

CENTRAL UNIVERSITY OF HARYANA
School of Education

Teaching Plan

Programme: B.Ed.

Year: I

Course Code-

Credit: 04

Name of Teacher: Ms. Meenakshi

Session: 2018-20

Semester-II

Course Title: Pedagogy of Life Science

Maximum Marks: 100

1. Teaching and Examination Scheme:

Teaching Scheme (Unit wise Division of Teaching hours)				Examination Scheme		
Unit No.	Lecture (L)	Tutorial (T)	(L+T)	Continuous Internal Assessment (CIA)	Tem End Examination TEE	Total Marks CIA+TEE
I	12	4	16	30 Marks	70 Marks	100 Marks
II	12	4	16			
III	12	4	16			
IV	12	4	16			
TOTAL	48	16	64			

Legends: L- Lecture, T-Tutorial/Teacher Guided Student Activity, P- Practicum/Practical.
CIA-Continuous Internal Assessment and TEE- Term End Examination

2. Unit-wise Teaching Plan:

Unit/Topic	Approximate Hours (Lecture/Tutorial/Practicum/Practical)	Content Outlines/Teaching Points	Teaching Strategies	Learning Outcomes	Evaluation Strategies	Suggested Learning Resources
UNIT I Concept, Nature, importance and Scope of Life Science. Various branches related to life Science: Mathematics, Geography, Chemistry, Physics, Statistics, Language	16 Hours	1.1 Concept, Nature, Importance and Scope of Life science 1.1.1 Concept of life Science. 1.1.2 Nature of life Science.		On completion of this unit the students will be able to: (i) Explain the concept and nature of life science.	Students' will prepare assignment and present their views/ideas on aims &	

