



AMITY UNIVERSITY

— UTTAR PRADESH —

FORMAT FOR COURSE CURRICULUM

Course Title: Teaching of science (B.ED)

Course Code: To be Decided Later

Credit Units:04

Level: UG

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
3	1	-	-	04

Course Objectives:

To enable the student teacher to :

- Understand the aims and objectives of teaching science at the secondary school level.
- Appreciate the role of science in day to day life and its relevance to modern society.
- Develop adequate skills to select and use different methods of teaching the content of sciences.
- Develop competencies for teaching sciences, organizing laboratory facilities and equipment and designing pupil centered teaching learning experiences
- Develop skills to design and use various evaluation tools to measure learner achievement in sciences.

Pre-requisites: Graduation/ Post graduation in any science discipline

Student Learning Outcomes:

After completion of the course students will be able to

- Analyse the nature of relationship of science with technology and society,
- Describe the basic nature and structure of science,
- Critically evaluate and apply key approaches and strategies of development of science curriculum ,
- demonstrate the application of some innovative experiments in the area of science education , and
- Formulate the different methods of evaluating students

Course Contents/Syllabus:

	Weightage (%)
Module I : Nature and significance of Science	10%
Descriptors/Topics <ul style="list-style-type: none"> • Nature and scope of science. • Science as an integrated area of study • Science and modern Indian society: Relationship of science and society. Impact of science with special reference to issues related with environment, industrialization and disarmament. • Uses and abuses of Science 	
Module II: Planning for Instruction	20%
Descriptors/Topics <ul style="list-style-type: none"> • Objective based teaching of Sciences: Aims and Objectives of teaching Science in schools at secondary level. • Writing Objectives in terms of behavioural outcomes • Designing of objective based learning outcomes in cognitive, affective & psychomotor domains. • Content analysis of a unit/lesson. • Lesson Planning – Importance and Basic steps. Planning lesson for an explanation, demonstration, numerical problem in teaching of Sciences. • Unit Planning – Format of a unit plan. • Pedagogical Analysis: Meaning and need. Guidelines for conducting pedagogical analysis 	
Module III : Approaches and Methods of teaching Sciences	20%
Descriptors/Topics <ul style="list-style-type: none"> • Process approach, Direct Experience approach, Inductive – Deductive approach, • Lecture cum Demonstration cum discussion method, Problem solving, Concept mapping, Programmed Instruction, Teaching, Seminar, Computer Assisted Learning (CAL) • Co-operative Learning, Project Method, Discovery and heuristics • Creating different situations of learning engagement: Group learning, individual learning, small group, peer coaching, cooperative learning, collaborative learning, situated/contextual learning • Constructivist Approach - salient features • Guided inquiry& self study 	
Module IV : Learning Resources in Science	

<p>Descriptors/Topics</p> <ul style="list-style-type: none"> • Teaching Aids – Need, Importance, Selection, use and classification of Teaching Aids based on type of experience, Audio visual aids, multimedia, computer, charts, models, smartboards and improvised apparatus • Importance of practical work & improvisation in Science Teaching. • The Science Laboratory – Planning, Organization of Lab, Storage, Record keeping and safety of scientific equipments • Aquarium, Vivarium and botanical garden – setting and maintaining • Museum and Zoological garden, planetarium , bio-spheres • Co-curricular Activities – Science Club, Science Exhibition, Scientific Excursions, Science Symposia, Science Quiz, Bulletin Board. • Science Text books – Characteristics & significance. • Journals and magazines of science education. 	<p>10%</p>
<p>Module V– Evaluation in Science Teaching And Reflective Teaching</p>	
<p>Descriptors/Topics</p> <ul style="list-style-type: none"> • Evaluation – Concept, nature and need, Norm referenced & Criterion referenced evaluation. • Comprehensive and continuous evaluation: Concept and significance, Historical background of CCE, Scholastic and Co-scholastic Assessment, Tools and Techniques for Formative and Summative Assessments • Diagnostic Test and Remedial Instructions • Finding solutions to problems through Action Research. • Action Research: Meaning need and scope • Steps in conducting action research • Maintaining Reflective Diary • Developing a teaching portfolio/Journal 	<p>20%</p>

Pedagogy for Course Delivery:

- Lectures and Demonstrations
 - Discussions
 - Debates
 - Excursions & Field Trips
- Case Studies

Lab/ Practical's details, if applicable: NA

List of Experiments: NA

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
100	0	70

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Class Test	Project	Portfolio	Attendance	End Term Examination
Weightage (%)	10	10	05	05	70

Lab/ Practical/ Studio Assessment: NA

Continuous Assessment/Internal Assessment					End Term Examination

Components (Drop down)							
Weightage (%)							

Text & References:

Methods of teaching physical science, M, Vanaja, (2005) Hyderabad, Neelkamal Publication

Methods of teaching physical science, Rajsekher, S., (2005) Hyderabad, Neelkamal Publication

Methods of teaching biological science, Ameeta, P.,(2004) Hyderabad, Neelkamal Publication

Practical aspects in Teaching of Science, Prasad, Janardan, (2006) New Delhi; Kaniska Publishers, Distributers

Teaching of Science in Secondary Schools, Mohanty, Susandhya, (2003) New Delhi; Deep and Deep Pub. Pvt. Ltd.

Science Education, Chandra, Ramesh,ed, (2007), Delhi, Kalpaz Publication

Organisational Structure of Science, Rao, Digumarti Bhaskara, (2001) New Delhi; Discovery Publishing House

Teaching of environmental science, Singh, Y.K. (2005), New Delhi, APH Pub. Corp.

Methods of Teaching Science, Sree, Kaudi Jaya, (2004) New Delhi, DPH

Modern methods of teaching science, Joshi, M.M., (2006) New Delhi, Cyber tech. Pub.

