# New CBCS Scheme of Instruction & Syllabi of B.Sc.B.Ed.

**(Zoology, Botany & Chemistry)**

(Effective from the academic session 2020- 2021)

## Invertis Institute of Education


## INVERTIS UNIVERSITY

Invertis Village, Bareilly-Lucknow NH-24,

Bareilly (U. P.) - 243123

India

## The Process for Establishing the PEO‟s

**The PEOs are established through the following process steps:**

**STEP 1: Vision and Mission of the Education Department are taken into consideration to interact with various stake holders,and establish the PEO's**

**STEP 2: The Head of the Department and other Senior Faculty prepares the draft version of PEOs and POs.**

**STEP 3: The draft version is discussed with stakeholders and their views are collected by the head of the department.**

**STEP 4: Head of the department reviews and analyzes the PEOs and POS and submits them to departmental committee.**

**STEP 5: The Departmental committee deliberates on the recommendations and freezes the PEOs and POs and submits them to the BOS for final approval.**

**The Program curriculum is designed by incorporating inputs from members of Board of Studies and Academic council and industry.**

- Inputs are also obtained from alumni and other stakeholders.
- Therefore, PEOs are established, checked for consistency with the mission statement of the department.

# PROGRAM OUTCOMES (POs): B.SC.B.Ed.

| Program Outcomes (POs) | | |
|---|---|---|
| **PO1** | **Educational knowledge** | Develop a conceptual understanding of the fundamental physical principles described above. |
| **PO2** | **Problem analysis** | Identify the relationship between the conceptual description of nature and its mathematical expression. |
| **PO3** | **Interpersonal Skills** | Examine the mathematical description of these principles that can be used to develop devices, structures, and technologies that are useful for mankind. |
| **PO4** | **Critical thinking Skills** | Use the mathematical description of these principles to develop problem solving skills that will benefit your future career. |
| **PO5** | **Conduct investigations of problems** | Students should be able to design, conduct, record, analyze, and explain the results of chemical experiments. |
| **PO6** | **Use of Modern tools** | Students should be able to use and/or identify methods by which to solve chemical problems. |
| **PO7** | **Ethics** | Develop understanding about teaching, pedagogy, school management and community involvement. |
| **PO8** | **Individual and teamwork** | Exhibit the leadership capacity and teamwork skills for decision making. |
| **PO9** | **Communication skill** | An ability to Demonstrate effective communication. |
| **PO10** | **Subject specification** | Make use of subject specific pedagogical knowledge and skills. |
| **PO11** | **Holistic Development** | Practice skills and approaches for enhancing understanding of subject matter knowledge to be taught in secondary schools. |
| **PO12** | **Life-long learning** | Build skills and abilities of communication, reflection, art, aesthetics, theatre, self expression and ICT. |

# CHOICE BASED CREDIT SYSTEM (CBCS)

The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in India. This will benefit the students to move across institutions within India to begin with and across countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point
Average (CGPA) based on student's performance in examinations, the UGC has formulated the guidelines to be followed.

**Outline of Choice Based Credit System:**

**1. Core Course:** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

**2. Elective Course:** Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

**2.1 Discipline Specific Elective (DSE) Course**: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).

**2.2 Dissertation/Project**: An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

**2.3 Generic Elective (GE) Course**: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective. P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

**3. Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course:** The Ability Enhancement (AE) Courses may be of two kinds: AE Compulsory Course (AECC) and AE Elective Course (AEEC). "AECC" courses are the courses
based upon the content that leads to Knowledge enhancement. They ((i) Environmental Science, (ii) English/MIL Communication) are mandatory for all disciplines. AEEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

**3.1** AE Compulsory Course (AECC): Environmental Science, English Communication/MIL Communication.

**3.2** AE Elective Course (AEEC): These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based instruction.

**Project work/Dissertation** is considered as a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A Project/Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.

# Structure of B.Sc.B.Ed. (ZBC) CBCS

| YEAR | SEMESTER | CORE COURSE | ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) | SKILL ENHANCEMENT COURSE (SEC) | DISCIPLINE SPECIFIC ELECTIVES (DSE) | GENERIC ELECTIVE (GE) |
|---|---|---|---|---|---|---|
| 1 | I | DSC 1A | | SEC 1 (BED151) | DSE-1 EDUCATIONAL TECHNOLOGY | |
| | | DSC 2A | AECC-1 | | | |
| | | DSC 3A | | | | |
| | | DSC 1A (P) | | | | |
| | | DSC 2A (P) | | | | |
| | | DSCE-1 | | | | |
| | II | DSC 1B | AECC-2 EPC-I | | DSE-2 ICT-I | GE-1 (SG/NSS/NCC) |
| | | DSC 2B | | | | |
| | | DSC 3B | | | | |
| | | DSC 1B (P) | | | | |
| | | DSC 2B (P) | | | | |
| | | DSCE-2 | | | | |
| 2 | III | DSC-1C | | SEC-2 (BED351) | DSE-3 SOCIOLOGICAL ASPECT | |
| | | DSC-2C | | | | |
| | | DSC-3C | | | | |
| | | DSC-1C(P) | | | | |
| | | DSC-2C(P) | | | | |
| | | DSCE-3 | | | | |
| | IV | DSC-1D | AECC-3 EPC-II | SEC-3 (BED461) | DSE-4 CLASSROOM MANAGEMENT | |
| | | DSC-2D | | | | |
| | | DSC-3D | | | | |
| | | DSC-1D(P) | | | | |
| | | DSC-2D(P) | | | | |
| | | DSCE-4 | | | | |
| 3 | V | DSC-1E | AECC-4 | SEC-4 (BED551) | DSE-5 ICT-II | GE-2 GEN. HINDI |
| | | DSC-2E | | | | |
| | | DSC-3E | | | | |
| | | DSC-1E(P) | | | | |
| | | DSC-2E(P) | | | | |
| | | DSCE-5 | | | | |
| | | DSCE-6 | | | | |
| | VI | DSC-1F | AECC-5 | SEC-5 (BED651) | | GE-3 OPEN EDUCATIONAL RESOURCES |
| | | DSC-2F | | | | |
| | | DSC-3F | | | | |
| | | DSC-1F(P) | | | | |
| | | DSC-2F(P) | | | | |
| | | DSCE-7 | | | | |
| | | DSCE-8 | | | | |
| 4 | VII | | | SEC-6 (BED771) | | |
| | VIII | DSCE-9 | AECC-6 (ENVIRONMENTAL.) | SEC-7 BED861 | DSE-6 BOD081/BOD082/BOD083 | GE-4 EDUCATIONAL ENTERPRENEURSHIP |
| | | DSCE-10 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | DSCE-11 | | | | |
| | | DSCE-12 | | | | |

