Central University of Rajasthan
(Education for Sustainable Development)
NH-8 Bandarsindri, Kishangarh, District Ajmer, Rajasthan

School of Education

The three years M.Sc. B. Ed. Curriculum is meant for preparing teachers specifically for the senior secondary stage of school education. Hence, it can only include the knowledge domains appropriate for teaching at the senior secondary stage of Education. There exist two main models of teacher education programmes in India. The *long duration integrated model* wherein the subject matter knowledge is learnt alongside professional education courses and the *short duration model* in which the student would have already acquired a degree in the subject to be taught by him/her. This curriculum is meant for the first model.

While deciding on the courses and the structure, the domains of teachers' knowledge as outlined under the "Teacher Education Programmes: Curriculum" in the *International Encyclopaedia on Education* namely, 'subject matter knowledge', 'pedagogical knowledge' and 'pedagogical content knowledge' were considered. Of these knowledge domains, the subject matter knowledge required for teaching at the senior secondary level is presumed to be learnt at the secondary and the undergraduate programmes.

It is felt that a teacher to be a truly professional practitioner requires a conceptual understanding and appreciation of the above domains of knowledge and also the competence to implement the knowledge in specific contexts of teaching. In order that the teacher education programme to become a professional preparation programme, it should have a fair combination of theory and practice. Too much of theory would push the teacher education programme towards liberal arts orientation and hence prepare a disciplinarian rather than an efficient and effective practitioner. What the country needs today is *sound practitioner teacher* rather than those who merely verbalize theoretical knowledge. One way of achieving this would be to have a proper blending of reflections on theoretical basis and sufficient opportunities for practice followed by feedback.

The NCFTE (2009) has provided a suggestive framework for teacher education programmes. It is needless to say that a long duration programme of teacher education will be more comprehensive in its coverage of the suggested courses than a short duration programme, which needs to be selective. The committee has made deliberate attempts at incorporating as many courses from the NCFTE as possible, though in a reorganized structure. The courses in this curriculum are arranged under five areas namely, Foundations of Education, Pedagogical Knowledge, Pedagogical Content Knowledge, School Based Experiences and Add-on Courses instead of three areas as suggested in NCFTE.

In India, teacher education has been an isolated phenomenon in the field of higher Education which was mainly concentrating on primary and secondary school teachers. But it is lately realized by the Universities that in order to enhance quality in teacher education, they should integrate teacher education programmes with curricula across disciplines and faculties. This integration is also essential to develop teaching skills for those who opt for teaching profession in colleges and universities after completion of Ph.D. and Post-doctoral Research. This is the first attempt made by the Central University, Rajasthan with a clear focus on preparing teachers for Junior Colleges. From the next academic session 2014-15, the Central University of Rajasthan has proposed to introduce Integrated M.Sc., B.Ed. and Integrated M.Sc. programmes in the following subjects under the School of Education:

Integrated M.Sc., B.Ed. in the following subjects:

1 Physics
2 Chemistry
3 Mathematics
4 Economics

The integrated Programme proposed by the University is innovative and will be the unique Programme of its kind in the state of Rajasthan.

The salient features of the Integrated Programme:

- The three year integrated teacher education programme focuses on the theory of Education, pedagogical skills and subject content knowledge required for senior secondary level.
- The curriculum is open enough to incorporate the evolving pedagogical developments.
- The duration of Integrated M.Sc. B.Ed. Programme is of 3 Years (6 Semesters). In last two semesters of Integrated M.Sc., B.Ed. Programme (V and VI Semesters), the students will be placed in Senior Secondary Schools/Junior College for internship under the supervision of a mentor.
- The Programme offers Integrated M.Sc. B.Ed. (3 years duration) in four subjects (Mathematics, Physics, Chemistry and Economics)
- The Course structure is designed to prepare students for teaching profession in senior secondary schools.

Eligibility: B.Sc. Graduate

School of Education

As per the vision of The Central University of Rajasthan, various Schools of Studies have already been established by the University. Looking to the need for strengthening Education at all levels of Education in the state of Rajasthan, there is an urgent need for establishing School of Education to provide Integrated Innovative teacher education programmes.

The University Grants Commission has already indicated for the need of providing teacher education by the universities under the National Mission on Teachers and Teaching. The Central University of Rajasthan is keen to participate in this mission to strengthen Teacher Education by creating additional capacity for preparing qualified teachers.

The School of Education will have following Centres to perform various functions as proposed:

- Centre for Pre-service Teacher Education
- Centre for Curriculum Research Policy &Educational Development
- Centre for Learning & Pedagogic Studies
- Centre for Assessment and Evaluation
- Centre for the Professional Development of teachers and Teacher Educators
- Centre for Teachers Resource and Academic Support

The University is situated in the rural setting on National Highway–8 at Bandarsidri, Kishangarh of Ajmer district. It is surrounded by villages having primary, secondary and some Senior Secondary Schools. Therefore, the University has a scope of research in teacher education and developing learning models for applications and generating data for farming policy for educational development for rural areas.

Besides its core functions, the School Education will play a crucial role in extending training to various stakeholders of the University and nearby community:

- The School of Education will organize Orientation Programmes for Elementary, Secondary and Senior Secondary teachers and provide pedagogy, techniques and teaching skills to the teachers.
- The School of Education will provide opportunity to young faculty members of the University for training teaching techniques and skills.
- The Central University of Rajasthan is going to establish Community College from the next academic session 2014-15. Therefore, the school of Education will be helpful in providing service to the community, specially to the students who opt for some work for self-employment.
- The Central University of Rajasthan has already established a business Incubation Centre in the University. Therefore, young entrepreneurs may also have some training to extend their business in future.

The Central University of Rajasthan has created state-of-the-art infrastructure for post graduate programmes and research. Also, the University has teaching faculty for academic programmes. The proposed integrated programmes are designed with integration of various schools/departments. This will augment in depth interactions across the disciplines.

The syllabi of various Integrated Programmes have been prepared by the faculty and circulated to eminent subject experts throughout the country for their comments and suggestions. After incorporating their recommendations in the draft syllabi, these have been finalized by the committee of various disciplines/schools. This will lead to fruitful cross-disciplinary interactions and help the students to develop a contemporary holistic outlook.

After five years, the syllabus is revised to update and fulfil the recruitments preconditions in school education across the country.

The curriculum of Education of the 3 Years Int. M.Sc. B.Ed. Integrated Programme

Semester	Course Code	Credits	Paper	Title
I	EDU401 EDU402	03 03	Core Core	Basics of Education Senior Secondary Education in India: Status, Challenges and Strategies
II	EDU403 EDU404	03 03	Core Core	Learner and Learning Teaching Approaches and Strategies
III	EDU501 EDU502	03 04	Core Core	Learning Assessment Pedagogy of Science / Social Science
IV	EDU 503 EDU504	03 04	Core Core	Classroom Organization and Management Pedagogy of Mathematics/Physics/Chemistry/Economics
V	EDU601 EDU602 EDU 603	06 12 04	Core Core Core	School Internship-I (6 Weeks) School Internship & Teaching Practice-II andCase Study and Community Survey Reseach (14 Weeks) Action Research in Schools
Total Credits		48 Credits		

***Note: The Int M.Sc. B Ed programme is a bachelor programme of education and mastersprogramme of Science. Therefore, the Department of Education is introducing the six credits Education Project (literature review) as earlier was offered(04 credits) and continued for four years. Last years a sixteen (16) Credits Education Project was introduced. Now It has been decided in the faculty meeting that 16 credits project is theessentialrequirement of the Post Graduate Programme in Science, not B. Ed, as they might prefer their career in research in their respective discipline.**

CURRICULUM OF THE COURSES ON EDUCATION OF THE THREE-YEAR

M.Sc. B.Ed. INTEGRATED PROGRAMME

Specific Objectives for Education Components.

The curriculum is designed to achieve the following objectives of the M.ScB.Edto integrate content, pedagogy and technology-

1) The student-teacher understands the central concepts, tools of inquiry, and structure of the subjects and can create learning experiences that make these aspects of subject matter meaningful for students.
2) The student-teacher understands how the student learns and develop and can provide learning opportunities that support their intellectual, social and personal development.
3) The student understands how students differ in their approaches to learning and create instructional opportunities that are adapted to diverse learners.
4) The student-teacher understands and uses various instructional strategies to encourage students' critical thinking, problem-solving, and performance skills.
5) The student-teacher understands individual and group motivation and behaviour to create a learning environment that encourages positive social interaction, active engagement in learning and self-motivation.
6) The student-teacher uses effective verbal, non-verbal, ICT and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.
7) The student-teacher plans instruction based upon knowledge of the subject matter, students, the community and curriculum goals.
8) The student-teacher understands and uses formal and informal assessment strategies to evaluate and ensure the learner's continuous intellectual, social and physical development.
9) The student-teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and actively seeks opportunities to grow professionally.
10) The student-teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students, learning and wellbeing.

Modes of Learning Engagement

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

- **Lecture cum demonstrations**
- **Lecture-Discussion Session:** The teacher educator provides a platform for review of experiences, develops insights into the disciplinary knowledge base, and relates them to school realities.
- **Focussed small group discussions**
- **Focused reading and Reflection:** Student teachers would be led into focussed readings on various themes with questions involving reflections either individually or in small groups.

- **Observation-Documentation–Analysis:** Simulated and real school/community experiences would be arranged for the student teacher to observe, document in the form of record/journal/diary, and analyze to revisit their understandings or develop new insights.
- **Seminar:**Students will undertake thematic/topical study, prepare a write-up, and make a seminar presentation using ICT, followed by open house discussion to enhance their knowledge base and repertory skills in the presentation area.
- **Workshop:** A series of learning experiences in a given performance area would be provided in the form of a workshop engaging them in modelling-practice-feedback sequence to develop specified competencies required for a teacher
- **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.
- **Institution Based Practical:** Observing an experienced practitioner, planning-implementing-receiving feedback from peers and supervisor and reflection on one's performance would influence the development of insights, beliefs and attitudes necessary for a teacher. Learning experiences would be provided through several school/institution-based practicum to develop certain professional qualities and competencies. The conceptual and theoretical learning made under various courses would not transfer to the real classroom/school/institutional context unless one makes specific attempts at applying them in relevant contexts. The school /institution-based practical would also include planning and implementing learning experiences and strategies and reflecting on their appropriateness and effectiveness.

Modes of Assessment/ Evaluation - Self, Peers and External.

