vis-à-vis the objectives of secondary education.

Unit 2: Strategies for Teaching of Different Kinds of Mathematical Knowledge

Teaching of Mathematical Concepts
Meaning and aspects of a concept, concept formation and concept assimilation, Moves in teaching a concept – defining, stating necessary and/or sufficient condition, giving example...
with/without a reason, Comparing and contrasting, giving counter example; non-example with/without a reason; Use of Concept Attainment and Advance Organizer Models, planning and implementation of strategies in teaching a concept.

Teaching of Mathematical Generalisations


Learning by discovery: Nature and purpose of learning by discovery, Inductive-, deductive – guided discovery strategies, Maxims for planning and conducting discovery strategies; planning of strategies involving either induction or deduction or both for constructing knowledge.

Learning mathematics in groups-issues in practice, Characteristics of students of high ability and unsuccessful, Group work and cooperative or collaborative strategies, Provision in heterogeneous classrooms

Unit 3: Teaching of Process in Mathematics

Teaching for Understanding Proof
Developing an intuition about the nature of proof – to make the transition from concrete thinking to more formal reasoning and abstract thinking as they progress from class to class, kinds of proof – direct proof, mathematical induction, proof by contradiction, proof by cases, the contra positive, and disproof by counter example.

Teaching Problem Solving in Mathematics
Definition of a problem, problem-solving and teaching problem-solving; importance of teaching problem solving, posing a problem, generating problem, modeling and model for problem-solving in algebra and geometry, Situation model for solving word problem, discovering or exploring various options for solving the problem i.e. developing heuristics, carrying out the plan and generating and extending a good problem,

Unit 4: Assessment of and for Mathematics Learning
Stating measurable objectives of teaching concepts, generalizations, problem solving and proof; construction of appropriate test items for assessing product and developmental(thinking skills) outcomes, Diagnosing basic causes for difficulties in learning concepts, generalizations, problem solving and proof; planning remedial teaching strategies based on the perceived causes, implementing and evaluating the strategies.
Construction of unit tests: Design and blue print; item construction; marking scheme; question-wise analysis. Construction of a mathematics question paper including general instruction with nature of options and overall coverage, and marking scheme.
Learning mathematics in groups-issues in practice, Characteristics of students of high ability and unsuccessful, Group work and cooperative or collaborative strategies, Provision in heterogeneous classrooms

Unit 5: Learning Resources in Mathematics
Meaning, types, functions, preparation and utilization of learning resources in Mathematics: Textbook, Models, Calculators and Computers, Graphic calculators, Logo in learning algebraic language and spatial reasoning, Cabri geometry as a mediating and as a cognitive tool, Geometer’s sketchpad, The Mathematics Laboratory – planning and organizing lab activities, Mathematics Outside the Classroom

Sessional Work:
Selecting the content, knowing the content to teach the content through identifying the pedagogical content knowledge
Stating instructional objectives for a mathematics lesson and identifying learning outcomes
Designing learning activities, appropriate strategies; selecting/preparing learning resources; assessment techniques and tools, etc.
Preparing lesson plans and unit plans
Analysis of a Unit / Chapter in mathematics textbook to identify the concepts, principles and processes and to understand the underlying mathematical structures
Stating specific objectives of teaching items of knowledge and processes reflecting goals of secondary school mathematics
Critical analysis of moves and teaching skills used in a lesson taught in a class or in a lesson plan
Planning and implementation of appropriate strategies for teaching mathematical concepts and generalizations in simulated and real classroom situations
Construction of appropriate test items to assess outcomes of learning mathematics
Identification of learning difficulties experienced by students in a lesson and evaluation of the remedial strategies adopted by the teacher
Observation and analysis of strategies followed in teaching proof and problem-solving in mathematics
Preparation of at least a lesson plan based on each of the strategies of teaching proof, and problem solving and practice of the strategies in simulated/real classroom situations
Construction of a unit test, a diagnostic test and an achievement test in mathematics
Planning and implementation of remedial instructional strategies based on an analysis of students’ responses to questions in a test
Review of research articles from journals on mathematics education related to teaching and learning of mathematics in heterogeneous classes
Development of a learning aid on a topic in mathematics and the procedure for using it
Case study of a gifted/ talented and an unsuccessful learner in the class
An appraisal of inservice programme for mathematics teachers organized by some nodal institutions in the area/region