## Details of Course under B.Sc.B.Ed (ZBC)

| Course | Theory+Practical | *Credits Theory+Tutorial |
|---|---|---|
| **Core Course (28 Papers)** | **2X6=12** | **4x24=96** |
| **Core Course Practical / Tutorial* (12 Papers)** | | **1X12=12** |
| **Discipline Specific Elective (06 Papers)** | | **2X3=6**<br>**3X1=3**<br>**4X2=8** |
| **Generic Elective/Interdisciplinary (03 papers)** | | **1X1=1**<br>**2X3=6** |
| **SKILL ENHANCEMENT COURSE (SEC) (06 papers)** | | **1X2=2**<br>**2X4=8**<br>**12X1=12** |
| **Ability Enhancement Courses**<br>**Ability Enhancement Compulsory Courses (4 Papers of 2 credit each)**<br>**(2 Papers of 1 credit each)**<br>**1X2=2** | | **2X4=8** |

| | |
|---|---|
| **TOTAL** | **176** |

# B.Sc.B.Ed. (ZBC)

(Effective from the academic session 2020-2021)

## I-SEMESTER

| S.No. | Course code | Course Title | Category | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BEB109 | Zoology I | DSC-1A | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 2 | BEB110 | Botany I | DSC-2A | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 3 | BEB106 | Chemistry I | DSC-3A | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 4 | BEB153 | Life Science Lab – I | DSC-1A(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 5 | BEB151 | Chemistry Lab – I | DSC 3A(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 6 | BED101 | Childhood and Growing Up | DSCE-1 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 7 | BED102 | English language and communication | AECC-1 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 8 | BED103 | Educational Technology | DSE-1 | 2 | 1 | 0 | 15 | 35 | 50 | 2 |
| 9 | BED151 | Practicum I: Psychology practical | SEC-1 | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| | | | Total | 16 | 5 | 6 | 180 | 395 | 575 | 23 |

## II-SEMESTER

| S.NO. | Course code | Course Title | Category | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BEB209 | Zoology II | DSC-1B | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 2 | BEB210 | Botany II | DSC-2B | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 3 | BEB206 | Chemistry II | DSC-3B | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 4 | BEB253 | Life Science Lab – II | DSC-1B(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 5 | BEB251 | Chemistry Lab – II | DSC-3B(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 6 | BED201 | Contemporary India And Education | DSCE-2 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 7 | BED203 | ICT in Education-I | DSE-2 | 2 | 1 | 0 | 15 | 35 | 50 | 2 |
| 8 | BED261 | EPC – I: Reading and Reflecting on Texts | AECC-2 | 2 | 1 | 0 | 15 | 35 | 50 | 2 |
| 9 | BED251 | SCOUT AND GUIDE CAMP/ NSS/NCC | GE-1 | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| | | | Total | 16 | 6 | 6 | 180 | 395 | 575 | 23 |

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## B.Sc.B.Ed. (ZBC)

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### III-SEMESTER

| S.NO. | Course code | Course Title | Category | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BEB309 | Zoology III | DSC-1C | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 2 | BEB310 | Botany III | DSC-2C | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 3 | BEB306 | Chemistry III | DSC-3C | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 4 | BEB353 | Life Science Lab – III | DSC-1C(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 5 | BEB351 | Chemistry Lab – III | DSC-3C(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 6 | BED301 | Development of Education System in India | DSCE-3 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 7 | BED302 | Sociological Aspect of Education | DSE-3 | 2 | 1 | 0 | 25 | 50 | 75 | 3 |
| 8 | BED351 | CULTURAL ACTIVITIES, SPORTS AND YOGA | SEC-2 | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| | | | TOTAL | 14 | 5 | 6 | 175 | 375 | 550 | 22 |

### IV-SEMESTER

| S.NO. | Course code | Course Title | Category | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BEB409 | Zoology IV | DSC-1D | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 2 | BEB410 | Botany IV | DSC-2D | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 3 | BEB406 | Chemistry IV | DSC-3D | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 4 | BEB453 | Life Science Lab – IV | DSC-1D(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 5 | BEB451 | Chemistry Lab-IV | DSC-3D(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 6 | BED401 | Teaching, Learning and Assessment | DSCE-4 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 7 | BED402 | Classroom Management | DSE-4 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 8 | BED461 | EPC – II: Educational Excursion / Art andCraft Workshop | AECC-3 | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 9 | BED471 | School Internship – I for School Observation (Two Week) | SEC-3 | 0 | 0 | 0 | 0 | 50 | 50 | 2 |
| | | | Total | 15 | 5 | 6 | 180 | 445 | 625 | 25 |

## B.Sc.B.Ed. (ZBC)

(Effective from the academic session 2020-2021)

### V-SEMESTER

| S.NO. | Course code | Course Title | Category | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BEB509 | Zoology –V | DSC-1E | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 2 | BEB510 | Botany -V | DSC-1E | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 3 | BEB506 | Chemistry-V | DSC-2E | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 4 | BEB553 | Life science Lab V | DSC-1E(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 5 | BEB551 | Chemistry Lab-V | DSC-2E(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 6 | BED503 | Pedagogy of Physical Science | DSCE-5 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 7 | BED505 | Pedagogy of Biological Science | DSCE-6 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 8 | BED506 | ICT in Education-II | DSE-5 | 2 | 1 | 0 | 15 | 35 | 50 | 2 |
| 9 | BED504 | GENERAL HINDI | GE-2 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 10 | BED551 | Practicum IV : Micro Teaching, Preparation of Teaching Aid & Construction of Achievement/ Diagnostic Test | SEC-4 | 0 | 0 | 4 | 15 | 35 | 50 | 2 |
| 11 | BED561 | EPC-III Drama and Art in Education | AECC-4 | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| | | | TOTAL | 17 | 4 | 10 | 195 | 430 | 625 | 25 |