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 emphasis will be on a continuous and comprehensive evaluation. The modes of assessment would consist of

- **Self-assessment** with the help of various psychometric and educational assessment inventories.
- **Written tests and assignments** for assessing conceptual understandings and clarity
- **Products** of planning and preparation activities include lesson plan, unit plan, assessment tools, and learning resources.
- **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 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 students teacher of their school based experiences and project work related to different courses
- **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

Scheme of Assessment /Evaluation

The weightage suggested for formative and summative assessments per course are:

a) Theory- Terminal: 60 Marks
b) Sessional work: 40 Marks
c) **Practical's (School Internship etc.): 100 Marks**

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SEMESTER I

EDU501 BASICS OF EDUCATION

Credits:03 **Max Marks: 100 M**
Contact Hrs/ Week: 03 **Formative Assessment: 40%**
Summative Assessment:60 %

CourseLearning Outcomes
After completion of this course, student teachers will be able to:

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

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

Course Description:

This course provides a conceptual understanding of Education and its nature. The student-teachers will learn the status of Education as a discipline and its Role in school, family and society. They will know to analyze the various issues related to Education and understand the policies and reforms related to Education in India. There will be an insight in the learning of philosophical views on Education by western and Indian Philosophers. The student teachers will understand the Role of stakeholders in Education and the need forEducation internationally and compete globally.

Course Objectives:

1. To initiate the conceptual understanding of Education and its nature.
2. To comprehend the immerging trends in societies with its repercussions on Education.
3. To review the commissions and committees, the system and structure of the school education at different stages.
4. To enhance educational thinkers' ideas and understand the need for quality education to build the nation.

Prerequisites:

Student-teacher presupposes to have familiarity with the concept of Education. They must also have an idea about the structure and system of Education in India.

Course Content

I: Fundamentals of Education

Meaning of Education, Education as an evolving concept: ancient to present- Educational organizations in India, Education Policies and commissions: NEP-2020.Concepts in Education and their changing connotations: school, curriculum, teacher, learner, autonomy and control concerning the child and teacher. Shifts in the process of Education: Knowledge giving, didactic and constructivist interpretations. Expansions in modes of Education.

II:Aim of Education

Aims of Education-Education for National Development-Economic, Social and Individual, Education for Value development regarding Senior Secondary Stage. Changing aims of Education in the context of globalization. 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

III: Role of Education

Education as a system,Stages, forms, modes and streams of Education.Evolution of educational network over the past two centuries (the 1800s to 21st century. Role of state-centre: the need for a national system of Education,Predominant concerns of the education system– coordination, quality assurance and feasibility. Role of Stakeholders in Education-Parents, Community, Teachers, Students,Employer.Education as an instrument of social change, Socio-cultural influences on the aims and organization of Education. Social acceptabilityof educational policy andpractice. Emerging trends in societies and their repercussions on Education: globalization and internationalization of Education.

IV: Nature of knowledge

Nature of knowledge in Education: concepts, statements, educational implications, metaphors and theories. The emergingKnowledge base in Education.Differences between information, knowledge, belief, and truth.Ways of Knowing and sources of knowledge. Role of culture in Knowing, Transfer of knowledge into action and reflection on learning.Role of knower and known in knowledge transmission and construction.Forms of Knowledge and basis of categorization of knowledge. Facets of School Knowledge and relationship: local and universal; concrete and abstract; theoretical and practical; contextual and textual; school and out of school.

Mode of Transaction

Lecture-cum-discussions, Workshop Sessions, Assignments, Presentation by Students

Assignments

- Analyze 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

Assessment Method

Written examination and assignments, presentations, viva-voce etc.

Suggested Readings

- Agarwal, J.c. (2010).Teacher and Education in a Developing Society. Delhi; Vikash Publishing house.
- Anand, C.L. et al. (1983). Teacher and Education in Emerging in Indian Society, NCERT, New Delhi.
- Arulsamy.S. (2014). Educational Innovations and Management, Hyderabad: Neelkamal Publications.
- Arulsarmy, S. (2011). Philosophical and sociological perspectives on Education, New Delhi; Neelkamal Publications Pvt. Ltd.
- Bhatia K.K., (2011), Philosophical and sociological foundations of Education, New Delhi; Kalyani Publishers.

- Bigge, Morris, L. Educational Philosophies for Teachers. Columbus, USA: Charles Boston, USA: Allyn& Bacon.
- Brubacher, John. S. Modern Philosophies of Education. New York, USA: McGraw
- Dash, BN (2004). School Organisation, Administration and Management. New Delhi: Neelkamal Publications Pvt. Limited.
- Govt. of India (1986). National Policy on Education, Min. of HRD, New Delhi.Govt. Of India (1992).
- Programme of Action (NPE).Min of HRD. National Education policy 2020.
- Learning without Burden, Report of the National Advisory Committee.Education Act. Ministry of HRD, Department of Education, October 2004.
- Meenakshi Sundaram (2011). Educational Innovations and Management.Dindigul: Kaviyamala Publishers.
- Mukherji, SM, (1966). History of Education in India, Acharya Book Depot, Baroda
- Naik, J.P. & Syed, N., (1974). A Student's History of Education in India, MacMillan, New Delhi.
- National Policy on Education. 1986. Ministry of HRD, Department of Education, New Delhi.
- Seventh All India School Education Survey, NCERT: New Delhi. 2002
- UNDPA.Human Development Reports. New Delhi.
- NCERT (1986). School Education in India – Present Status and Future Needs, New Delhi.
- Oxford: Oxford University Press.
- Sharma, R. N. (2008). Education in the Emerging Indian Society. Delhi: Surjeet Publications.
- UNESCO. (2004) Education for All: The Quality Imperative. EFA Global Monitoring Report. Paris.

EDU502: SENIOR SECONDARY EDUCATION IN INDIA: STATUS, CHALLENGES AND STRATEGIES

Credits:03 **Max Marks: 100 M**
Contact Hrs/ Week: 03 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Learning Outcomes:

After completing this course, student-teachers will be able to:

- understand the concept, objectives and nature of senior secondary Education.
- explain the concept of universalization of Secondary Education;
- describe the RTE Act 2009 and its implication for universalization of Secondary Education;
- examine the status of Universalization of Secondary Education

- critically analyze the curricular and quality assurance concerns of National Curriculum Framework – 2005 on Secondary Education
- explain Initiatives by RashtriyaMadhyamikShikshaAbhiyan (RMSA) to improve the quality of secondary Education
- get acquainted with the quality indicators and strategies for assuring quality education in senior secondary schools.
- understand the interventions required to solve the problems and issues in imparting quality
- understand the roles and functions of different organizations and bodies in ensuring quality education in secondary schools
- explain the aspirations and qualities of teachers.
- describe the meaning of professional development of teachers
- explain significant issues related to the initial professional preparation of teachers;
- explain professional code of ethics and its importance for teachers;
- discuss the Role of teachers' organizations in the promotion of professionalism;

Program Outcomes (PO): This course covers the program outcomes of the Three Year Integrated M.Sc. B. Ed.

Course Level: Masters

Course Description:
This course provides an understandingof the concept, objectives and nature of senior secondary Education. Particular emphasis is placed on understanding interventions required to solve the problems and issues in imparting quality education in senior secondary schools. This course also helps to understand the roles and functions of different organizations and bodies in ensuring quality education in secondary schools.

Prerequisite
Any graduate student who enrolled in the B.Ed programme can study this course.

Course Objectives

The course will help student teachers to:

1. Understand the concept, objectives and nature of senior secondary Education.
2. Examine the status of the development of senior secondary Education in India
3. Understand the interventions required to solve the problems and issues in imparting quality education in senior secondary schools.
4. Understand the need for open and distance learning at the secondary level.

Course Content

I: About Senior Secondary Education

Concept, Nature and Purpose of Senior Secondary Education**:** Concept of senior secondary Education, aims, objectives, scope and nature of secondary Education,Universalization of Secondary Education (RashtriyaMadhyamikShikshaAbhiyan),Right to Education Act 2009 and its implications for universalization of Secondary Education (USE)

II: Status of Secondary Education

Current Status of Universalization of Secondary Education (USE) concerning access:enrollment, retention, and student learning achievement.The problem of teacher training, Role of NCTE and National Curriculum Framework for Teacher Education (NCFTE) 2009, Initiatives by RashtriyaMadhyamikShikshaAbhiyan (RMSA) to improve quality of secondary Education, Concerns of National Curriculum Framework (Secondary Education)– 2005,Open and distance learning concern to secondary Education: National Institute of Open Schooling – objectives and functions.

III: Quality Assurance in Secondary Education

Concept of Quality, Quality assurance in secondary Education, Quality Indicators for Secondary Education: Broad Quality Indicators and Specific Quality Indicators, Strategies for quality improvement in secondary schools, Roles and functions of different organizations and bodies in ensuring Quality Education at Senior Secondary Level—CBSE, State Board of Secondary Education, and Quality Council of India

IV: Teachers' Professional Preparation for Senior Secondary Education

Aspirations and qualities of teachers, Professional Development of Senior Secondary SchoolTeachers**.**Initial Professional Preparation, In-service Teacher Education Program for the enrichment of secondary teachers (DIET's, CTE's and IASE's etc.),Origin and development of teachers' organization in India and their role in fostering professionalism among teachers.

Mode of Transaction

Lecture-cum-discussions, Workshop Sessions, Assignments, Presentation by Students

Assignments

- Preparing status report on secondary Education in a chosen block/district concerning access, enrolment and dropout.
- Preparing a report on the GOI initiatives towardsuniversalization of Secondary Education in a chosenstate.
- Interview with teachers/students/parents odifferent schools and prepare a report on secondary education problems.
- Visit Open and distance learning centres at the secondary level and preparation of a report.

Assessment Method: Written examination and assignments

Suggestive Readings

- Aggarwal, J.C. (2005). The Progress of Education in free India. Arya Book Depot: New Delhi.
- Chaube, S.P., (2011). History and Problems of Indian Education. Agrawal Publications: Agra.
- Chopra, R.K.(1993).Status of Teachers in India, NCERT, New Delhi.

- Govt. of India (1953). Report of Secondary Education Commission, New Delhi.
- Govt. of India (1966).Indian Education Commission (1964-66) Report. New Delhi.
- Govt. of India (1986/1992). National Policy of Education, 1992, Modification and their POA's MHRD, Deptt. of Education.
- Malhotra, P.L. (1986). School Education in India: Present Status and Future Needs, NCERT, New Delhi.
- National Curriculum Framework on School Education, NCERT (2005).
- NCERT (1997) Code of Professional Ethics for Teachers.
- NCTE (2009). National Curriculum Framework for Teacher Education, New Delhi.