<p>Aims and Objectives of teaching of Life Science at Primary, Secondary and Senior Secondary.</p> <p>Bloom’s Taxonomy of Educational Objectives: Traditional and Revised</p> <p>Writing Instructional Objectives: RCEM approach, Robert Magar and Robert Miller.</p>		<p>1.1.3 Importance of life science. 1.1.4 Scope of life science. 1.2 Various branches related to life science Mathematics, Geography, Chemistry, Physics, Statistics, Language. 1.3 Aims & Objectives of teaching of life science. 1.3.1 Aims of teaching of life science. 1.3.2 Objectives of teaching of life science At primary level. At secondary level At senior secondary level 1.4 Bloom’s Taxonomy of Educational objectives: Traditional & Revised. 1.4.1 Tradition bloom’s Taxonomy. 1.4.2 Revised Bloom taxonomy. 1.5 Writing Instructional Objectives: RCEM Approach, Robert Magar Approach, Robert Miller Approach. 1.5.1 Robert Mager Approach 1.5.2 Robert Miller Approach 1.5.3 RCEM Approach</p>	<p>Lecture Discussion</p>	<p>(ii) Describe the importance of to be taught life science in schools. (iii) Relate the life science with other school subjects. (iv) Explain the aims and objectives of teaching of life science at various level. (v) Differentiate between aims and objectives. (vi) Discuss on objectives of teaching of life science (vii) Review the objectives of teaching of life science recommended by NCF 2005. (viii) Describe the traditional and revised bloom’s taxonomy (ix) Understand difference between traditional and revised bloom’s taxonomy. (x) Familiarize with the RCEM, Robert Mager and Robert Miller approaches used to write instructional objectives of teaching. (xi) Familiarize with the various action verbs used in writing instructional objectives. (xii) Write instructional objectives of any topic Highlight the main recommendations of various commissions/policies in the context of secondary education after independence i.e. Secondary Education Commission (1952-53), Indian Education Commission (1964-66), National Policy on Education (1986), and Programme of Action (1992).</p>	<p>objectives of life science recommended in NCF-2005</p>	<ul style="list-style-type: none"> • Abraham, I., & Reiss, M. (2016). <i>Enhancing learning with effective practical science</i>(1st ed.). London: Bloomsbury Publishing House. • Agarwal, K. P., & Bain M. P. (2019). <i>Powerful teaching: unleash the science of learning</i>. New Jersey: Wiley publishing House. • Ahmad, J. (2014). <i>Teaching of biological science</i>. Delhi: PHI Learning Private Limited • Amit (2002). <i>Teaching of physical sciences</i>. New Delhi: Anmol Publications. • Gupta, S.K. (1985). <i>Teaching of physical science in secondary schools</i>. New Delhi: Sterling Publications (Pvt.) Limited. • Keith, S. T. (2018). <i>Master class in science teaching</i>(1st ed.). London: Bloomsbury Publishing House. • Kochhar, S.K. (2003). <i>Methods and techniques of teaching</i>. Sterling Publishers Pvt Limited. • Kohli, V.K. (1998): <i>How to Teach Science</i>. Ambala: Vivek Publishers. • Kulshrestha, S.P. & Singh, G. (2013). <i>Teaching of Physical Science</i>. Meerut: R. Lall Book Depot. • Kumar, R. & Kumar. (2000). <i>Teaching of science</i>. Mangal deep Publication. • Kumar, P & Ramaiah, K. & Sreedharacharyulu, K. (2016). <i>Pedagogy of Physical Science</i>. New Delhi: Neel Kamal Publications • Mangal, S.K. (1997). <i>Teaching of life science</i>. New Delhi: Arya Book Depot. • Nagaraju, M.T. V & Vanaja, M. (2015). <i>Methods of Teaching of Physical Science</i>. New Delhi: Neel Kamal Publications. • NCF (2005). <i>National curriculum framework</i>. New Delhi: NCERT. • NCERT (2006). <i>Position paper on teaching of science</i>. New Delhi: NCERT. • Pandey. (2003). <i>Major issues in science teaching</i>. New Delhi: Sumit Publications. • Prasad Janardan. (1999). <i>Practical aspects in teaching of science</i>. New Delhi: Kanishka Publication • Sharma, R.C. (2006). <i>Modern Science Teaching</i>. New Delhi: Dhanpat Rai Publishing Comp. • Soni, A. & Tyagi, A. S. (2002). <i>Biology Teaching</i>. Vinod Pustak Mandir. <p>Web sources:</p>
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<p>Unit-II Basic Teaching Skills, Methods and Lesson Planning</p> <p>Basic Teaching skill: Meaning, characteristics, and components of various teaching skills: (Introducing the Lesson, Skill of Reinforcement, Skill of Reinforcement, Skill of Questioning, Skill of Explaining, Illustration with Example, Skill of Board Writing, Stimulus Various Skill)</p> <p>Methods of Teaching: Lecture Method, Demonstration Method, Laboratory Method, Project Method, Heuristic Method, Constructivist Method: constructivism, 5 E's of Constructivism, Constructivist classroom and teacher.</p> <p>Lesson Plan: Meaning, Concept, Importance and construction.</p>		<p>1 Basic Teaching Skills</p> <p>1.1 Introducing the lesson: Meaning, Characteristics and components.</p> <p>1.2 Explaining Skill: Meaning, Characteristics and components</p> <p>1.3 Questioning Skill: Meaning, Characteristics and components</p> <p>1.4 Reinforcement Skill: Meaning, Characteristics and components</p> <p>1.5 Illustration with Example skill: Meaning, Characteristics and components</p> <p>1.6 Stimulus Variation Skill: Meaning, Characteristics and components</p> <p>1.7 Board writing Skill: Meaning, Characteristics and components</p> <p>2 Methods of Teaching</p> <p>2.1 Lecture Method:</p> <p>2.2 Demonstration Method</p> <p>2.3 Laboratory Method</p> <p>2.4 project Method</p> <p>2.5 Heuristic Method</p> <p>2.6 Constructivist Method</p> <p>2.7 Constructivism</p> <p>2.8 5 E's of Constructivism</p> <p>2.9 Constructivist classroom and Teacher.</p> <p>3 Lesson plan</p> <p>3.1 Meaning</p>	<p>On completion of this unit the students will be able to:</p> <p>(i) Familiarize with various teaching skill used in teaching.</p> <p>(ii) Understand the importance of teaching skills in teaching.</p> <p>(iii) Use these teaching skill to make their teaching effective.</p> <p>(iv) Prepare lesson plan based on various teaching skills.</p> <p>(v) Understand the</p> <p>(vi) Familiarize with various methods used in teaching such as lecture method, demonstration method, laboratory method, project method, constructivist method.</p> <p>(vii) Explain characteristics, merits and demerits of lecture method, demonstration method, laboratory method, project method, constructivist method</p>		<ul style="list-style-type: none"> • Abraham, I., & Reiss, M. (2016). <i>Enhancing learning with effective practical science</i>(1st ed.). London: Bloomsbury Publishing House. • Agarwal, K. P., & Bain M. P. (2019). <i>Powerful teaching: unleash the science of learning</i>. New Jersey: Wiley publishing House. • Ahmad, J. (2014). <i>Teaching of biological science</i>. Delhi: PHI Learning Private Limited • Amit (2002). <i>Teaching of physical sciences</i>. New Delhi: Anmol Publications. • Gupta, S.K. (1985). <i>Teaching of physical science in secondary schools</i>. New Delhi: Sterling Publications (Pvt.) Limited. • Keith, S. T. (2018). <i>Master class in science teaching</i>(1st ed.). London: Bloomsbury Publishing House. • Kochhar, S.K. (2003). <i>Methods and techniques of teaching</i>. Sterling Publishers Pvt Limited. • Kohli, V.K. (1998): <i>How to Teach Science</i>. Ambala: Vivek Publishers.