The following topics in mathematics at secondary school level may provide subject matter inputs for explaining different pedagogical aspects of teaching mathematics and for
undertaking the sessional work. (As and when there are changes in topics to be taught in Mathematics at school level, the corresponding changes in topics should be made).

**Arithmetic:**
Development of number system; Modular Arithmetic, Ratio and proportion, time and work

**Algebra:**
Sets, Relations, Functions and Graphs, Systems of linear equations and their graphical solutions, quadratic equations, Linear inequations and graphical solutions and their applications, Theory of Indices and logarithms, Cyclic factorization, Factor theorem and Remainder Theorem, Matrices, Axioms of Groups and Fields with examples from Number Systems.

**Geometry:**
Axioms of Euclidian Geometry, Polygons and Circles, Congruency and similarity of triangles, Polyhedrons and Prisms, Introduction to transformation geometry of two dimensions (straight lines only), Construction of geometrical figures

**Trigonometry:**
Trigonometric ratios, simple identities and elementary problems on heights and distances, solution of simple trigonometric equation

**Statistics:**
Tabular and Graphical representation of Data, Measures of Central Tendency and Variability

**Computing:**
Computer devices flow charts and algorithms

**References:**
NCERT, A Textbook of Content-cum-Methodology of Teaching Mathematics, New Delhi: NCERT.
NCERT and State textbooks in Mathematics for Class VIII to X

Periodicals/Journals
Educational Studies in Mathematics
International Journal of Science and Mathematics Education
Journal of Research in Mathematics
Journal of Mathematics Teacher Education
Mathematics Education Research Journal
Mathematics Teaching
Research in Mathematics Education
School Science and Mathematics
Teaching Children Mathematics
The Mathematics Teacher

AREA D: SCHOOL BASED EXPERIENCES

D1 Initiatory School Experiences

Course Objective
This course aims at enabling student teachers to
Develop conceptual understandings about teaching and learning in school environment
Validate the theoretical understandings developed through various foundation and pedagogy courses
Understand and develop meaningful learning sequences appropriate to the specificity of different levels of learning
Mobilise appropriate resources for them.

Task Set 1 Initiatory Experiences
Reflections on one’s own School Experiences
Identifying Nurturants and Deterrents
Creating a ‘Big Picture’

Task Set 2 Recognise School as an ‘organised’ Endeavour
Functioning within a ‘structure’ with defined roles and responsibilities
Internal arrangements for coordinated functioning-time table, work allocation, differential responsibilities, planning and coordination procedures
External liaison – with parents, community, authorities.

Task Set 3 School as an ‘Enabling Learning Environment’
What ‘enables’ learning in schools?
Nature of school environment;
Learner perceptions; teacher perceptions; parental/community perceptions
Nature of inter relationships between and among learners-teachers; teachers; teacher-principal; parents-school; office-teachers-learners
Nature of ‘impact’ generated in school
Task Set 4 Classroom as a Learning Site
Kinds, modalities, learning resources used, student reactions and any relevant related points

Task Set 5 Design Learning Sequences in each of the two school subjects with all the details required; draw upon from the other earlier courses of study

Assessment of this course shall be done internally by the teacher education institution concerned

D2 Internship in Teaching

Course Objectives
On completion of the course the student teacher will be able to
Understand the content and pedagogical principles, issues and problems related to teaching
Acquire competencies and skills required for effective classroom teaching, class management and evaluation of student learning, organization of co-curricular activities, working with the community
Develop proper professional attitudes, values and interests
Understand the role of a teacher
Familiarize with the existing educational scenario of the respective states.