SEMESTER II

EDU503 LEARNER AND LEARNING

Credits:03 **Max Marks: 100 M**
Contact Hrs/ Week: 03 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Learning Outcomes:

After completing this course, student-teachers will be able to:

- illustrate the concept of development, its dimensions and factors that influences the process of an individual's development
- demonstrate the educational implications of developmental theories of Piaget, Kohlberg, Erickson, Havighurst and Gagne
- reflect on their implicit understanding of the nature and kinds of learning
- illustrate the different perspective of learning in reference and its pedagogical implications
- analyzed the Role of constructive view in the learning process and proposeda way to facilitate the construction of knowledge
- appreciate the critical Role of learner differences and contexts in making meanings, and draw out implications for schools and teachers

Program Outcomes (PO): This course covers the program outcomes of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

Course Description:

This course develops the foundational background in the prospective teacher to about the psychology of their learner. It creates understanding about different levels of development, internal and external factors affecting growth and development and its significance for the teacher. It covers the various critical developmental theories developed by Piaget, Kohlberg,

Erickson, Havighurst and Gagne. It further develops insight into the nature of the learning and the Role of teachers, parents, and schools in the management of the learning. The course develops the understanding of prospective teacher about the constructivist perspective. It will help them comprehend the difference in individual learners, different learning styles, and its implications for school and teachers.

Course Objectives

The coursewill helpstudent teachers to:

1. To analyzethe concepts of growth, its various dimensions and affecting factors.
2. To critically evaluate the stages and educational implications of Piaget, Kohlberg, Erickson, Havighurst and Gagne developmental theories of learning.
3. To elaborate on the nature of learning and learning thinking skills.
4. To exhibit the Role of teacher, parent and school in managing the learning process.
5. To explore the ways to facilitate the knowledge construction in constructivism.
6. To reflect the concept of learner difference and its implications for teachers and schools

Prerequisite

Any graduate student who enrolled in theB.Ed programme can study this course. They should have a general idea about the growth and development of learner and factors related to learning.

Course Content

I: Fundamentals of Growth and development

Concept of growth, development and maturation; Factors that influence individual development: Internal (innate, acquired) and external environment (Physical, socio-cultural, ecological, economic and technological); Nature and nurture; Educational implications for teachers for a holistic understanding of learner's development.

Dimensions and stages of individual development: physical, cognitive, language, affective, social and moral, their interrelationships and implications for teachers; Developmental theories and educational consequences of; Piaget (mental development), Erickson (psycho-social development), Kohlberg (moral development), Havighurst (developmental tasks of Adolescents) and Gagne (Hierarchy of Learning)

II: Nature of Learning and Influencing Factors

Nature of learning: learning as a process and learning as an outcome; factual, conceptual, procedural, principles and generalizations, rules, attitudes, values and skills (psychomotor); Learning thinking skills: Inductive, deductive, Scientific thinking, divergent-convergent, Analysis, Synthesis, Critical thinking; Perspectives of learning and implications for pedagogical principles -behaviouristic, cognitive, humanistic and constructivist; Factors Influencing Learning- Internal and External**;** Role of the teacher, parents, school and

community in addressing various factors influencing learning; Issue of media influences on learning – the Role of parents, teachers and School Management

III: Shift in Learning Environment

Paradigms shift inthe learning environment from teacher-centric to learner-centric approach; Distinctions between learning as 'construction of knowledge and learning as 'transmission and reception of knowledge'; Understanding processes that facilitate construction of knowledge: (i) experiential learning and reflection (ii) social mediation (iii) cognitive negotiability (iv) situated learning and cognitive apprenticeship and (v) metacognition; Facilitating Individual versus group learning: Self-learning, cooperative and collaborative learning.

IV: Understanding Learners

Understanding the psychology of individual differences; Understanding learners from multiple intelligences perspective with a focus on Gardner's theory of multiple intelligences and its educational implications; Differences in learners based on- predominant 'learning styles' and socio-cultural contexts;Understanding differences based on the range of cognitive abilities-learning difficulties, slow learners and dyslexics, intellectual deficiency, intellectual giftedness; Catering and attending to individual differences: grouping, individualizing instruction, guidance and counselling, bridge courses, enrichment activities, Infrastructural support

Mode of Transaction

Lectures, Seminars, PowerPoint Presentation, Peer-group discussion, Group work, Project

Assignments

The following activities are only suggestive. The teacher educator can formulate more;

- Critical analysis of classroom instruction in the light of the understandings developed in Units 2 & 3
- Anyone experiment on learning – the division of attention, memory, transfer of learning
- Case study of a learner with behaviour problem/talented child/a learning disabled child/a slow learner/a disadvantaged child
- Study of intelligence of at least five school children and relating it with achievement and other background factors
- Psychology Practical test:Intelligence test, learning style.

Assessment Method: Written examination and assignments, presentations, viva-voce etc.

Suggested Readings

- Benjafield, J.G. (1992). Cognition, Prentice-Hall, Englewood Cliffs.

- Brown, J.S., Collins A and Dugrid, P (1989).Situated Cognition and the Culture of Learning, Educational Researcher.
- Chauhan S. S (1988), Advanced Educational Psychology, Vikas Publishers, Delhi.
- Charles G. Morris, (1993). Understanding Psychology, Second edition, Prentice Hall of India Private Limited, New Delhi.
- Gagné, R. M. (1985) The Conditions of Learning and Theory of Instruction (4th edition). New York: Holt, Rinehart and Winston
- Gardner, Howard (1989). Frames of Mind.The Theory of Multiple Intelligences, Basic Books, New York.
- Jeanne, Ellis Ormrod. Educational Psychology: Developing Learners. Fourth Edition
- Jeffrey Arnett (2007), Adolescence and Emerging Adulthood: A Cultural Approach.(3rd. ed.). Upper Saddle River, NJ: Pearson.
- Mangal, S.K. (2013). Advanced Educational Psychology, Prentice-Hall of India, Delhi.
- Santrock, J. W. (2006). Educational Psychology (2nd ed.). New Delhi: Tata McGraw-Hill Publishing Company Limited.

EDU504 Teaching: Approaches and Strategies

Credits:03 **Max Marks: 100 M**
Contact Hrs/ Week: 03 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Outcomes

After completion of the course, the student teachers will be able to:

- Critically analyze the elements and process of teaching.
- Describe and demonstrate proficiency in teaching.
- Analyze the Role and function of the teacher in the pre-active phase,
- Identify and write the instructional objectives of different levels of Bloom's taxonomy.
- Adopt and apply the various strategies to make the teaching interactive and practical.
- To decide and imply Individualized Instruction, Small Group or Whole Group Instruction to facilitate the learning of students
- Critically evaluate the Role of the teacher as professionals.

Course Level: Mastery.

Course Description

This course will equip the prospective teachers with the necessary understanding and skills to be professional and competent teacher. First, the course develops a clear concept of teaching and its relation to learning. Second, it will help develop the theoretical understanding of teaching as an entirely systematic and planned activity. Third, the course develops the knowledge about pedagogical skills among student teachers to transform into proficient

teacher. Fourth, the course discussed the 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. Finally, it will be also helpful in developing the identity of the teacher as a professional.

Course Objectives

The course will help student teachers to:

1. Demonstrate his/her understanding of the Role of a teacher at different phases of instruction
2. Demonstrate his/her knowledge aboutother teaching skills and their Role in effective teaching
3. Transform prospective teachers into proficient professionals.
4. Exhibitsunderstanding about expectations and responsibilities of a teacher and the 'identity as a teacher.

Prerequisite

Any graduate student who enrolled inthe B.Edprogramme can study this course. However, they should have a general idea about teaching and an adequate understanding of the learning and learning factors.

Course Content

I: Understanding Teaching

Concept of Teaching and its relation to learning, planning elements, Assumptions underlying teaching, and their influence on teaching.Proficiency in teaching; meaningand the factorsaffecting- Knowledge, Skills, Competencies, teaching aptitude, teaching attitude, Experience and commitment. The Technological Pedagogical Content Knowledge (TPACK)
Teacher's professional identity- Social status, Impact of one's socialization processes, awareness and reflection of one's own shifting identities as 'student', 'student-teacher, and their influences on 'becoming a teacher.'

II: Teaching at Pre-Active Stage (Preparing Phase)

An analysis of teacher roles and functions in pre-active phase – visualizing; decision-making on outcomes, preparing and organization.
Visualizing learner readiness, characteristics, the subject matter content and interlinkages, the learning resources, approaches/strategies.Decision-making on outcomes: establishing general

instructional goals, specification of objectives and standards for learning, allocating instructional time for various activities/tasks – instructional time as a variable in education.Decision-making on instructional approaches and strategies as per need and suitability,Preparing for instruction: identifying and selecting available learning resources or developing the required learning resource

III: Teaching at Interactive stage (Implementing Phase)

An analysis of teacher roles and functions in the interactive phase - facilitating and managing to learn;Expository Strategy as an approach to teaching for understanding: Presentation-discussion-demonstration, the Advance Organizer Model; Inquiry Strategy as an approach to teaching for construction of knowledge and thinking skills: Concept Attainment/ Concept Formation, Inductive Thinking-Problem Based Learning/Project Based Learning;
Approaches to Organizing Learning - Approaches to Individualized Instruction: Programmed Instruction(Linear, Branching and mathetics).Small-Group and Whole Group Teaching approaches; Cooperative and Collaborative approaches to learning, Brainstorming, Role Play and Dramatization, Simulation and Games. A blended approach to teaching-learning and Scenario-based teaching-learning

IV: Teaching at Post Active stage(Assessment Phase)

An analysis of teacher roles and functions in the post-active phase: evaluation of pupil learning, assessment and generating feedback on all three phases of teaching. Criteria for evaluating teacher/ teaching effectiveness: Using learner achievement as feedback, student feedback. Criteria for professional development in teaching: self-reflection, observation and feedback by peers, teachers Performance appr0aisal system.Understanding teacher as a professional: expectations and responsibilities of a teacher, balancing personal aspirations and professional pressures,teacher as an autonomous functionary and a community member, developing an 'identity as a teacher.

Mode of Transaction: Lectures, Seminars, PowerPoint Presentation, Peer-group discussion, Group work, Assignments, Project, Simulated teaching.

Assignment

- Study of instructional practices concerningthe 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
- The practice of skills in a simulated situation.

Assessment Method: Written examination and assignments.