### VI-SEMESTER

| S.NO. | Course code | Course Title | Category | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BEB609 | Zoology VI | DSC-1F | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 2 | BEB610 | Botany VI | DSC-1F | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 3 | BEB606 | Chemistry VI | DSC-2F | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 4 | BEB653 | Life Science Lab VI | DSC-1F(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 5 | BEB651 | Chemistry lab VI | DSC-2F(P) | 0 | 0 | 2 | 10 | 15 | 25 | 1 |
| 6 | BED603 | Pedagogy of Physical Science –II | DSCE-7 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 7 | BED605 | Pedagogy of biological Science-II | DSCE-8 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 8 | BED606 | Open Educational Resources | GE-3 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 9 | BED671 | School Internship – II for Practice Teaching (Two Week) | AECC-5 | 0 | 0 | 0 | 0 | 50 | 50 | 2 |
| 10 | BED651 | Practicum V : Workshop on Preparation forTeaching & Simulation Teaching | SEC-5 | 0 | 0 | 2 | 50 | 0 | 50 | 2 |
| | | | TOTAL | 17 | 3 | 4 | 205 | 395 | 600 | 24 |

**B.Sc.B.Ed. (ZBC)**

(Effective from the academic session 2020-2021

## Semester VII

| Sr. No. | CODE | Course Title | CATEGORY | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BED771 | SEC | SEC-6 | 0 | 0 | 0 | 50 | 250 | 300 | 12 |
| | | | TOTAL | 0 | 0 | 0 | 50 | 250 | 300 | 12 |

## Semester VIII

| Sr. No. | CODE | Course Title | CATEGORY | L | T | P | CA | EE | TOTAL | CREDIT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BED801 | Inclusive Education | DSCE-9 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 2 | BEB803 | Gender, School & Society | DSCE-10 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 3 | BEB804 | Educational Measurement & Evaluation | DSCE-11 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 4 | BED805 | Curriculum Development | DSCE-12 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 5 | BOD081/BOD082 /BOD083 | DSE-6 | DSE-6 | 3 | 1 | 0 | 30 | 70 | 100 | 4 |
| 6 | BED802 | Environment Education | AECC-6 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| 7 | BED861 | SEC-7 | SEC-7 | 0 | 0 | 2 | 0 | 0 | 50 | 2 |
| 8 | BED806 | EDUCATIONAL ENTERPRENUERSHIP | GE-4 | 2 | 0 | 0 | 15 | 35 | 50 | 2 |
| | | | TOTAL | 17 | 3 | 2 | 150 | 350 | 550 | 22 |

**B.Sc.B.Ed. (ZBC)**

(Effective from the academic session 2020-2021)

# Core Courses-1

| S.NO. | SUBJECT | |
|---|---|---|
| | THEORY | PRACTICAL |
| 1 | Basics of inorganic Chemistry1 | Life Science Lab – I |
| 2 | Non-Chordate and Cell Biology | Chemistry Lab- I |
| 3 | Diversity of Viruses, Bacteria, A I ;lf Lichens, &Fungi | Life Science Lab – II |
| 4 | Basics of Organic Chemistry II | Chemistry Lab – II |
| 5 | Evolution, Developmental Biology and Environmental II | Life Science Lab – III |
| 6 | Diversity of Bryophytes, Pteridophytes. Gymnosperms &Angiosperms | Chemistry Lab – III |
| 7 | Basics of Inorganic Chemistry III | Life Science Lab – IV |
| 8 | Chordate and Comparative Anatomy & Histology | Inorganic Chemistry Lab – IV |
| 9 | Physiology, Molecular Biology, Plant Biotechnology of Plants | Life Science Lab – V |
| 10 | **Basics** of Organic Chemistry IV | Organic Chemistry Lab – V |
| 11 | Biochemistry, Endocrinology and Animal Behaviour | Life Science Lab –VI |
| 12 | Economic Botany and Plant Anatomy | Chemistry Lab – VI |
| 13 | Basics of Physical Chemistry | |
| 14 | Economic Zoology, Microbiology and Immunology | |
| 15 | Cytogenetic, P1ant Pathology | |
| 16 | Basics of PhysicalChemistry1.1 | |
| 17 | Physiology &Toxicology, Genetics end Biotechnology | |
| 18 | Plant Resource Utilization, Palynology and Biostatistics | |

## Core Courses-2

| S.NO. | SUBJECT |
|---|---|
| 1 | Childhood and Development |
| 2 | Contemporary India And Education |
| 3 | Development of Education System in India |
| 4 | Teaching, Learning and Assessment |
| 5 | Pedagogy of Physical Science-I |
| 6 | Pedagogy of mathematical Science-I |
| 7 | Pedagogy of Physical Science-II |
| 8 | Pedagogy of mathematical Science-II |
| 9 | Inclusive Education |
| 10 | Educational measurement & Evaluation |
| 11 | Curriculum Development |
| 12 | Gender, School & Society |

## DISCIPLINE SPECIFIC ELECTIVES

| S.NO. | SUBJECT |
|---|---|
| 1 | Educational Technology |
| | ICT in Education-I |
| 2 | Sociological aspects of Education |
| | Classroom Management |
| 3 | Special Education |
| | Guidance & Counselling |
| 4 | Value Education |
| | ICT in Education-II |
| | Assessment for Learning |
| 5 | Basic knowledge of computer : System & Generations |
| | Programmed Instruction |
| 6 | Language and communication |
| | Organizational Administration |
| 7 | Action research |
| | Gender School and society |
| 8 | Life skill education |
| | Childhood and growing up |
| | Early Childhood and education |

## Generic Electives (Any four)

| S.NO. | SUBJECTS |
|---|---|
| 1 | SCOUT AND GUIDE/NSS/NCC |
| | GENERAL STUDIES |
| | OPEN EDUCATIONAL RESOURCES |
| | NATIONAL CONCERN AND EDUACTION |
| 2 | Educational entrepreneurship |
| | VOCATIONAL EDUACTION |
| | CONSTITUTION OF WORLD |
| | GEOGRAPHY OF WORLD |
| | LANGUAGE AND LINGUISTIC |
| | GENERAL HINDI |
| 3 | TEXT AND PERFORMANCE |
| | GENDER AND HUMAN RIGHTS |
| | CONTEMPORARY INDIA: WOMEN AND EMPOWERMENT |
| | ACEDEMIC WRITING AND COMPOSITION |
| | COMPUTER LANGUAGE |