		<p>3.2 Concept 3.3 Importance 3.4 Construction of Lesson plan</p>	<p>(viii) Differentiate between various teaching methods. (ix) Distinguish between various teaching method. (x) Adopt a suitable and appropriate method in their teaching. (xi) Incorporate different methods in their teaching. (xii) Construct lesson plan in life science.</p>	<ul style="list-style-type: none"> • Kulshrestha, S.P. & Singh, G. (2013). <i>Teaching of Physical Science</i>. Meerut: R. Lall Book Depot. • Kumar, R. & Kumar. (2000). <i>Teaching of science</i>. Mangal deep Publication. • Kumar, P & Ramaiah, K. & Sreedharacharyulu, K. (2016). <i>Pedagogy of Physical Science</i>. New Delhi: Neel Kamal Publications • Mangal, S.K. (1997). <i>Teaching of life science</i>. New Delhi: Arya Book Depot. • Nagaraju, M.T. V & Vanaja, M. (2015). <i>Methods of Teaching of Physical Science</i>. New Delhi: Neel Kamal Publications. • NCF (2005). <i>National curriculum framework</i>. New Delhi: NCERT. • NCERT (2006). <i>Position paper on teaching of science</i>. New Delhi: NCERT. • Pandey. (2003). <i>Major issues in science teaching</i>. New Delhi: Sumit Publications. • Prasad Janardan. (1999). <i>Practical aspects in teaching of science</i>. New Delhi: Kanishka Publication • Sharma, R.C. (2006). <i>Modern Science Teaching</i>. New Delhi: Dhanpat Rai Publishing Comp. • Soni, A. & Tyagi, A. S. (2002). <i>Biology Teaching</i>. Vinod Pustak Mandir. <p>Web sources:</p> <p>http://www.ncert.nic.in/departments/nie/desm/publication/pdf/4decadepdf.pdf</p> <p>http://www.ncert.nic.in/departments/nie/desm/pdf/Guidelines_SLS_MEE%E2%80%93932017-18.pdf</p> <p>https://mhrd.gov.in/sites/upload_files/mhrd/files/upload_document/Guideline%20Science%20Exhibition-Guidelines.pdf</p> <p>http://www.ncert.nic.in/departments/nie/desm/publication/pdf/phy_sci_parti.pdf</p> <p>http://www.ncert.nic.in/departments/nie/desm/publication/pdf/phy_sci_partii.pdf</p>
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<http://www.ncert.nic.in/rightside/links/pdf/framework/english/nf2005.pdf>

Unit-III Co-Curricular Activities, Learning Resources
Co-curricular activities and learning resources: Science club, science exhibition, science fair science, museum, field trip, text book, internet, aquarium, vivarium and herbarium.