Suggestive Readings

- Bloom, B S., Englehart M D, Furst E J, Hill W H and Khrathwohl, D R (1956, 1964) Taxonomy 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
- Davis, Irork (1971) The Management of Learning, McGraw Hill, London
- Jangira N K and Ajit Singh (1982) Core Teaching Skills: The Microteaching Approach, NCERT, New Delhi
- Nagpure, V. (1992) Teacher Education at Secondary Level, Himalaya Publishing House, 'Ramdoot', DrBaleraoMarg, Girgaon, Bombay 400 004
- Passi, B K (1976) Becoming better teacher Micro-teaching Approach, SahityaMudranalaya, Aahmedabad
- Sharma, R A (1983) Technology of Teaching; International Publishing House, Meerut
- Kumar, K L (1996) Educational Technology; New Age International (P) Ltd Publishers, New Delhi
- Singh, LC Microteaching: Theory and Practical, National Psychological Corporation, Agra.

SEMESTER III

EDU505 LEARNING ASSESSMENT

Credits:03 **Max Marks: 100 M**
Contact Hrs/ Week: 03 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Outcomes

The student teachers will be able to:

- Understand the nature of assessment and evaluation and their Role in the teaching-learning process.
- Examine the contextual roles of different forms of assessment in schools
- Develop assessment tasks and tools to assess learners performance
- Examine the issues and concerns of assessment and evaluation practices in schools
- Understand the policy perspectives on examinations and evaluation and their implementation practices.
- Trace the technology-based assessment practices and other trends at the international level

Program Outcomes (PO): This course covers the program outcomesofthree Year Integrated M.Sc. B.Ed.

Course Level: Mastery

Course Description:
This course provides an understanding of assessment and evaluation, assessment practices and strategies to improve student learning. Particular emphasis is placed on assessment for, as, & of learning, assessment of cognitive, affective & performance-based learning, and authentic assessment practices. More importantly, this course trains the student teachers to construct various assessment tools and explore the technology-based new assessment trends.

Course Objectives

The student teachers would be acquainted;

1. To explain the basic concepts of assessment, measurement, appraisal, and evaluation.
2. To comprehend the associated concepts of assessment for, as & of learning.
3. To train the student teachers to construct various assessment tools for assessing cognitive, affective and performance-based learning.
4. To explore the various innovative assessment practices and strategies in school settings.
5. To make student teachers familiar with measures and practices for interpreting, reporting, and using assessment data to improve learning.
6. To discuss various issues and problems related to assessment and evaluation practices in school settings.

Prerequisites

Student teachers presuppose familiarity with examinations, tests, question papers, learners progress and reporting the result of learners achievement. They must also knowthe psychological principles involved in teaching and learning, various aspects of learner and learning, teaching strategies & approaches, and pedagogy.

Course Content

I: Basic of Assessment

Meaning of Assessment, Measurement, Tests, Examination, and Evaluation and their interrelationships.A paradigm shift in assessment. 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).

II: Various Forms of Assessment

Meaning of assessment for learning, assessment of learning and assessment as learning.Need for continuous, formative and diagnostic assessment, Assessment Tools- Use of Projects,

Assignments, Work sheets, Practical work, Performance-based activities,Assessment of Group Processes, Portfolio Assessment – its meaning, scope, and uses.

III: Assessment Procedure

Dimensions of learning: cognitive, affective and performance, Assessment of cognitive learning: Construction of a question paper, Consideration of what and why to assess (content and objectives), weightage to content, objectives, allocation of time; Preparation of a blue print, Construction/selection of items; Guidelines for construction of test items-different types –multiple choice/multiple responses, short answer, concise answer and essay type, Development of Rubrics, Analysis and Interpretation of Students' Performance. Use of Feedback for teachers, students, parents, and administrators.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.

IV: Trends in Assessment

Existing Practices: Unit tests, half- yearly and annual examinations, semester system, Issues and Problems: Marking Vs Grading, Objectivity Vs Subjectivity, Trends in assessment and evaluation: school-based assessment, Online examination, technology-based examinations.

Mode of Transaction:

Lecture-cum-discussions, Workshop Sessions, Assignments, Presentation by Students

Sessional Work

- Planning of achievement test and other assessment tools,
- School visits followed by a presentation on evaluation practices in schools
- Presentation of papers on issues and concerns/trends in assessment and evaluation
- Presentation of documents on examination and evaluation policies

Assessment Method: Written examination and assignments

Suggested Readings:

- Carr, J.F., & Harris, D.E. (2001).Succeeding with Standards: Linking Curriculum, Assessment, and Action Planning. Alexandria, VA, USA: Association for Supervision and Curriculum Development.
- Chauhan, C.P.S. (2019). Emerging Trends in Educational Evaluation. New Delhi,Neha Publishers & Distributors
- Crockett, Lee Watanabe & Churches, Andrew (2016). Mindful Assessment: The 6 Essential Fluencies of Innovative Learning (Teaching 21st Century Skills to Modern Learners), Bloomington, Indiana: Solution Tree Press.
- Gupta, Rainu (2016).Measurement, Evaluation and Assessment For Learning, New Delhi, Shipra Publication
- Guskey, T.R., & Bailey, J.M. (2001).Developing Grading and Reporting Systems for Student Learning. Thousand Oaks, CA. USA, Corwin Press.

- Mangal S.K. &Mangal, S. (2019).Assessment for Learning, New Delhi, PHI Learning Pvt. Ltd.
- Natrajan V. and Kulshreshta S.P. (1983).Assessing non-Scholastic Aspects-Learners Behaviour. New Delhi: Association of Indian Universities.
- Popham, James W. (2011).Classroom Assessment:What Teachers Need to Know, 6thEdition, Boston, MA USA, Allyn& Bacon.
- Singh A. K. (2019). Tests, Measurements and Research Methods in Behavioural Sciences. New Delhi, Bharti Bhawan Publisher.

EDU 506PEDAGOGY OF SCIENCE

Credits:04 **Max Marks: 100 M**
Contact Hrs/ Week: 04 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Learning outcome

The student teachers will be able to:

- Analyze a science curriculum based on norms and standards.
- Justify the current curricular trends, standard and foster a community of pre-service teachers that includes all students.
- Develop a pool of teaching-learning resources for teachers as professionals-organizations, websites, publications, etc.
- Prepare and Instructional plan and unit plans at different levels incorporating problem-solving and the use of manipulates and technology;
- Prepare, explain, and use both traditional and alternative ways of assessments;
- Demonstrate the use of various teaching and motivational strategies and apply them in their future classroom.

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

Course Description:

This course provides an understanding of the concept of pedagogy, andragogy, andheutagogy The student teachers will learn how to teach science concepts using different science teaching strategies. They will learn how to do pedagogical analysis and make unit plans and lesson plans according to recent approaches. The student teachers will understand using various teaching-learning resources, including ICT, for teaching science at the secondary and senior

secondary level. They will have a proper understanding of the assessment process of students learning.

Course Objectives

The student-teacher will envisage to;

1. Explain the basic concepts of pedagogy, andragogy, and heutagogy.
2. Describe the associated concepts of pedagogy of science.
3. Dothe pedagogical analysis, unit plans and lesson plans using various innovative approaches.
4. Improve students' teacher, planning, implementation & reflection in teaching, assessment & feedback practices of science.
5. Reflect, analysis and implement in a better way what they have learned from the course and how they hope to apply it in their future classroom.
6. Exhibit certain professional skills useful for teaching science.

Prerequisites:

Student teachers must have some familiarity with general science, various terms, concepts and theories of science. They must also knowthe psychological principles involved in teaching and learning, multiple aspects of learner and learning, and various teaching strategies & approaches.

Course Content

I: Fundamentals of Science discipline

Meaning, nature & scope of science; Historical evolution of science and scientific inquiries (Early science in east and west); Meaning and differences in scientific theory, laws, principles, concepts & facts.Development of Science in India: Landmarks and Contribution of Indian ScientistsCorrelation of Integrated Science with other Subjects.

II: Basic of Science Pedagogy

Concept of Pedagogy, Andragogy and Heutagogy. Pedagogical analysis of curriculum,Unit Plan, Instructional plan,Teaching skills, Teaching Strategies and approaches appropriate in science teaching

Unit III: Learning Resources

Meaning and types of learning resources, Significance, Preparation and utilization of learning resources in Science, Use of ICT to meet diverse needs of learners. Science laboratory – planning and organizing lab activities, science outside of the classroom.

Need and Relevance of Participation in Seminars, Workshops, Conferences, Symposia, and membership of Professional Organisations in Professional development of teachers.

Unit IV: Assessment

Assessment of learning, assessment for and as learning in science, Stating measurable objectives of teaching concepts, constructing appropriate test items for assessing product and developmental(thinking skills) outcomes, Diagnostic testing & remedial teaching. Construction of unit tests in science.

Mode of Transaction:

Lecture-cum-discussions, Workshop Sessions, Assignments, Presentation by Students

Assignments

- Reflection on Pedagogical analysis of science curriculum
- Assignments on Unit Planning and Lesson Planning.
- Identifying and conducting at least 05 experiments/demonstrations from classes 6-10 syllabus individually or in small groups
- Presentation of paper on the issues related to science pedagogy
- Construction of Unit tests.

Assessment Method: Written examination and assignments.

Suggested Readings:

- Albert, Paul (2017).Pedagogy of Physical Science. New Delhi: Blue Rose Publishers.
- Chauhan. SS (1985).Innovation in Teaching-Learning Process, New Delhi, Vikas Publishing House.
- Das, R.C (1985), Science Teaching in school, New Delhi, Sterling Publishers Pvt. Ltd.,
- Jangira. NK &Ajit Singh (1982).Core Teaching Skills, The Micro-teaching Approach, New Delhi: NCERT.
- Kochhar, SK (2003).Methods and Techniques of Teaching. New Delhi: Publishers Pvt.Ltd..
- Kohli, V.K. (1998).How to Teach Science. Ambala: Vivek Publishers.
- Kulshrestha, S.P., Singh, Gaya (2013).Teaching of Physical Science. Meerut: Raj Printers
- Mangal, S.K., &Mangal, Shubhra (2018).Pedagogy of Physical Sciences. Meerut: International Publishing House
- NCERT (2012) Source book on Assessment in Science Classes VIVIII. New Delhi.
- NCERT. (2006). Position paper on Teaching Of Science. New Delhi: NCERT
- NCF (2005). National Curriculum Framework. New Delhi: NCERT.
- Radha Mohan. (2016).Teaching of Physical Science. New Delhi: Neelkamal Publishers.
- Rajasekar, S. (2016).Methods of Teaching Physical Science. New Delhi: Neelkamal Publishers
- Sharma, R.C. (2006).Modern Science Teaching. New Delhi: Dhanpat Rai Publishing Company
- Siddiqui N.N. and Siddiqui M.N. (2000).Teaching of Science Today Tomorrow. New Delhi: Doaba House.