## ABILITY ENHANCEMENT COMPULSORY COURSE

| S.NO. | SUBJECTS |
|---|---|
| **1** | English language and communication |
| | EPC – I : Reading & Reflecting on Texts |
| **2** | ENVIRONMENT |
| | EPC – II : Educational Excursion / Art & Craft workshop |
| **3** | School Internship (2 Week) |
| | EPC – III : Drama & Art in Education |
| **4** | English Language & Communication |
| | EPC - VI :Understanding The Self including Workshop on Self Development |
| **5** | Logical Reasoning |
| | EPC - V : Preparation & Presentation through ICT |

## SKILL ENHANCEMENT COURSE

| S.NO. | SUBJECTS |
|---|---|
| **1** | Practicum I : Psychology Practical |
| **3** | Practicum III : Cultural Activities, Sports & Yoga |
| **4** | School Internship - I for School Observation (2 Week |
| **5** | Practicum IV :Micro Teaching, Preparation of Teaching Aid & Construction of Achievement/ Diagnostic Test |
| **6** | Practicum V : Workshop on Preparation for Teaching & Simulation Teaching |
| **7** | School Internship (16 weeks including 2 week School and Community Awareness Program) |

## Ability Enhancement Elective Course (Any two)

| S.NO. | SUBJECTS |
|---|---|
| **1** | English Language Teaching |
| **2** | Soft Skills |
| **3** | Translation Studies |
| **4** | Creative Writing |
| **5** | Technical Writing |
| **6** | Film Studies |
| **7** | Business Communication |

# Semester: III

**Course Code:**

**Basics of Inorganic Chemistry –II**

**BEB306**

**MM: 100**

After going through the course the teacher trainee will be able to –

- apply the knowledge of inorganic chemistry in explanation of different properties exhibited by coordination compounds.
- describe the theories of bonding and non-aqueous solution

**Course Outline:**

**Unit I: Chemistry of d-block elements**

- General Chemistry of 1st row d-block elements,
- Electronic configuration, ionization potential, oxidation states,
- Chemistry of Ti and V complexes, Chemistry of Cr and Mn complexes,
- Types of magnetic behaviour shown by transition elements

**Unit II: Coordination Compounds**

- Various definitions, types of ligands: classical ligands, non-classical ligands, The Chelate and Macrocyclic effects, Multidentate ligands,
- stereochemistry and various coordination numbers, isomerism in coordination compounds,
- nomenclature, stability of coordination compounds,
- Valence bond theory for bonding in coordination compounds, strength and weaknesses of valence bond approach.

**Unit III: Crystal field theory**

- The splitting of d-orbitals in different fields (octahedral, tetrahedral, tetragonally distorted octahedral, square planar, trigonal bipyramidal
- Jahn Teller effect in octahedral and tetrahedral complexes.

**Unit IV: Radioactivity**

- Nuclear Fission & Nuclear Fusion
- Radioactivity, Nature of radiations from Radioactive elements,
- Radioactive tracers, Carbon Dating,
- Artificial Radio activity,

**Unit V: Acids & Bases**

- Concepts of Acids and Bases: Arrhenius concept; Bronsted – Lowry concept;
- Basicity or basic strength of a Bronsted base; Acidity or acid strength of a Bronsted acid m;
- Lewis acid – base concept; Super acids
- HSAB principle and its applications

**Suggested Reading:**


- Advanced Inorganic Chemistry Vol. I & II By *Satya Prakash, G. D. Tuli , S. K. Basu & R. D. Madan* S Chand & Sons
- Advanced Inorganic Chemistry by *Cotton F. Albert* John - Wiley.
- Concise Inorganic Chemistry by J. D. Lee Blackwell.
- Inorganic Chemistry: Principles of Structure & Reactivity *By Huheey , E. A. Keiter , R. Keiter , O. K. Medhi ,* Pearson Publications .
- Vogel, A.I. A text book of quantitative Inorganic Analysis, ELBS. 1978.
- Pandey , Bajpai and Giri, Practical Chemistry, S.Chand , Revised Edition.

**Course Code:**

## ZOOLOGY-III

## BEB 309

**Credit: 04 (L-3, T-1, P-0)** **Contact Hours: 60**

**MM: 100**

**COURSE OBJECTIVES**

1. To introduce and classify different types of biomolecule.
2. To explore about structure and function of proteins in living system.
3. To learn about structural and physiological role of carbohydrates in living beings.
4. To study metabolism of lipids and their physiological role in organisms.
5. To learn about the enzymes, their mode of action and mechanisms of regulation.
6. To study the details of basic metabolic processes of energy production.

**Physiology and Biochemistry**

**Unit 1 Physiology of digestion, respiration and circulation:** Digestive System - Mechanical and chemical digestion of food; Role of gastrointestinal hormones; Control and action of GI Tract secretions; Absorptions of carbohydrates, lipids, proteins, water, minerals and vitamins, Respiration: Blood pigments: Role in oxygen transport, Oxygen dissociation curves and their physiological significances, Transport of CO2, Bohr and Haldane effect, Chloride shift, Circulation: Origin and conduction of cardiac impulse, Cardiac cycle, Blood volume, cardiac out-put, Blood pressure and its regulation; Electrocardiogram, Autonomic control and chemical regulation of heart rate

**Unit 2 Physiology of excretion and nerve conduction:** Excretion: Structure of nephron, Physiology of Urine formation, Composition of normal urine, Muscle: Types, Ultra structure of striated muscle, mechanism of muscle Contraction , Neuron and glia - Structure and function ,Ionic distribution, Transmembrane potential, Ionic channels, Action potential, Origin and conduction of nerve impulse, Synapse and synaptic transmission

**Unit 3 Biomolecules:** Classification, Structure and properties of amino acids. Classification and biological function of proteins. Protein configuration: Primary structure, secondary structure (α-helix & β-pleated structure), Tertiary (Native) structure and structure of multimeric protein (quaternary structure). Classification & properties of carbohydrate, isomers of monosaccharides. Classification & properties of fatty acids. Structure and functions of triglycerols, membrane phospholipid, cholesterols, steroid hormones.