Methods of teaching home science, Seshaiyah, Ponnana Rama, (2004) New Delhi, DPH

Techniques of teaching environmentl Science, Swamy, Kovi Rama, (2006) New Delhi, Sonali Pub.

Science Education, Rao, V.K., (2004) New Delhi, APH Pub. Corp.

Teaching of Science, Kulshrestha,S.P, (2006) Meerut,Surya Publication

Teaching of Social Science, Sharma R.A,(2005) Meerut,Surya Publication

Innovative Science Teaching:for physical science teaching, Mohan,Radha,(2007) New Delhi,Prientice-Hall of Ind.

Achievement in Science, Rao, D.B & Latha,D.P, (2006)New Delhi,Discovery Publications

The Art of Teaching Science, Venvilae,G & Vaille, D,(2006) New Delhi,Viva Books

Teaching of Science, Kalra,Rajendra (2007) M, New Delhi,Shipra Publication

Science Teaching in Schools, Das, R.C, (2004) New Delhi,Sterling

Techniques of Teaching Science, Singh, Y. Chakradhana and Rao, D. Bhaskara, (2006) New Delhi,Sonali Publication

Encyclopaedia Of Teaching Of Science - Vol-1 (A-L), Dat-Poly, (2006) New Delhi, Sarup

Teaching of Science, Mangal, S.K, New Delhi, (2002) Arya Book Depot

Teaching of Physical Science , Kulshrestha, S.P, (2004)Meerut, Surya Publications

Teaching of Science, Singh,Uttam K. and Nayak, A. K., (2003) New Delhi, Commonwealth Publications

Innovative Science Teaching, Mohan, Radha, (2002) New Delhi, Prientice-Hall of India

Teaching of Science & Life Sciences, Sharma, L.M, (2003)New Delhi, Dhanpat Rai Publication

Teaching of Life Sciences, Mangal, S.K, (2003)New Delhi, Arya Book Depot

Teaching of Physical Sciences, Mangal, S.K, (2004)New Delhi, Arya Book Depot

Teaching of Life Sciences, Yadav, K, (2004)New Delhi, Anmol Publications

Teaching of Science, Siddiqui, M.H, (2005), New Delhi, APH Publishing House

Teaching of Biological Science, Mangal, S.K & Mangal, Shubhra, (2005) Meerut, International Publishing House

Teaching of Science & Life Sciences, Sharma, L. M., (2003) New Delhi, Dhanpat Rai Publication

Teaching of Science, Singh, Uttam Kumar & Nayak, A.K, (2005) New Delhi, Commonwealth Publications

Methods Of Teaching Science, Sree, K.J & Rao, D.Bhaskara, (2005) New Delhi, Discovery Publications

Teaching of Science, Kalra, Rajendra, M, (2003), New Delhi, Shipra Publications

Teaching of Science, Joshi, S. R., (2005) New Delhi, Ashish Publishing House

Teaching of Science, Dash, B.N., New Delhi (2004), Dominant Publishers

Science Education Today, Nanda, V.K (2004), New Delhi, Anmol Publications

Science Education, Rao, V.K., (2004) New Delhi, APH Publishing House

Teaching of science, Joshi, S.R., (2005) New Delhi, APH Publishing House

Science Education, Singh UK & Nayak AK (2005), New Delhi, Commonwealth Publications Publisher

Teaching of Science, Singh UK & Nayak AK (2005)., New Delhi, Commonwealth Publications Publisher

Teaching of Science, Joshi S.R, (2005). New Delhi, A.P.H. Publishing Corporation

Any other Study Material:

Archana Tomar (2005) **Teaching of Biology**, Kalpaz Publications, New Delhi.

Buxton.A Cory.(2010) **Teaching Science in Elementary and Middle School** Sage Publications, New Delhi.

Bybee.w.Roger (2010) **The Teaching of Science 21st Century Perspective** National Science Teachers Association, USA

Fensham P.J. (1994) **The content of Science: A constructive Approach to its Teaching and Learning**, The Falmer Press, Washington, D.C

Joshi S.R (2005) **Teaching of Science**, A.P.H Publishing Corpn., New Delhi

Lawson.E. Anton.(2010) **Teaching Inquiry Science in Middle School** Sage Publications, New Delhi

Leckstein, John Murrey (1988) **Basic Skills – Science**, John Murrey Boston

Mangal S.K & Shubhra (2005) **Teaching of Biological Sciences**, International Publishing House, Meerut

Narendra Vaidya (2003) **Science Teaching in Schools**, Deep & Deep Publishers, New Delhi

NCERT (1982) **Teaching Science in Secondary Schools**, NCERT, New Delhi.

NCERT (2006) **Science Text books of Classes**, NCERT, New Delhi

P. Ameetha (2004) **Methods of Teaching Biological Science**, Neelkamal, Hyderabad

Ralph, E. Martin & Others (1994) **Teaching Science for all Children**, Allyn and Bacon

Rao, V.K. (2004) **Science Education**, APH Publishing Corpn. New Delhi

Sharma L.M (2003) **Teaching of Science & Life Science**, Dhanpat Rai Publishers, New Delhi

Sharma, R.C (2005) **Modern Science Teaching**, Dhanpat Rai & Sons, Delhi.

Siddiqui .H.Mujibil(2007) **Teaching Science** Balaji offset, N.Delhi

Siddiqui N.N & Siddiqui M.N (1994) **Teaching of Science Today & Tomorrow**, Dooba House, Delhi

Tripathi Sahil (2004) **Teaching of Physical Science**, Dominant Publications, Delhi.

UNESCO (1966) **Source Book for Science Teaching**, UNESCO, Paris.

Vanaja M. (2006) **Teaching of Physical Science**, Neelkamal Publications, Hyderabad