EDU 506 PEDAGOGY OF SOCIAL SCIENCE

Credits:03 **Max Marks: 100 M**
Contact Hrs/ Week: 03 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Learning outcome

The student teachers will be able to:

- analyze a social science curriculum based on norms and standards.
- Justify the current curricular trends, standard and foster a community of pre-service teachers that includes all students.
- Develop a pool of teaching-learning resources for teachers as professionals-organizations, websites, publications, etc.
- prepare and Instructional plan and unit plans at different levels incorporating problem-solving and the use of manipulates and technology;
- prepare, explain, and use both traditional and alternative ways of assessments;
- demonstrate the use of various teaching and motivational strategies and apply them in their future classroom.

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

Course Description:

This course provides an understanding of the concept of pedagogy, andragogy, and heutagogy The student teachers will learn how to teach social science concepts using different social science teaching strategies. They will learn how to do pedagogical analysis and make unit plans and lesson plans according to recent approaches. The student teachers will understand using various teaching-learning resources, including ICT, to teach social science at the secondary and senior secondary levels. They will have the proper understanding of the assessment process of students learning.

Course Objectives

The student-teacher will envisage to;

1. Explain the basic concepts of pedagogy, andragogy, and heutagogy.
2. Describe the associated concepts of pedagogy of social science.
3. Do the pedagogical analysis, unit plans and lesson plans using various innovative approaches.
4. Improve students' teacher, planning, implementation & reflection in teaching, assessment & feedback practices of social science.

5. Reflect, analysis and implement in a better way what they have learned from the course and how they hope to apply it in their future classroom.
6. Exhibit specific professional skills helpful in teaching social science.

Prerequisites:

Student teachers must have some familiarity with social science, various terms, concepts, and social science theories. They must also know the psychological principles involved in teaching and learning, multiple aspects of learner and learning, and various teaching strategies & approaches.

Course Content

I: Fundamentals of Social Science discipline

Understanding Social science: Meaning, nature and scope of social science, Emergence of social science discipline, social science as an academic discipline, distinguishing social science from natural sciences, correlation of social science with other subjects.

II: Basics of Social Science Pedagogy

Concept of Pedagogy, Andragogy and Heutagogy.Pedagogical analysis of curriculum, Unit Plan, Instructional plan, Teaching skills, Teaching Strategies and approaches appropriate in social science teaching

Unit III: Learning Resources

Meaning and types of learning resources, Significance, Preparation and utilization of learning resources in Social science, Use of ICT to meet diverse needs of learners. Experiments in Social science, planning and organizing social science activities through Eco Club

Need and Relevance of Participation in Seminars, Workshops, Conferences, Symposia, and membership of Professional Organisations, Professional development of teachers.

Unit IV: Assessment

Assessment of learning, assessment for and as learning in Social science, Stating measurable objectives of teaching concepts, constructing appropriate test items for assessing product and developmental(thinking skills) outcomes, Diagnostic testing & remedial teaching. Construction of unit tests in Social science.

Mode of Transaction:

Lecture-cum-discussions, Workshop Sessions, Assignments, Presentation by Students

Assignments

- Reflection on Pedagogical analysis of social science curriculum
- Assignments on Unit Planning and Lesson Planning.
- Identifying and conducting at least 05 experiments/demonstrations from classes 6-10 syllabus individually or in small groups
- Presentation of paper on the issues related to social science pedagogy
- Construction of Unit tests.

Assessment Method: Written examination and assignments.

Suggested Readings:

- Bawa, M.S. (ed.) (1996), Evaluation in Economics: Teachers' Handbook, Institute of Advanced
  Studies in Education, Department of Education, University of Delhi.
- Chauhan. SS (1985).Innovation in Teaching-Learning Process, New Delhi, Vikas Publishing House.
- Jangira. NK &Ajit Singh (1982).Core Teaching Skills, The Micro-teaching Approach, New Delhi: NCERT.
- Kochhar, SK (2003).Methods and Techniques of Teaching. New Delhi: Publishers Pvt.Ltd.
- NCF (2005). National Curriculum Framework. New Delhi: NCERT.
- Newlands, David (ed.) The Handbook for Economics Lecturers, http://www.economics.ltsn.ac.uk
- Srinivasan, M.V. Teaching Economics in India. New Delhi: NCERT
- Sivarajan, K &Faziluddin,A. (2003). Methodology of Teaching and Pedagogic Analysis. Calicut University, Calicut.

SEMESTER IV

EDU507 CLASSROOM ORGANIZATION AND SCHOOL MANAGEMENT

Credits:03 **Max Marks: 100 M**
Contact Hrs/ Week: 03 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Outcomes

The student teachers will be able to:

- Organize their classroom well
- Create a conducive classroom climate in their classes
- Identify the different leadership styles of any administrator

- Manage behaviours of the students in classrooms
- Manage time in the classroom effectively
- Prepare day to day schedules in schools
- Prepare time table
- Develop a good relationship with all stakeholders in the school

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

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Course Description:

This course will equip the student teachers with the different concepts of classroom organizationand school management. It develops them to understand the essential components of any classroom. This course teaches the student-teacherhow to create a healthy classroom climate and a conducive school environment. The teacher sets up specific rules and routines;this aspect is also dealt with in this course. It will make the student teachers aware of the different strategies they can use to manage the classroom effectively. The essential components of school organization, such as day to day schedules, collaborating with various agencies, documentation, professional learning communities etc., are also a necessary part of this course.

Course Objectives

The student teachers will enable to

- Visualizethe importance of classroom management
- Adopt ways of preventing problems in managing a classroom
- Create a conducive classroom climate
- Handlestudents with various classroom management strategies.
- To discuss the various tasks of effective school management

Prerequisites

The student-teacher should be aware of the classroom dynamics and the school's structure as an organization.

Course Content

I: Concept of Concept Organization

Classroom organization: Meaning Concept and Purpose Types: smart classroom, distributed classroom, virtual classroom, Organization of Space and learning resources; Display area and other facilities, Physical resources in a school (**(in consideration of inclusiveness)and its management**- physical space (building) with adequate classroom space, adequate furniture, learning resources such as the labs, library, sports field, and staff rooms, rest rooms, etc. Maintenance, Optimum utilization with intent or schedule, streamlining ways of using the

facilities: coordination, sharing, School climate: Concept and Characteristics (conducive, learner-friendly, inclusive, vibrant), Relation between school policy and school climate.

II: School Environment and it's Component

School Environment: concept (as an institution with an environment of its own), Factors affecting School Environment, Role of Headmaster:Administrative, Academic, Team Building, the Leadership style of the headmaster In constituting Conducive school Environment, Teacher Role: Promoting self-esteem among students, Teacher self-assessment and accountability (importance of feedback from different sources). Team Work.

III:Classroom management

Classroom management – concept, need and approaches Establishment of routines, rules and procedures, Roles of students in a classroom – leader, follower and non-participant, Role of a teacher in classroom management – the relationship between leadership styles of a teacher and classroom discipline, Managing behaviour problems in a classroom – Preventative, Supportive and Corrective. Common mistakes in classroom behaviour management.,Punishment and its legal implications – the rights of a child in the Context of WHO document and NCPCR, Time management in a classroom

Unit IV: School Functioning

Planning for the school: annual and long term; yearly school calendar, Day to day schedules-time table, notifications, announcements, Regular, documentation of events and activities, Collaborating with different agencies, Staff Meetings, a forum for sharing, review and further planning, Regular, documentation of events and activities, Professional Learning Communities (Online Communities) for teacher development, Mechanisms that promote the good relationship of school and teacher with parents and community.

Mode of transaction

Lecture, discussion, brainstorming

Assignment

- Visit a school and prepare a report on the physical infrastructure of that school.
- Conducting survey and identify the leadership style of the headmaster in schools andits impact on the staff members
- Go through the report of NCPCR (National Commission for protection for child rights) and prepare an essay on corporal punishment.
- Suggest a strategy for conducting an effective staff meeting
- 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
- Prepare a plan of action to be implemented during the next three years for improving the functioning of the school

- Project work on analyzing excellent and weak points of school management in private, Government, large-sized and small-sized classroom

Assessment Method: Written examination and assignments.

Suggested Readings:

- Alka, Kalra (1977) Efficient School Management and Role of Principals, APH Publishing Corporation, New Delhi.
- Bagley, Classroom Management, New York: Macmillan
- Buch, T (et al.) (1980) Approaches to School Management, Harper & Row Publishers, London.
- Campbell, R F., Corbally, J E and Nystrand, R O.(1983). Introduction to Educational Administration, (6thed), Allyn and Bacon, Inc., Boston Blumberg, A & Greenfield, w (1986) The effective principal, Allyn& Bacon, London.
- Govt of India (1992), Programme of Action, MHRD, New Delhi.
- Griffiths, J. Podirsky, M. Deakin, S. and Maxwell, S. (2002). Classroom Layout. URL: http://ehlt.flinders.edu.au/education/DLT/2002/environs/suyin/overview.html.
- Gupta, S K and Gupta S (1991) Educational Administration and Management, ManoramaPrakashan, Indore.
- Khan, M S (1990) Educational Administration, Asia, Publishing House, New Delhi.
- Marsh, C. (2000). Handbook for Beginning Teachers.Second Edition. Pearson Education: Australia.
- Naik, J P (1970) Institutional Planning, Asia Institute for Educational Planning and Administration, New Delhi.
- Sushi, T et al. (1980) Approaches to school management, London: Harper & Row.
- Vashist, Savita (Ed)(1998) Encyclopedia of School Education and Management, New Delhi, Kamal Publishing House.

EDU508 PEDAGOGY OF CHEMISTRY

Credits:04 **Max Marks: 100 M**
Contact Hrs/ Week: 04 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Outcomes:

The student-teacher will be able to;

- Understand the concept, meaning, nature and scope of chemistry and reforms in the school chemistry syllabus.
- Make use of pedagogical analysis of different topics of the chemistry syllabus at the senior secondary level.
- Understand the concept of year plan, unit plan and lesson plan, and use in the teaching-learning process.

- Incorporate various appropriate teaching-learning aids to make their teaching effective.
- Use various assessment and feedback techniques to improve teaching and learn in chemistry at the senior secondary level.
- Improve their planning, implementation & reflection in the teaching of Chemistry.