**Unit 4 Enzyme and metabolism:** Concept of enzyme and mechanism of enzyme action. Respiration: Types - Aerobic respiration, Anaerobic respiration, respiratory substrates, mechanism of respiration: Glycolysis, TCA cycle, terminal oxidation (Oxidative phosphorylation, Electron transport chain). Energy calculation (output) in

**Course Code:**

prokaryotes / eukaryotes. Pentose phosphate pathway, Oxidation of saturated fatty acids, β-oxidation, oxidation of unsaturated fatty acids, α-oxidation.

**Suggested readings**

Animal Physiology:


1. Tortora, - G.J. and Derrickson, B.H. (2009). *Principles of Anatomy and Physiology*, XII Edition, John Wiley & Sons, Inc.
2. Widmaier, E.P., Raff, H. and Strang, K.T. (2008) *Vander 's Human Physiology,* XI Edition. McGraw Hill
3. Guyton, A.C. and Hall, J.E. (2011). *Textbook of Medical Physiology,* XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company


Biochemistry:


4. Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006). *Biochemistry.* VI Edition. W.H Freeman and Co.
5. Nelson, D. L., Cox, M. M. and Lehninger, A.L. (2009). *Principles of Biochemistry.* IV Edition. W.H. Freeman and Co.
6. Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009). *Harper'Illustrated Biochemistry.* XXVIII Edition. Lange Medical Books/Mc Graw3Hill.


**Course Outcomes:**

After completing the course, the students will be able to:

1. Describe the structure and function of bimolecules.
2. Determine the physiological role of carbohydrates, lipids and proteins in living beings.
3. Discuss the concept of enzyme, its mechanism of action and regulation.
4. Understand different aspects of metabolism related to carbohydrate and lipids.
5. Describe the basic processes involve in glucose breakdown to produce ATP.
6. Understand and apply the basic knowledge of biochemistry in daily life

## BOTANY 3

### BEB 310- Plant Anatomy, Embryology and Ethenobotany

**Credit: 04 (L-3, T-1, P-0)** **Contact Hours: 60**

**MM: 100**

**Course objectives:**

1. Observe plant structures of monocot and dicot angiosperm plants.
2. To provide students with skills necessary to section and stain fresh plant materials.

**Course Code:**

3. To train students in the proper use of the compound light microscope and to give themexperience in interpreting images.
4. To provide students with skills in modern microscopic processing and analysis techniques.
5. To learnt the complexity of tissue organization within plant bodies to develop asintegrated organisms in diverse environments.

**Unit I:Introduction:** scope of plant anatomy, applications in systematics. Tissues: classification of tissues, simple and complex tissues, secretory system: hydathodes, cavities, lithocysts and laticifers. **Wood anatomy:** axially and radially oriented elements; sapwood and heartwood, ring and diffuse porous wood; dendrochronology.

**Unit II:Root and Stem:** organization of root apex (Apical cell theory, Histogen theory, Korper-Kappe theory); Quiescentcentre; root cap; structure of dicot and monocot root and origin of lateral root. Stem organization of shoot apex (Apical cell theory, Histogen theory, Tunica Corpus theory). Structure of dicot and monocot stem.

**Unit III:Leaf:** structure of dicot and monocot leaf, Kranz anatomy, vascular cambium structure, function, seasonal activity of cambium; secondary growth in root and stem.

**Unit IV:Embryology:** Structure and development of male and female gametophytes – microsporogenesis, megasporogenesis, embryo sac types. Double fertilization, development of embryo, endosperm development and its morphological nature, apomixis and polyembryony.

**Unit V:Ethnobotany and folk medicines**: definition, ethnobotany in India, methods to study ethnobotany, applications of ethnobotany, national interacts, palaeo-ethnobotany, folk medicines of ethnobotany, ethnomedicine, ethnoecology, ethnic communities of India; application of natural products to certain diseases-Jaundice, cardiac, infertility, diabetics, Blood pressure and skin diseases.

**Suggested Reading:**


1. Plant Anatomy: S.N. Pandey and A. Chadha. Ist Edition. Vikas Publishing House, New Delhi, India.
2. An introduction to Plant Taxonomy. Jeffrey, C. 1982. . Cambridge University Press, Cambridge, London. Jones, S.B. Jr. Luchsinger, A.E. 1986.
3. S.K. Jain, Manual of Ethnobotany, Scientific Publishers, Jodhpur, 1995.
4. Glimpses of Indian. Ethnobotny, Oxford and I B H, New Delhi, 1981.
5. S.K. Jain (ed.) 1989. Methods and approaches in ethnobotany. Society of ethnobotanists, Lucknow, India.
6. S.K. Jain, 1990. Contributions of Indian ethnobotny.Scientific publishers, Jodhpur.
7. Trivedi P C, 2006. Medicinal Plants: Ethnobotanical Approach, Agrobios, India.
8. Purohit and Vyas, 2008. Medicinal Plant Cultivation: A Scientific Approach, 2nd edn. Agrobios, India.


**CO:** By the end of this course, students will be able to:

1. Understand the scope & importance of Anatomy and Embryology.
2. Know various tissue systems.
3. Understand the normal and anomalous secondary growth in plants and their causes.
4. Perform the techniques in anatomy.
5. Understand structure and development in microsporangium and megasporangium. •
6. Understand microsporogenesis and megasporogenesis.
7. Understand male and female gametophytes.
8. Know fertilization, endosperm and embryogeny.

## Chemistry Lab III

**Course Code: BEB351** **Credit: 01 (L-0, T-0, P-2)**

**Contact Hours: 30** **MM: 50**

**Course Outline:**

1. Determination of sodium carbonate and sodium bicarbonate in a mixture.
2. Determination of the amount of calcium carbonate in chalk .
3. Determination of available chlorine In bleaching powder.
4. Determination the strength of unknown KMnO4 solution.
5. Determination of Cu and Ni gravimetrically and volumetrically.

**Note: Experiments may be added/deleted subject to availability of time and facilities**

**Course Code:**

**Zoology- LAB**

**Course Code:BEB352** **Contact Hours:60**

**Credit: 02 (L-0, T-0, P-4)** **MM: 50 Course**

**Outline:**

Lab Based on Zoology

Urochordata

(a) Herdmania (i) External characters (ii) Dissection (iii) Permanent preparation of branchial wall (iv) Larva and metamorphosis- prepared slides.

(b) Cephalochordata: Branchistoma ( Amphioxus ) (i) General features (ii) Transverse section through the body – prepared slides.