Instructional Aids: Meaning and concept, Importance, Types (Audio Aids, Visual Aids, Audio-Visual aids)

Science Laboratory and Practical work: Planning, Organization, and Equipping, Safety measures and Importance of Practical Work

Role, duties and qualities of life Science teacher.

- 3.1 Co-curricular activities**
 - 3.1.1 Science Club
 - 3.1.2 Science exhibition
 - 3.1.3 Science fair
 - 3.1.4 Museum
 - 3.1.5 field trip
- 3.2 Learning Resources**
 - 3.2.1 Text Book
 - 3.2.2 Internet
 - 3.2.3 Aquarium
 - 3.2.4 Vivarium
 - 3.2.5 Herbarium
- 3.3 Instructional Aids**
 - 3.3.1 Meaning and concept
 - 3.3.2 Types of Instructional aids
 - 3.3.2.1** Audio Aids
 - 3.3.2.2** Visual Aids
 - 3.3.2.3** Audio-Visual aids
 - 3.3.3 Importance of Instructional Aids
- 3.4 Science Laboratory and Practical work: Planning, Organization, and Equipping, Safety measures and Importance of Practical Work**
 - 3.4.1 Science laboratory Planning
 - 3.4.2 Organization of laboratory
 - 3.4.3 Equipping of laboratory
 - 3.4.4 Practical Work in laboratory
 - 3.4.5 Importance of practical work
 - 3.4.6 Safety measures in laboratory

- (i) Describe the co-curricular activities, learning resources, instructional aids, importance of practical work, safety measures to be adopted in science laboratory.
- (ii) Identify the co-curricular activities, learning resources, audio aids, visual aids. Audio-visual aids used in life science.
- (iii) List various co-curricular activities adopted in teaching learning process of life-science
- (iv) Understand the importance of science fair, field trip, museum, learning resources, audio aids, visual aids, and audio- visual aids.
- (v) Understand the setting and equipping of science laboratory
- (vi) Use appropriate instructional aids in their teaching.

- Abraham, I., & Reiss, M. (2016). *Enhancing learning with effective practical science*(1st ed.). London: Bloomsbury Publishing House.
- Agarwal, K. P., & Bain M. P. (2019). *Powerful teaching: unleash the science of learning*. New Jersey: Wiley publishing House.
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- Gupta, S.K. (1985). *Teaching of physical science in secondary schools*. New Delhi: Sterling Publications (Pvt.) Limited.
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- NCF (2005). *National curriculum framework*. New Delhi: NCERT.
- NCERT (2006). *Position paper on teaching of science*. New Delhi: NCERT.
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<p>Unit-IV Assessment and Evaluation in Life Science</p> <p>Assessment and Evaluation: Meaning, concept, importance, types (Formative and summative assessment)</p> <p>Devices and Techniques of Evaluation.</p> <p>Blue Print and Test: Definition, types of test (Achievement test, Teacher made test & Diagnostic Test) Characteristics of good test, Test items and importance.</p>	<p>4.1 Assessment and Evaluation: Meaning, concept, importance, types (Formative and summative assessment)</p> <p>4.1.1 Assessment: definition, concept, Importance, types (Formative & Summative Assessment)</p> <p>4.1.2 Evaluation: definition, concept, Importance (Formative & Summative Evaluation)</p> <p>4.1.3 Importance of Evaluation and assessment.</p> <p>4.2 Devices and Techniques of Evaluation.</p> <p>4.2.1 Devices of evaluation</p> <p>4.2.2 Techniques of evaluation</p> <p>4.3 Blue Print and Test: Definition, types of test (Achievement test, Teacher made</p>	<p>On completion of this unit would be teacher will be able to:</p> <p>(i) Explain the need and importance assessment and evaluation in teaching learning process.</p> <p>(ii) Differentiate between assessment and evaluation.</p> <p>(iii) Differentiate formative and summative assessment.</p> <p>(iv) Differentiate between formative and summative evaluation.</p> <p>(v) Know various techniques of evaluation.</p> <p>(vi) Illustrate of assessment and evaluation.</p> <p>(vii) Construct the blue print.</p> <p>(viii) Construct the test paper</p> <p>(ix)</p>	<ul style="list-style-type: none"> Abraham, I., & Reiss, M. (2016). <i>Enhancing learning with effective practical science</i>(1st ed.). London: Bloomsbury Publishing House. Agarwal, K. P., & Bain M. P. (2019). <i>Powerful teaching: unleash the science of learning</i>. New Jersey: Wiley publishing House. Ahmad, J. (2014). <i>Teaching of biological science</i>. Delhi: PHI Learning Private Limited Amit (2002). <i>Teaching of physical sciences</i>. New Delhi: Anmol Publications. Gupta, S.K. (1985). <i>Teaching of physical science in secondary schools</i>. New Delhi: Sterling Publications (Pvt.) Limited. 		