Organization
The internship will be organised for a continuous period of eight weeks in selected cooperating schools of the southern region. Necessary orientation to the cooperating teachers and headmasters will be organised at the Institute.

Activities
Getting acquainted with various aspects of cooperating schools- The student will teach 40 lessons in each method/subject. Out of 40 lessons in each subject, 20% will cater to the needs of slow learners, enrichment for talented children, in-group learning set up and on self-learning models
Participating in school activities and organisation of activities
Administering of diagnostic tests and identifying of learning difficulties
Conducting a case study/action research
Organizing curricular and co-curricular activities

Post-internship Activities
Follow-up activities (remedial and enrichment activities) to be taken up by the Institute
Finalization of records and reports related to curricular and co-curricular activities

Evaluation and Scheme of Assessment
Evaluation of performance during pre-internship will be done on the basis of assessment by institute supervisors, cooperating teachers, headmasters, records, reports and student activities/assignments. The scheme of assessment will be as follows.

<table>
<thead>
<tr>
<th>Area</th>
<th>Subject</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching</td>
<td>I</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>100</td>
</tr>
<tr>
<td>2. Record of Lesson Observation</td>
<td>I</td>
<td>10</td>
</tr>
</tbody>
</table>
(Ten in each method)

3. Evaluation Record
   Subject I  15
   Subject II 15

4. Preparation and presentation of teaching aids
   Subject I  15
   Subject II 15

5. Record of participation in school activities
   Subject I  10
   Subject II 10

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Total  300
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AREA E: ADD-ON COURSES

Course E1 Language Proficiency

Course Objectives
Upon completion of this course, the student teacher will:
Improve his/her proficiency in ‘reading’, ‘writing’, ‘thinking’, and ‘communicating’ in the language of instruction.
Develop an interest in reading
Improve his/her ability to understand instruction

Unit 1: Engaging with narrative and descriptive accounts
The selected texts could include stories or chapters from fiction, dramatic incidents, vivid descriptive accounts, or even well produced comic strip stories.

Suggested Activities:
Reading for comprehending and visualizing the account (individual + group reading and discussion/explanation)
Re-telling the account - in one’s own words/from different points of view (taking turns in a smaller group)
Narrating/describing a related account from one’s life experience (in front of a smaller group)
Discussion of characters and situations – sharing interpretations and points of view (in a smaller group)
Writing based on the text – eg. Summary of a scene, extrapolation of story, converting a situation into a dialogue etc. (individual task)

Unit 2: Engaging with popular subject-based expository writing
The selected texts could include articles, biographical writing, or extracts from popular non-fiction writing, with themes that are drawn from the subject areas of the student teachers (various sciences, mathematics, history, geography, literature/language pieces)

For this unit, the student teachers should work in groups divided according to their subjects, within which different texts could be read by different pairs of student teachers.

Suggested Activities:
Reading to extract overall meaning, information, subject knowledge (guided reading in pairs and simple note making)
Identifying major concepts and ideas involved and making notes on these in some schematic form - flow diagram, tree diagram, mind map etc (guided working in pairs)
Explaining the gist of the text/topic to others (in the larger subject group)
Attending to writing style, subject-specific vocabulary and ‘perspective’ or ‘reference frame’ in which different topics are presented – this will vary across subjects and texts, and requires some interpretative skills for ‘placing’ the context of each text (group discussion and sharing)
Writing a review or a summary of the text, with comments and opinions (individual task)

Unit 3: Engaging with journalistic writing

The selected texts would include newspaper or magazine articles on topics of contemporary interest. Student teachers can be grouped randomly for this unit.

Suggested Activities:
Using reading strategies such as scanning, skimming and reading for extracting information – as appropriate for initial reading of articles (guided individual task)
Analysis of structure of the article, identifying sub-headings, key words, sequencing of ideas, use of concrete details, illustrations and/or statistical representations etc (guided working in pairs)
Critical reading for attending to ‘framing’ of the article, point(s) of view presented, possible biases or slants (small group discussion)
Researching and writing articles on topics of local interest (working to produce a local interest magazine)

Unit 4: Engaging with subject-related reference books

For this unit, the student teachers should work in groups divided according to their subjects. Within these groups, pairs of student teachers would make a choice of a specific topic in their subject area which they could research from a set of available reference books. The focus of this unit is as much the learning of effective processes of reference research and its presentation, as the actual reading of the reference books themselves.