Cyclostomata Petromyzon ( Lamprey ) – External characters

Chondrichthyes

(a) Fish (i) External characters
(b) (ii) Exo-skeleton Glycerine and permanent preparation of placoid scales
(c) (iii) Endoskeleton
(d) (1) Axial skeleton (a) skull (b) Visceral Skeleton (c) Vertebral column
(e) (2) Appendicular skeleton (a) Pectoral girdle and fins
(f) (b) Pelvic girdle, fins and claspers
(g) (c) Median fins
(h) (v) Dissection
(i) (a) Digestive system Examination of the folds of stomach and " scroll valve"
(j) (b) Vascular system 14 Heart, ventral aorta, dorsal aorta, arterial arches ( afferent and efferent )
(k) ( c) Gills
(l) (d) Urinogenital system
(m) (e) Nervous system : Cranial nerves
(n) (f) Internal ear
(o) (g) Eye muscles
(p) Osteichthyles (a) Labeo rohita ( rohu )- General morphology and dissected specimen. (b) Acipenser (sturgeon ), Lepiodosteous ( gar-pike ), Hippocampus ( sea hourse) Antennarius (Indian angler ), Angulla (eel), Pleuronectes ( sole ), Exocoetus ( flying fish ), Clarius ( cat fish ), Anabas ( climbing perch ) and Neoceratodus ( lungfish ).
(q) (c) Different kinds of scales-
(r) prepared slides Amphibia (a) Rana tigrina ( The Indian bull-frog )
(s) Development of frog from models
(t) (b) Urodela : Necturus, Ambystoma and Axolotal larva
(u) (c) Anura : Bufo, Rhacophorus (tree frog), Alytes (midwife toad).
(v) (d) Gymnophiona : Ichthyopnis Reptillia a. Varanus (i) External characters (ii) Skeleton
(w) (1) Axial Skeleton (a) Skull (b) Vertebral column (c ) Ribs and sternum (2) Appendicular Skeleton (a) Pectoral girdle and fore-limb. (b) Pelvic girdle and hind-limb. b. Ophidia Difference between poisonous and non-poisonous snakes, Naja (cobara), Vipera ( viper), Typhlops ( burrowing snake ) and Python. Biting mechanism of a poisonous snake (model Aves (A) Columba livia intennedia (pigeon) External Characters. Structure of Feather. Varieties of feathers. Developments of feather-prepared slide. (ii) Skeleton of fowl - (1) Axial skeleton: (a) Skull (b) Vertebral column (c) Ribs and sternum (2) Appendicular skeleton. (a) Pectoral girdle and fore-limb (b) Pelivic girdle and hind-limb. (B) Gallus

**Course Code:**

(fowl) Perching mechanism: Model Skulls and Beaks of Birds. Feet of birds Models Embryonic membrances-whole mount of 72 hour's chick embryo Mammalia (i) Prototheria: Ornithorhynchus (Platypus) (ii) Metatheria (iii) Eutheria : (a) Edentata: Dasypus (Armadillo) (b) Pholidota: Manis (Scaly ant-eater). (c) Cetacea: Platanista (Ganges dolphin). Histology (i) Tissues Preparation of the following (a) Epithelia: (i) Squamous (ii) Ciliated and (iii) Stratified (b) Muscular: (i) Striped muscles (ii) Unstriped muscles. (c) Connective (i) Areolar tissue (ii) Tendon the leg muscles of frog (tease and examine in glycerine) (ii) Adipose tissue from insect and frog (iv) cartilage (free hand sections of frogs hyoid and suprascapula, train with haematoxyline and (v) Bone (Decalcified). (d) Blood; Preparation of Vertebrate blood film, stain with Leishmann's stain. (e) Nervous: Neurons (f) Histology of various organs-prepared slides

## CBT 351- Botany Lab-III

**Practicals:**

1. Stem of *Boerhaavia*, *Bignonia*, *Bougainvellia*, *Dracena*, *Leptadenia*, *Nyctanthes*, *Salvadora*.
2. Embryology of the anatropous ovule
3. Embryology of the Orthotropous ovule
4. Embryology of the Campylotropous ovule
5. T.S. of ovule
6. Embryology of the micro-spores
7. Stages of the cell division-meiosis and mitosis in onion.
8. Detailed morphological and anatomical study of medicinally important part(s) of locally available plants (minimum 8 plants) used in traditional medicine.
9. Field visits to identify and collect ethno medicinal plants used by local tribes/folklore.

**CO: By the end of this course, students will be able to:**

- Learn about the anatomical structures of monocot and dicot plants.
- Understand with the anomalous secondary growth.
- Learnt about embryo development in plant.
- Understand the different stages of mitosis and meiotic cell division.
- Under stand with the anatomical and embryonic development in plants.

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## Development of Education System in India

**Course Code: BED301** **Credit: 04 (L 3, T 1, P-0)**

**MM: 100**

After going through the course the teacher trainee will be able –

- To recognize the development of educational system in India in historical perspective.
- To illustrate the salient features of Indian Education, ancient, medieval and modern periods.
- To explain the implications of recommendations made by the various Committees and Commissions for educational (General and Special) developments in India.
- To discuss insight into the issues and challenges of present day education system.
- To criticize the important quality related issues which need to be taken into account revision/ development of new education policy.
- To create the adequate knowledgeof the recommendations of various commissions and committees on Indian Education.

**Course Outline:**

**Unit I: Education in Ancient and Medieval India**

- Vadic Education (Gurukul)
- Budhisht Education (Matha/Vihar)
- Muslim Education (Madaras and Maktabs)

**Unit II: British Education in India**

- Charter Act 1813 & 1833, Oriental-Angliest controversy, Macaulay's minute, Filtration Theory, Adam Report and Auckland Education Policy
- Wood's dispatch, Hunter commission, Shimla Accord, Indian University Commission and Curzon Education Policy.
- Growth of National Consciousness, National Education Movement, Gokhley Bill and Education Policy.
- Sadler commission, Dyarchy, Hartog Committee and Wood – Abbott Report
- Wardha Scheme, Kher Committee, Acharya Narendra Deo Committee - I

**Unit-III: Policies and Legislations for Development of Education**

- University Education Commission (1948-49), Secondary Education Commission (1952-53),
- Report of the Education Commission (1964-66), National Policy on Education 1986, Revision of National Policy on Education -1990, 92, Programme of Action (1992), National Knowledge Commission. RTE Act (2009 & 2012).