<p>Assessment of practical work in life science</p> <p>Action Research: Meaning, Steps and importance.</p>		<p>test & Diagnostic Test) Characteristics of good test, Test items and importance.</p> <p>4.3.1 Test: Definition of Test Types, (Achievement test, Teacher made test & Diagnostic Test), Characteristics of a good test Importance of test.</p> <p>4.3.2 Test Items</p> <p>4.3.3 Blue Print: Definition, Importance</p> <p>4.4 Assessment of Practical Work</p> <p>4.5 Action Research: Meaning, Steps and importance.</p> <p>4.5.1 Meaning of Action Research.</p> <p>4.5.2 Steps of Action Research.</p> <p>4.5.3 Importance of Action research in life science</p>			<ul style="list-style-type: none"> • Keith, S. T. (2018). <i>Master class in science teaching</i>(1st ed.). London: Bloomsbury Publishing House. • Kochhar, S.K. (2003). <i>Methods and techniques of teaching</i>. Sterling Publishers Pvt Limited. • Kohli, V.K. (1998): <i>How to Teach Science</i>. Ambala: Vivek Publishers. • Kulshrestha, S.P. & Singh, G. (2013). <i>Teaching of Physical Science</i>. Meerut: R. Lall Book Depot. • Kumar, R. & Kumar. (2000). <i>Teaching of science</i>. Mangal deep Publication. • Kumar, P & Ramaiah, K. & Sreedharacharyulu, K. (2016). <i>Pedagogy of Physical Science</i>. New Delhi: Neel Kamal Publications • Mangal, S.K. (1997). <i>Teaching of life science</i>. New Delhi: Arya Book Depot. • Nagaraju, M.T. V & Vanaja, M. (2015). <i>Methods of Teaching of Physical Science</i>. New Delhi: Neel Kamal Publications. • NCF (2005). <i>National curriculum framework</i>. New Delhi: NCERT. • NCERT (2006). <i>Position paper on teaching of science</i>. New Delhi: NCERT. • Pandey. (2003). <i>Major issues in science teaching</i>. New Delhi: Sumit Publications. • Prasad Janardan. (1999). <i>Practical aspects in teaching of science</i>. New Delhi: Kanishka Publication • Sharma, R.C. (2006). <i>Modern Science Teaching</i>. New Delhi: Dhanpat Rai Publishing Comp. • Soni, A. & Tyagi, A. S. (2002). <i>Biology Teaching</i>. Vinod Pustak Mandir. <p>Web sources:</p> <p>http://www.ncert.nic.in/departments/nie/desm/publication/pdf/4decadepdf.pdf</p> <p>http://www.ncert.nic.in/departments/nie/desm/pdf/Guidelines_SL_SMEE%E2%80%932017-18.pdf</p> <p>https://mhrd.gov.in/sites/upload_files/mhrd/files/upload_docume</p>
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<http://www.ncert.nic.in/rightside/links/pdf/framework/english/nf2005.pdf>

Internal Assessment Strategies:

The thirty marks have been allotted under Internal Assessment. The following activities will be executed under Internal Assessment:

S. No.	Activity	Mode	Weightage of Marks
1	Two Sessional tests will be conducted (Best one will be considered)	Written Test	10
2	Preparation of an assignment on various topics and it is followed by presentation in the classroom (Group activity) and any other activity under Practicum	Assignment & Presentation (PPT)	15
3	Percentage of attendance		05
Total Marks			30