Sequence of activities:
Selecting the topic for research and articulating some guiding questions
Searching and locating relevant reference books (could be from a school library or the Institute library)
Scanning, skimming and extracting relevant information from the books by making notes
Collating notes and organizing information under various sub-headings
Planning a presentation – with display and oral components
Making presentations to whole subject group, fielding questions

Unit 5: Engaging with educational writing

Selected texts here could be drawn from the wide range of popular educational writing in the form of well-written essays, extracts or chapters from authors who deal with themes from education, schooling, teaching or learning. The writings selected should present a definite point of view or argument about some aspect of the above themes. Student teachers can be grouped randomly for this unit.

Suggested activities:
Reading for discerning the theme(s) and argument of the essay (guided reading – individually or in pairs)
Analyzing the structure of the argument: identifying main ideas, understanding topic sentences of paragraphs, supporting ideas and examples, terms used as connectors and transitions (guided small group discussion)
Discussion of the theme, sharing responses and points of view (small group discussion)
Writing a response paper (individually or in pairs)
Presentations of selected papers, questions and answers (large group)

**Course E2 ICT Skill Development**

**Objectives:**
On completions of the course, the student will be able to
- Describe a computer system;
- Describe the working of a computer;
- Open the windows operating system;
- Use word processing package;
- Appreciate the use of the word processing package in education;
- Acquire the skill of trouble shooting whenever there are problems in the working of computer.

**COURSE CONTENT:**

**Unit I: Computer Fundamentals**
Basic anatomy of computer; Introduction to Computing; What is computer; Characteristics of Computer – Speed, Storage, Accuracy, Versatile, Automation, Diligence; Classification of Computers, Types of Computer; Data Representation Within Computer; Basic Structure of Computer – input, output, process; Memory – ROM, RAM, CD ROM., Configuration of Computer – Selecting a PC

**Unit II: Input / Output Devices**
Input Devices – Keyboards, Mouse, Touch Screen, MICR, Light Pen, Joy Stick, Digitizer, Scanner; Output Devices – VDU, Printers, laser, Inkjet; Data storage devices – Hard disk, Compact disk, Optical disk, Pen drive and other devices

**Unit III: Operating System.**
Operating system – What is Operating system?, Types of Operating system, Relative Merit and Demerits; Computer Networks, Distributed Processing; Installation of Software, MS Windows- Introduction to Windows, Control Panel, File Manager, Accessories Write, Paint brush, Calendar, Card File, MS-Office, Overview.

**Unit IV: MS-Word**
Starting MS-Word: Creating a Documents; Opening a Documents; Saving a Documents; Editing, Formatting Text, Viewing Documents; Formatting Documents – Line spacing, Paragraph spacing, Setting Tab, Indenting Text, Aligning Text; Adding Header and Footers; Numbering Pages; Inserting a Tables; Proofing a Documents – Spell-check, automatic Spell-
check, Auto Text, Auto Correct; Printing a Documents; Mail Merge; Simple Trouble shooting; Use of MS-WORD in Education.

**Unit V: Spread Sheet – MS Excel**

Introduction to MS-Excel; Starting MS-Excel, Opening a Worksheet, Saving a Worksheet; Spreadsheet operations – Entering Numbers, text, Dates & Time, formulas; Editing the Worksheet – Deleting Cells, Rows, Columns; Inserting Cells, Rows, Columns, Printing a Worksheet; Formulas and Function – Entering Formulas, Absolute and Relative Reference of a Cell, Mixed Referencing, operating in Formulas, Using Text, Data and Time in a Formula, Array and Named Ranges; Preparing a Resume