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

Course Description:

This course provides an understanding of pedagogical analysis of the chemistry syllabus at the senior secondary level. Special emphasis is placed on year planning, unit planning, lesson planning for the chemistry curriculum at the senior secondary level. More importantly, this course trains the student teachers in doing pedagogical analysis, content analysis, formulation of objectives, teaching-learning experiences with effective teaching approaches, and evaluation strategies.

Course Objectives

1. To understand the nature and historical development of Chemistry
2. To integrate the knowledge of Chemistry with the other school subject
3. To develop understanding about curriculum in Chemistry
4. To train the student teachers in making year plan, unit plans and lesson plans for transacting chemistry curriculum at the senior secondary level.
5. To comprehend the associated concepts of content analysis, specific and instructional objectives, teaching-learning experiences and assessment.
6. To train the student teachers to construct various assessment tools for assessing cognitive, affective and performance-based learning in chemistry.
7. To make student teachers familiar with measures and practices for interpreting, reporting, and using assessment data to improve learning.

Prerequisite

Student teachers must have basic knowledge of pedagogy, content analysis, various teaching strategies, approaches, teaching-learning aids, use of ICT in teaching, and other learning resources. In addition, they must be familiar with senior secondary school chemistry, terms, facts, principles, and theories. They must also have the basics knowledge of bloom taxonomy, psychological aspects of learning and learner, motivational & assessment strategies.

Content

I: Fundamental of Chemistry discipline

Meaning and Nature of Chemistry, Scope and Future Perspectives of Chemistry, Place of Chemistry in the school curriculum (Secondary and Senior Secondary), Correlation of Chemistry with other school subjects. Recent trends in Chemistry Curriculum, CHEM Study,

Aims and Objectives of teaching chemistry at school level and writing objectives in behavioural terms.

II: Planning Instruction

Objectives of Science Teaching and Learning (Chemistry at senior secondary level) concerning NCF(2005), Development of Learning Objectives: Anderson and Krathwohl's Taxonomy, How to write Objectives?
Meaning of concept, its characteristics, concept formation, assimilation methods, facilitative learning models- constructivist models: Bruner, Piaget, Gagne. Processes of understanding chemical concepts,Various approaches of teaching chemistry: Inductive approach, deductive approach, integrated approach, Science, Technology and Society approach, Micro approach, Mastery learning approach

Unit planning -its characteristics, Lesson Planning Various models of lesson planning in chemistry, factors affecting lesson planning. Various teaching skills, use of web- quest, on-line instruction, facilitative planning – enhancing student participation, construction of knowledge, feedback, co-operation, collaboration, student inquiry, showing plans and critique, micro instruction in simulation, Role play, use of social media's technology for posting instructional pictures (using processes) chem draw, chem sense.

III: Learning Resources

Meaning, types, functions, preparation, utilization of learning, resources in chemistry. Preparation of teaching aids and improvising instruments, online and open sources, text-book, work-book, journals, models, graphics, developing videos and use of mobile technology.

Organization of chemistry laboratory instrumentation – supply storage and maintenance, chemicals and reagents, their procurement, preservation and appropriate use, safety precautions, rules and regulation.
teaching chemistry in different settings – laboratory, filed experiments, mobile chemistry experiments laboratory programme – list of laboratory activities of recommended experiments, project work.

IV: Assessment

Assessment for learning, Assessment of learning and assessment as learning in chemistry
And constructing appropriate test items for assessing product and developmental (thinking skills) outcomes, diagnosing the courses for difficulties in learning concepts, process, understanding problems, generalizations, planning remedial teaching strategies, implementing evaluation strategies.
Unit tests: Design blueprint; item construction, marking scheme, question-wise analysis, prepare question paper in chemistry with general instruction on option and overall coverage and marking scheme of preparing question bank in chemistry.

Mode of Transaction:

Lecture-cum demonstration, model lesson planning, Model Teaching session, Role Playing, Simulation, Learning by Expositions, presentations, projects, seminars, focused reflection on

pedagogical analysis, collaborative & cooperative strategies, review and brainstorming session.

Assignments

- Doing pedagogical analysis of the different topics of senior secondary Chemistry.
- Design learning activities, appropriate strategies, selecting/preparing learning resources, assessment techniques and tools, etc.
- Prepare different models of lesson plans on various topics of senior secondary Chemistry.
- Construct of unit tests, diagnostic tests and achievement tests in Chemistry.
- Plan and implement remedial instructional strategies on different topics of senior secondary Chemistry.
- Develop learning aids on various chemistry topics and the procedure for using them in natural classroom settings.

Assessment Method: Written examinations and assignments, performing teaching sessions, presentations& reflections, viva-voce etc.

References:

1. Agarkar, S.C. (2005) An Introductory Course on School Science Education, Mumbai: HBCSE, TIFR.
2. Chemistry Part I, Textbook for class XII New Delhi: NCERT.
3. Chemistry Part I, Textbook for class XINew Delhi: NCERT.
4. Chemistry Part II, a Text book for class XI New Delhi: NCERT.
5. Chemistry Part II, Textbook for class XII New Delhi: NCERT.
6. Ediger Marlow and RaoBhaskara. (1996). Science and curriculum, New Delhi, Discovery Publishing House.
7. Gupta, S.K (1992) Teaching of Physical Science, New Delhi: Sterling Publishing House
8. Gupta, V.K. (1995) Teaching and Learning of Science and Technology, Vikas Publishing House Inc.
9. Khirwadkar Anjali (2003). Teaching of Chemistry Modern Method. New Delhi: Sarup& Son's
10. Malhotra, V. (2006) Methods of Teaching Chemistry, New Delhi: Crescent Publishing Corporation.
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12. Mani, R.S. (2001) New Approaches of Teaching Science, Resent Researches in Education Psychology, 6(I-II) 2001, 1-6.
13. Mani, R.S. (2012) Mobile Science and Technology Development of Skills in Science and Technology. Education and Society, (I), 2012

Websites Reference

1. http://www.unit planning.com It costs $400/- for loading the website. It is for sale also for $400/- by a single user at one time.
2. Resources for Teachers –Community Resources for Science http://www.crscience.org/resources for teachers
3. Free classroom lesson plans and unit plans for teachershttp://www.sholastic.com/teachers/lesson plans/free-lesson plans
4. How to write a unit plan 8 steps-wikihowhttp://www.wikihow.com>...>Teacher resources>
5. BBC-Schools-Teachers-Bang goes the theory: Lesson plan 9 http://www.bbc.co.uk>schoolsHome>Teachers>Bang goes the Theory.
6. Video clips from the lesson plan'conservation of mass in chemical reactions' for use in 11-14 science lessons.
7. Unit plan for the periodic table http://www.umanitoba.ca/.../S1-2%20-%20chemistry%20and %20periodic%20…
8. A lesson plan in chemistry phases of matter-slide share http://www.slideshare.net/.../a-lesson-plan-in-chemistry-phases-of-matter-9560... Oct 5,2011
9. High school (Grades 9-12) Chemistry activities, Lesson plans… http://www.sharemy lesson.com/high –school-chemistry-teaching –resources/ (these are provided free on proper request and authentication)
10. Richard, J.A.; Muthlish, N and Bond (2012) can blessed learning enhance teaching skills? University News, 50(11), March 12-18, 2012,1-6 http://www.en.wikipediachemistry
11. Mani, R.S. (2013) planning energy needs and energy technology in education, International Journal of Multidischemistry Sciences and Research, I(I), July-August 2013 206-212

EDU508PEDAGOGY OF ECONOMICS

Credits:04 **Max Marks: 100 M**
Contact Hrs/ Week: 04 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Learning outcomes

The student Teachers will be able to;

- Develop content analysis and frame instructional objectives based on Blooms Taxonomy
- Correlate economics subject with other subjects
- Use different methods of teaching in the school

- Develop and design various teaching aids
- Plan co-curricular activities for the teaching of economics
- Use community resources for effective teaching of economics
- Work for their professional development

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

Course Description:
This course will help to understand the nature of the subject they are going to teach in schools as future teachers. It will also give them an understanding of the objectives of teaching Economics at a higher secondary level. This course will provide an insight into the different approaches and methods of teaching economics. They will be able to decide the appropriate approach and teaching method for a particular topic. This course will also help the teacher know about the different teaching aids that can be prepared and used to make the teaching-learning effective and interesting. The use of ICT will also be deliberated for teaching the subject. The student teachers will know about different co-curricular activities and how they can incorporate them for teaching economics. A teacher also has to assess students; the various techniques of evaluation will be deliberated. They will also be acquainted with the qualities an economics teacher should possess and develop themselves professionally and keep themselves updated.

Course Objectives

1. Acquaint the students with the nature of Economics as a discipline and teach economics at the higher secondarystage.
2. Develop understanding about the correlation of Economics with othersubjects.
3. Develop an understanding of different types of planning and the importance ofcontent analysis.
4. Develop an understanding of the different methods and approaches forteaching Economics at the higher secondarystage.
5. Make them aware of the various co-curricular activities and community resources for the teaching of Economics
6. Acquaint them with the need and importance of evaluation in economics

Prerequisite
They should be aware of the school syllabus and have gone through the Economics textbooks of the state board and NCERT

Course Content

I: Nature of Economics discipline

Nature and Scope of Economicssubject,Importance of Economics as a discipline Higher

secondarylevel, Objectives of TeachingEconomics. Co-relation: Meaning, Importance of Co-relation, Types of Co-relation, Co-relation of Economics with other subjects

II: Planning Instruction

Blooms Taxonomy and writing Instructional objectives.ContentAnalysis: Need and importance of ContentAnalysis, Preparation of ContentAnalysis.Planning of teaching: Need and importance, Unit Plan, Lesson plan,Methods of teaching: Lecture, seminar, Discussion, Project, Problem-solving, Team Teaching, innovative ways of teaching economics,Audio Visual Aids: Meaning and Definition, Need and importance of AVAids, Types of AVAids, Points to be considered while preparing and using AVAid

ICT in teaching of Economics

III: Co-curricular activities and Community Resources

Co-Curricular Activities in TeachingofEconomics: Importance, Types, Principles of organizing Co-curricularActivities, Need & Importance of Co-curricularActivities, Role of Teacher in organizing Co-curricularActivities,**Field Trip: Importance, procedure & Role ofTeacher, Eco laboratory and Eco club,** Community resources for the teaching of Economics **IV:Assessm**

Assessment for, of and as learning in Economics, Construction of appropriate test items for assessing product and developmental (thinking skills) outcomes, diagnosing the Courses for difficulties in learning concepts, process, understanding problems, generalizations, planning remedial teaching strategies. Construction of unit tests: Design and blue print; item construction, marking scheme, question-wise analysis, construction of question paper in Economics