**Unit IV: National Programmes**

- IEDC (1974, 1983), DPEP (1994)
- SSA (2000, 2011),
- RMSA (2009), IEDSS (2009), RUSA (2009) and various other schemes.
- Role of governmental and non-governmental agencies in education

**Unit V: Understanding Diversity and Future Perspective**

- Concept of Diversity; Types of Diversity: (Gender, linguistic, cultural, socio-economic and disability.)
- Diversity in learning and play; Addressing diverse learning needs, Diversity: Global Perspective
- Support Systems to Meet Diverse Learning Needs- Family, Community, School, Peer, Administrative and Resource Support

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- Ensuring standards in Open & Distance Learning system – Non-formal education, face-to-face *vs.* Distance mode
- Problems of Pre-primary, Primary Secondary, Higher Education.

**Suggested Readings:**


- Anand, C.L. et.al. (1993). Teacher and Education in Emerging Indian Society, NCERT, New Delhi.
- Compendium of Schemes (2014). Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment, Govt. of India.
- Education Commission. (1964-1966). Ministry of Education, Government of India, New Delhi.
- Julka, A. (2014). Evaluation of the Implementation of the Scheme IEDSS in India. Department of Education of Groups with Special Needs. NCERT, New Delhi.
- Julka, A., Mukhopadhyay, S., Vyas, S., Sharma, M, Anupriya, C., & Salin, D. (2014). Including Children with Special Needs: Primary Stage. NCERT, New Delhi.
- Kumar, A. (2003). Environmental challenges of the 21st century, APH Publishing Corporation, New Delhi.
- Mohanty, J., (1986). School Education in Emerging Society, sterling Publishers. MacMillan, New Delhi.
- National Policy on Education (1986). Ministry of Human Resource Development. Govt. of India, New Delhi.
- National University of Educational Planning and Administration (2014). Education for All Towards Quality with Equity: INDIA. NUEPA, New Delhi.
- Ozial, A.O. (1977). Hand Book of School Administration and Management. Macmillan, London.
- Programme of Action (1992). Ministry of Human Resource Development. Govt. of India, New Delhi.
- Report of Core group on value orientation to education (1992). Planning commission, Govt of India.
- Salamatullah, (1979). Education in Social context, NCERT, New Delhi.
- School Education in India – Present Status and Future Needs (1986). NCERT, NewDelhi.
- Seventh All India School Education Survey (2002). NCERT, New Delhi.
- UNDP (1996). Human Development Reports. Oxford University Press. New York.
- UNESCO (2004). Education for All: The Quality Imperative. EFA Global Monitoring Report. Paris.
- UNESCO (2009). Report on Education for sustainable development.
- Varghese, N.V. (1995). School Effects on Achievement: A Study of Government and
- Private Aided Schools in Kerala. In Kuldip Kumar (Ed.) School effectiveness and learning achievement at primary stage: International perspectives. NCERT. New Delhi.

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## Sociological Aspects of Education

**Course Code: BED302** **Credit: 02 (L 2, T 0, P 0)**

**Contact Hours: 30** **MM: 50**

After going through the course the teacher trainee will be able –

- To define concept and process of social organization, social stratification and institution
- To explain the relationship, between culture, society and education
- To estimate the issues of equality, excellence and inequalities in education.
- To compare the Sociology of Education and Educational Sociology.
- To discuss the signification of the education in our society.
- To evaluate the importance of educational sociology in our society and its background.

**Course Outline:**

**Unit I: The Social, Cultural and Political Contexts of Education**

- Concept and nature of sociology of Education, Difference between sociology of education and Educational Sociology.
- Sources of the Aims of Education: - social, cultural, economic and political contexts and their impact on education.
- Education as an instrument of Social Change.
- Modernization, Socialization, Social Stratification, Social Mobility; influence of society, family, peer groups, media and new age technologies on education.

**Unit II: Issues and Concerns in Education**

- Emerging trends in societies and their repercussions on education, national and social integration, vocationalization of education and skill development: liberalization, privatization, globalization and internationalization of education.
- Indian Constitution and national goals: Preamble, fundamental rights and duties, Concepts of democracy, socialism, secularism, pluralism, national and emotional integration; inclusive education,
- Constitutional provisions and amendments related to Education.

**Unit III: Education and Development** The Evolving Concept of Development.

- Need for Sustainable development
- Equity and Equality in Education – meaning, nature and forms of inequality (i)dominant and minor groups (ii) gender (iii) public and private schools (iv) rural and urban schools(v) tribal
- Equalization of education opportunities; Constitutional problems for ensuring equality

**Suggested Reading:**


- Chaube and Chaube (1994) Foundations of Education, Vikas Publishing House Pvt. Ltd.
- Chaube, S.P & Chaube, A. (2000). Philosophical and Sociological Foundations of Education. Agra: Vinod Pustak Mandir.
- Dewey, J. (1961). Democracy and Education. New York: The Macmillan Company.
- Dewey, John (1956). The Child and the Curriculum and School and Society, University of Chicago Press, Chicago, Illinois, U.S.A.
- Explorations (of the marginalised). Cambridge Scholars Publishing