EconomicsTeacher: Qualities, Professional Growth of Economics Teacher, Meaning and importance of current affairs,Role of teacher in dealing with current affairs and controversial topics

Course Content

I: Economics: Nature, scope and correlation

Nature and Scope of Economicssubject,Importance of Economics as a discipline Higher secondarylevel, Objectives of TeachingEconomics. Co-relation: Meaning, Importance of Co-relation, Types of Co-relation, Co-relation of Economics with other subjects

Unit II: Planning of Teaching and Methods of teaching

Blooms Taxonomy and writing Instructional objectives.ContentAnalysis: Need and

importance of ContentAnalysis, Preparation of ContentAnalysis.Planning of teaching: Need and importance, Unit Plan, Lesson plan,Methods of teaching: Lecture, seminar, Discussion, Project, Problem-solving, Team Teaching, innovative ways of teaching economics

Unit III: Resources for Teaching of Economics

Audio-Visual Aids: Meaning and Definition, Need and importance of A.VAids, Types of A.VAids, Points to be considered while preparing and using A.VAid, Use of media,ICT in teaching of Economics

Text Books: Meaning of TextBook, Characteristics of Text Book, Need and Importance of TextBook, Qualities of a Good TextBook, Defects of Existing TextBook, Criteria forevaluation of Textbook,Community Resources for the teaching of economics

UNIT IV: Co-curricular activities and dealing with current issues in Economics

Co-Curricular Activities in TeachingofEconomics: Importance, Types, Principles of organizing Co-curricularActivities, Need & Importance of Co-curricularActivities, Role of Teacher in organizing Co-curricularActivities,Field Trip: Importance, procedure & Role ofTeacher,Meaning and importance of current affairs,Role of teacher in dealing with current affairs and controversial topics

Prerequisites:

They should be aware of the school syllabus and have gone through the Economics textbooks of the state board and NCERT

Mode of transaction

Lecture, Discussion, Workshop, Seminar

Assignment

1. Group work on the preparation of lesson plans inEconomics
2. Group work on contentAnalysis
3. Plan and organize the co-curricular activity for economics students
4. Prepare a teaching aid and ICT based lessons for teaching economics
5. Conducting Seminar in EconomicsClass.
6. Preparing a list of different projects which can be given tostudents
7. Preparing a unit test based on the blueprint

Assessment Method: Written examination and assignments.

Suggested Readings:

- Binning, A.C. & Binning, A.H. (-----). *Teaching Social Studies in Secondary Schools.* New York: McGraw Hill & Co.
- Chakravarty., &Sukhamong. (1987). *Teaching of Economics in India.* Bombay: Himalaya Publisher.

- Das, R.C. (1984). *Curriculum and Evaluation*. New Delhi: NCERT.
- Dhand. (1990). *Techniques of Teaching*. New Delhi: Ashish Publishing House.
- Kanwar, BS (1970). *Teaching of Economics*. Ludhiana: Prakash Brothers Educational Publishers.
- Norman, L. (Ed.). (1975). *Teaching Economics*.(2nd ed.).London: London Educational books.
- Rudramambe, B. (2004). *Methods of Teaching Economics*. New Delhi: Discovery Publishers. NCERT. (1974).*Teaching Units in Economics for High and Higher Secondary Stage*. NewDelhi: NCERT
- NCERT. (1975). *The Curriculum for the Ten Year School - A Framework*. New Delhi: NCERT.
- ---------- Yadhav,A.( ) *Teaching of Economics*. New Delhi: Anmol Publications Pvt.Ltd.

EDU508 PEDAGOGY OF MATHEMATICS

Credits:04 **Max Marks: 100 M**
Contact Hrs/ Week: 04 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Learningoutcomes:

The pre-service senior secondary mathematics teachers will be able to:

- describe the nature of thesenior secondary curriculum in the context of paradigm shifts.
- Examine teaching by analyzing classroom interactions and the interplay among mathematics, classroom tasks, teaching, and students' thinking and learning methods.
- Describe national and state math goals/standards and the math reform movement, and explain how they influence today's math curriculum;
- Develop professional dispositions for teaching through the demonstration of professional attitudes and work habits as well as the identification of professional organizations and professional development resources.
- Develop the own understanding of what mathematics is, how students learn mathematics, and how to analyze students' mathematical thinking,
- Develop a repertoire of teaching and assessment strategies that is congruent with students' beliefs regarding mathematics,
- Familiarize yourself with current curricular trends, and foster a community of learners that includes ALL students.
- Trace & use the technology-based pedagogy, assessment practices and other trends at the national & international level.
- Reflect on what they have learned from the course and how they hope to apply it in their future classroom.

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed. (Mathematics).

Course Level: Mastery

Course Description:
This course provides an understanding& skills related tothe pedagogy of Mathematics, assessment practices and teaching strategies to improve student mathematics learning. Special emphasis is placed on senior secondary school mathematics curriculum, the teaching of process in mathematics, strategies for teaching different kinds of mathematical knowledge, assessment for, as, & of Mathematics learning, teaching mathematics for All, and Learning Resources in Mathematics. More importantly, this course trains the student teachers to develop various teaching & motivational strategies according to the students' interest, nature of the content and available resources, construction of assessment tools used for Mathematics teaching, and the new trends of mathematics pedagogy.

Course Objectives:

1. To elucidate the nature of senior secondary curriculum in the context of paradigm shifts and national and state math goals/standards, math reform movement and explain how they influence today's math curriculum;
2. To comprehend the associated concepts of the teaching of Mathematics.
3. To explore what mathematics is, how students learn mathematics, and how to analyze students' mathematical thinking,
4. To organize, explain, and use both traditional and alternative assessments;
5. To motivate for professional development.
6. To train the student-teacher for a repertoire of teaching strategies that is compatible with students' beliefs regarding Mathematics,
7. To make familiar with current curricular trends and foster a community of learners that includes ALL students.
8. To discuss various issues and challenges related pedagogy of Mathematics.
9. Demonstrate the use of various teaching and motivational strategies and what they have learned from the course, and how they hope to apply it in their future classroom.

Prerequisite
Student teachers should be familiar with the nature, dimensions, curriculum and concepts of Mathematics at various level of Education. In addition, they must knowthe psychological principles involved in teaching and learning, multiple aspects of learner and learning, and various teaching strategies & approaches. And they must also have an understating of different and introductory information about the teaching-learning process.

Course Content

I: Nature of Mathematics Discipline

Meaning, Nature, scope and significance of Mathematics in the school curriculum, Aims and Objectives of teaching Mathematics at school level and writing objectives in behavioural terms, Correlation of Mathematics with other subjects, Curriculum reforms in senior

secondary school mathematics and the paradigm shifts, Mathematics curriculum construction: principles and types.

II: Instructional Strategies of Mathematics

Meaning and aspects of a concept, concept formation and concept assimilation, Use of Concept Attainment and Advance Organizer Models, planning and implementation of strategies in teaching a concept, Concept mapping, Mind mapping.

Difference between Methods & Techniques, Methods of Mathematics teaching: Learning by Exposition, Inductive-Deductive, Analytic-Synthetic, Project, Teaching Problem Solving in Mathematics, Learning by discovery, Laboratory Method, Activity-Based Method, Project Method, Teaching for understanding proof, Programmed Instruction, Learning to develop reasoning, meta-cognitive/reflective skills, Learning mathematics in groups-issues in practice, Group work and cooperative or collaborative strategies, Techniques of Teaching Mathematics: Oral, Written, Assignment, Drill Work & Supervised Study etc.

Characteristics of students of high ability and unsuccessful learners.Instructional strategies in heterogeneous classrooms, supplementary learning resources, use of technology to meet diverse needs of learners, institutional programmes for gifted in mathematics.

III: Assessment

Tools and Techniques of Assessment &Evaluation, 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 & achievement tests: Design and blueprint; item construction; marking scheme; question-wise analysis. Construction mathematics question paper, including general instruction with nature of options and overall coverage, and marking scheme.

IV: Teaching Skills and learning resources

Mathematics teaching at Micro and Macro level, Basic Skills of Teaching Mathematics: Introducing the Lesson, Probing Question, Explanation, Illustration with Examples. Stimulus Variation, Chalk Board Writing etc. Pedagogical & Content Analysis of Senior Secondary School Mathematics, Lesson planning-need and importance, various forms of lesson plans.Professional Development Concerns of Mathematics Teachers.

Meaning, types, functions, preparation and utilization of learning resources in Mathematics: Mathematics Textbook, Models; Integration of ICT with content and pedagogy; Calculators and Computers, Graphic calculators, Mathematics Learning Software (Cabri-geometry, Geometer's sketchpad etc.) The Mathematics Laboratory – planning and organizing lab activities, Mathematics outside the Classroom.

Mode of Transaction

Learning by Expositions, presentations, projects, seminars, Focused reading and reflection, collaborative & cooperative strategies, critical pedagogy, paraphrasing, reflection and

brainstorming session on educational studies related concepts, critical pedagogy, dialogue and open discussion and blended learning approach.

Assignments

- Stating instructional objectives & specific objectives for mathematics lessons and identifying learning outcomes
- Designing learning activities, appropriate strategies; selecting/preparing learning resources; assessment techniques and tools, etc.
- Critical analysis of moves and teaching skills used in a lesson taught in a class or in a lesson plan
- Planning, construction & implementation of appropriate strategies and appropriate test for teaching mathematical concepts and generalizations in simulated and real classroom situations
- 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
- Development of a teaching & learning aids on any topic in mathematics and the procedure for using it
- Demonstration on the basic Teaching Skills
- Case study of a gifted/ talented and an unsuccessful learner in the class Presentation of papers on issues related with science.
- Write a reflection on the course on what they have learned from the course and how they hope to apply it in their future classroom

Assessment Method: Written examination and assignments, presentations, viva-voce etc.

Suggested Readings:

- Aggarwal S. M. (2014) Course in Teaching of Modern Mathematics, New Delhi: Dhanpat Rai & Co.
- Anderson, L. W., &Krathwohl, D. R. (Eds.). (2000).A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives. New York: Longman
- Areekkuzhhiyil, Santosh (2011). Instructional Approaches: A Manual for Professional Practitioners,Hyderabad.
- Bhaitia, S.K. & Jindal Sonia (2016) A Textbook of Curriculum, Pedagogy & Evaluation, New Delhi: Paragon International Publisher.
- Bloom, S. (1956). Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain. New York: David McKay Co Inc.
- Chambers, Paul &Timlin, Robert (2019).Teaching Mathematics: Developing as a Reflective Secondary Teacher. New Delhi: Sage Publication.

- Das, SushmitaSutradhar (2012). A Study of Mathematics Curriculum for School Education since Last Two Decades and its Implementation (For Presentation on National Meet on Mathematics Celebration of National Year of Mathematics -2012, by NCERT, New Delhi w.e.f. 20th to 22nd Dec' 2012), retrieved from http://www.ncert.nic.in/pdf_files/17.Mathematics%20Curriculum%20for%20School%20Education%20_16.12.pdf
- Ghosh , Jonaki B (2012) Learning Mathematics in Secondary School: The Case of Mathematical Modelling Enabled by Technology, paper submitted for 12th International Congress on Mathematical Education, July, 2012, COEX, Seoul, Korea , retrieved from https://www.mathunion.org/fileadmin/ICMI/Conferences/ICME/ICME12/www.icme12.org/upload/submission/1854_F.pdf
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- James, Anice (2014) Teaching of Mathematics,New Delhi: Neel Kamal Publication.
- Kulshereshtha, A.K. (2017). Pedagogy of Mathematics, Meerut : R. Lall Publishers.
- Kumar Krishan, K.N. , Raju Bondu&Srilatha G. (2016),Pedagogy of Mathematics, New Delhi: Neelkamal publishers
- Mangal, S.K. (2012).Teaching of Mathematics, Ludhiana: Tandon Publications.
- Mukalel, Joseph C. (2015) Creative Approaches to Classroom Teaching, New Delhi: Discovery Publication.
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- NCERT (2006). Position Paper-National Focus Group on Teaching of Mathematics. New Delhi: NCERT.
- NCERT (2012). Pedagogy of Mathematics, New Delhi, NCERT.
- NCERT (2013). Pedagogy of Science, Part-I & II, New Delhi, NCERT.
- NCTM (2000).Principles and Standards for School Mathematics – An Overview. Reston, VA: National Council of Teachers of Mathematics.
- Nickson, M. (2006).Teaching and Learning Mathematics: A Guide to Recent Research and its Application. London: Continuum.
- Posamentier, A.S, Smith, B.S, &Stepelman, J. (2010).Teaching Secondary Mathematics: Techniques and Enrichment Units (8^{th} Ed.). Boston: Allyn& Bacon.
- Raju ,Bondu&Babu, M. Rajendranath (2016).Pedagogy of Mathematics, New Delhi: Neel Kamal Publication.
- Ramanujam, R. &Subramaniam K. [Ed.](2012)Mathematics Education in India Status and Outlook , Mumbai ; HomiBhabha Centre for Science Education, Tata Institute of Fundamental Research.

- Ramanujam, R. &Subramaniam K. [Ed.](2012)Mathematics Education in India Status and Outlook , Mumbai ; HomiBhabha Centre for Science Education, Tata Institute of Fundamental Research.

- Rao, N.M. (2016).A Manual of Mathematics Laboratory. New Delhi: Neelkamal Publications.
- Reeve, W.D. (1954). Mathematics for the Secondary School. New York: Holt, Rinehart and Winston, Inc.

- Russel, J. (2007).Teaching of Mathematics. New Delhi: Campus Books International.
- Shankaran and Gupta, H.N. (1984). Content- cum – Methodology of teaching Mathematics. New Delhi: NCERT.
- Yashpal Committee Report (1993). Learning Without Burden, New Delhi: Report of the National Advisory Committee Appointed by the Ministry of Human Resource Development.

Periodicals

- 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

EDU 508 PEDAGOGY OF PHYSICS

Credits:04 **Max Marks: 100 M**
Contact Hrs/ Week: 04 **Formative Assessment: 40%**
Summative Assessment:60 %

Course Learning Outcomes

The pre-service senior secondary physics teachers will be able to:

- understand the Physical concepts in their correct dimensions
- perceive the Physical Phenomenon with care and concern
- observesystematically, purposively measure, record and analyze physical data
- verify the facts, concepts, relations and theories of Physics
- frame unit plan and lesson plan based on various formats and implementit in classroomteaching
- perform experiments, demonstrate experiment and apply during classroom teaching
- ability to assess student's knowledge of physics in a systematic and practical way

Program Outcomes (PO): This course covers the program outcomes …….. of Three Year Integrated M.Sc. B. Ed.

Course Level: Mastery

Course Description: This course is a four-credit course. This course explainsthe significance of the physics curriculum of higher secondary level and how to analyze various concepts and principles in Physics, recent trends in physics curriculum and how physics is

related to other subjects. The student teachers learn the aims and objectives of teaching Physics and how to teach Physics concepts using different methods and strategies of teaching. They learn how to plan instruction and also learn how to assess the learning of students. They get a conceptual understanding of the learning resources in Physics. They will become professionals in Physics teaching.

Course Objectives

The student-teacher would be able to;

1. Understand the nature and development of Science Education
2. Integrate knowledge in physics with the other school subject
3. Develop an understanding about curriculum in Physics
4. Formulate the aims and objectives of teaching Physics
5. Understand the process of science and the role of the laboratory in the teaching-learningsituation
6. Appreciate various approaches of teaching-learning of physics
7. Use effectively different activities/ experiments / laboratory experiences for teaching- learning of physical science
8. Identify the concepts of physical science that are alternatively conceptualized by teachers and students in general
9. Explore different ways of creating learning situations considering learning needs and context of the learner and the relevant concept
10. Facilitate development of scientific attitudes in learners
11. Construct appropriate assessment tools for evaluating learning of physical science.

Course Content

I: Science, Society and Curriculum

Science and society- Physics, science and society; physics for the environment, health, peace and equity, science for sustainable development- Scientific attitude; Relating Physics education to the environment (natural environment, artefacts and people), technology and society and appreciating the issues at the interface of science, technology and society; Imbibing various values through teaching-learning of Science; Developing problem-solving skills; Correlation-concept, types, need and importance,correlation of Physics with other subjects; Curriculum -Meaning, Types, Organisation, Recent trends in physics curriculum, curriculum and syllabus; International union of physics, PSSC, Howard physics project, Project classroom 2000+Committees, Accelerated Science programme of ICASE, California physics instruction standards, Contributions of scientists- Einstein, Newton, C V Raman, APJ Abdul Kalam, G. Madhavan Nair, ECG Sudarshan, Kalpana Chawla, Sunitha Williams, Tessy Thomas

II: Aims and Objectives

Aims and Objectives of teaching physics- Nurturing curiosity, creativity and aesthetic sense in science (Secondary Stage)/ Physics (Higher Secondary stage); Aims and Objectives of teaching Physics concerning NCF(2005); Objective-based instruction-

Instructionalobjectives, Specific objectives, learningexperience, Evaluation; Taxonomy:Bloom's Taxonomy, 1956-Revised Bloom's Taxonomy(Anderson and Krawthwohl),1990-- Mc Cormack and Yager Taxonomy ofScience Education,1989 - Process skills- Technology Integrated Taxonomy, Peck andWilson,1999; Methods of teaching Physics; Techniques of teaching Physics

III: Learning Resources

Learning aids and improvised aids important in physics learning; Textbook, Handbook, Sourcebook, Workbook, Reference book, Supplementary reading materials- Qualities, importance; Community Based Teaching and Learning of Physics- Community based resources- Meaning, need and significance; Science library, Science laboratory; Field trips and excursions- Need and importance; Science fairs and exhibition-Significance, organization and evaluation; Science club-Significance, organization and activities; Informal learning contexts: Science Park, museum, historical Governmental and non-governmental movements and organizations for popularising science-Science Talent Search Programme, Science Olympiad, KVPY; E-Resources in Teaching and Learning of Physics

IV: Teaching and Assessment of Physics

Teaching skills,- Definitions and meaning, principles, steps, microteaching cycle-Link Practice; Planning for instruction- Stages of Planning instruction- year plan, unit plan, lesson plan- importance and steps in construction; Planning of lessons in constructivist format; Models of Teaching; 5 E model, 7 E model- a lesson plan based on each model; Achievement test-construction; Diagnostic test-construction, remedial instruction; Assessment of thinking skills- critical and creative thinking-assessment of process skills in Physics; Online assessment-meaning- Practicing of online tools, Professional development of Physics teacher.

Prerequisite

Student teachers must have some familiarity with various terms, concepts and theories ofPhysics. In addition, they must know about physical phenomena in the environment, available resources for the teaching of Physics, psychological principles involved in teaching and learning, various aspects of learner and learning, various teaching strategies & approaches, and various assessment methods.

Mode of Transaction:

Lecture-cum-discussions, Brainstorming sessions, Workshop Sessions, Assignments, Presentation by Students

Assignment

Workshop for preparation of lesson plan

Any four Assignments-

- Correlation of physics with other subjects

- Community-based resources available for the teaching of physics
- e-resources in teaching and learning of Physics
- Planning of activities relating Physics education to the environment
- Preparation of an innovative lesson plan
- Research and extension activities for professional growth of physics teacher

Assessment Method: Written examination and assignments.

Suggested Readings

Anderson, L. W., &Krathwohl, D. R. (Eds.). (2000). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. New York: Longman

Bloom, Benjamin Samuel. (1956). Taxonomy of Educational Objectives: The Classification of Educational Goals (Vol.1): Green, Longman.

Ediger, M. & Rao, D. (2003).Teaching Science in Elementary Schools.New Delhi: Discovery Publishing House.

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Krishna Kumar (2005). National Curriculum Framework, NCERT, MHRD, New Delhi: Govt. of India.

Mangal, S.K. &Mangal, Uma (2009).Essentials of Educational Technology. New Delhi: PHI Learning Pvt Ltd

Mariamma Mathew (2014): Teaching science for biological and physical sciences: NAS Publishers: Kerala

National Council of Educational Research and Training (2013).Pedagogy of physics-1.: New Delhi: Publication Division of NCERT

National Council of Educational Research and Training (2013). Pedagogy of physics-11.New Delhi:Publication Division of NCERT.

Olson, David & Torrance, Nancy (1996). The Handbook of Education and Human Development: Oxford, Blackwell Publishers.

Parthasarathy R. (2000). Paths of Innovators In Science, Engineering and Technology, East-West Books Pvt. Ltd. Editors, ERNET (2007): TheTorch Bearers of Indian Renaissance: Bangalore, Indian Institute of Science: Chennai.

RadhaMohan(2007). Innovative Science Teaching.New Delhi: Prentice-Hall of India Pvt. Ltd.

Tony Liversidge, Matt Cochrane, Bernard Kerfoot& Judith Thomas(2009). Teaching Science.New Delhi: Sage Publications India Pvt Ltd.