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- Freire Paulo (1985) The Politics of Education: Culture, Power and Liberation: Houndmill, Basingstoke, London Macmillan Publisers.
- Hallinan, Maureen T. (Ed.) (2000) Handbook of the Sociology of Education, Springer e-books, springer Book Archives.
- Hassan Taj (2005) Current Challenges in Education, Neelkamal
- Illich, I. (1971). Deschooling Society. New York: Harpers & Row.
- Krishnamurthi J, (1947) Education and the Significance of life, KFI Publications.
- Krishnamurthi J. (1974) Krishnamurthi on Education, Krishnamurthi Foundation India
- Kumar Krishna (2004) What is Worth teaching/ 3rd Edition Orient Longman
- Mathur,S.S.(1986). A Sociological Approach to Indian Education. Agra: Vinod Pustak Mandir.
- Mittal M. L. (2009) Education in the Emerging Indian Society, International Publishing House.
- NCERT (1986). School Education in India – Present Status and Future Needs, New Delhi.
- Pathak, Avijit (2002) social Implications of Schooling, Delhi Rainbow Publishers.
- Sachchidananda (2005). School Community and the State. New Delhi: Serials Publications.
- Salamatullah, (1979). Education in Social context, NCERT, New Delhi.
- Saraswathi T S (1999) Culture, Socialization and Human Development, Sage Publication.
- Singh, R.P. (1993). Contemporary Indian Education Scene. Ambala Cantt: The Indian Publications.
- Singh,R.P. (1993). Indian Education – In depth Studies. New Delhi: Commonwealth Publishers.
- Taneja, V.R. (1973). Foundations of Education: Philosophical and Sociological. New Delhi: Sterling Publications.
- UNESCO. (2004) Education for All: The Quality Imperative. EFA Global Monitoring Report. Paris.
- UNESCO. (2004) Education for All: The Quality Imperative. EFA Global Monitoring Report. Paris.
- Walia J.S. (2001). Principles and Methods of Education. Jalandhar: Paul Publishers. Walia, J.S. (2004). Principles of Education. Jalandhar: Paul Publishers.
- Ziyauddin and Kasi (2009) Dimensions of Social Exclusion: Ethnographic

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## Health Education and Yoga

**Course Code: BED303** **Credit: 02 (L 2, T 0, P**

**Contact Hours: 30** **MM: 50**

After going through the course the teacher trainee will be able – •

To recognized the concept of holistic health education.

- To explain the various dimensions and determinants of health.
- To assess the school health Programme and its importance.
- To justify the need and importance of Physical Education.
- To discuss the benefits and activities of Meditation, Stress management and physical fitness.
- To judge the procedure for health related fitness evaluation.

**Course Outline:**

**Unit I: Health and Physical Fitness**

- Introduction; Meaning & Definition, Dimensions and determinants of health
- Importance of balanced diet, School health Programme and role of teacher in development of health
- Definition, Meaning, Types, Factors and Benefits of physical fitness
- Factors affecting physical fitness, Importance of physical activities at school level
- Assessment of physical fitness

**Unit II: Philosophical bases of Health Education and Yoga**

- Role of Institutions (School, Family and Sports),
- Policies and major programmes for Health Education and Yoga
- Introduction, Meaning and miss-concepts of Yoga
- Types of Yoga and their main features, nature and educational implications.
- Hatha Yoga Pradipika: Asanas, Shatkriyas and Pranayamas – Types and benefits,

**Unit III: Meditation & Stress Management**

- Meditation: Meaning, Nature & Relationship with mind.
- Importance of Meditation in school •Stress: Meaning, Nature, Types and Factors
- Role of Meditation in Stress Management.

**Suggested Reading:**


- Dr. Ajmer Singh (2003). Essentials of physical Education. Ludhiana: Kalyani publishers.
- Daryl Syedentop (1994). Introduction to physical education, fitness and sports (2nd ed.). London: Mayfield publishing company.
- Dr. A.K.Uppaland Dr. G. P. Gautam (2004). Physical education and Health. Delhi: Friends publisher.
- Dr. Sopan Kangane and Dr. Sanjeev Sonawane (2007). Physical Education (D. Ed.). Pune:
- Nirali publication.

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## EPC – I: Reading and Reflecting on Texts

**Course Code: BED361** **Credit: 01 (L-0, T-0, P-2)**

**Contact Hours: 30** **MM: 50**

After going through the course the teacher trainee will be able –

- To recall and reflect on their own educational journeys and become conscious of factors those have shaped their aspirations and expectations.
- To become more conscious of their responses to experiences observations of life situations, as also of ideas and issues that arise in their minds, and to judge their capacity for reflection.
- To demonstrate their capacities as readers, writers and thinkers when they learn reading and writing together.
- To critically analyze the various text structures.
- To develop competencies of discussing and arguing interactively in groups. Reading of newspapers, magazines, journals, computer will make students relate themselves with the world.
- To evaluate themselves as a good citizen and develop various practical skills and capabilities.

**Course Outline:**

**Unit I:Reading Skills**

- Different Types of Reading Skills and Strategies: Extensive, Intensive, reading aloud, Silent Reading, Purposes of Reading, reading between the lines, Read and response to a variety of texts in different ways.
- Reading for Comprehension: Process of reading, Skimming and Scanning, Narrative text, Expository text, reading a wide variety of texts, including empirical, Conceptual and Historical, Policy Documents.
- Role of Language and the Pedagogy of Reading across other Subjects: Reading a text, enhance capacities as readers, newspapers, magazines, journals, computer, framing questions to think about.
- Problems of Reading and Methods of Teaching Reading: Readings interactively individually and in small groups, use of dictionary, Diagnosis of readings skills deficiencies and remedial teaching.

**Unit II: Writing Skills**

- Mechanics of writing and elements of good writing ( eg. coherency and cohesion). Nature and style of writing, combining reading and writing for the development of critical skills.
- Writing –Words: Sentences and Paragraphs, Role of Language and Pedagogy, Writing Across Other Subjects.
- Writing messages, notices, Circulars, Invitations, Biodatas, agreement/disagreement, Opinion.
- Writing Composition: Letters, Types of Letters, Essays, Reports, Autobiographical narratives, Field notes, Ethnographies. Formal and Informal writing. Assignments, Variety of texts, Activities for Writing, dialogues, short poems and short skills, Writing within the context of other ideas.

**Practical Activities**

**Activities Related to Reading of Text:**

- Teacher Educator will give a topic (related to empirical, conceptual and historic work, policy document) for reading. After reading, pupil teachers will discuss their view in group on the given topic of reading. Teacher educator will examine/observe the handling with the diverse texts of the students and remedial suggestions will be given.

**Activities Related to Skills and Strategies:**

- Teacher educator will demonstrate essential skills (model reading, drill, pronunciation, silent reading etc.) of reading and writing. Narrative texts, expository texts from diverse sources, autobiographical narratives and field studies etc. could also include addressing various reading skills and strategies.
- Teacher educator will set goal for learning, monitoring, comprehension and self-reflection.

**Activities Related to Observation and Discussion:**

- Pupil teachers will observe the activities of peer group. Teacher educators will motivate pupil teachers to think and critically analyze activities of self and group during reading, discussion and writing.

**Activities Related to Evaluation and Reflection:**

- Students will develop reflections from experience and observation. Teacher educator will evaluate reflections.

**Assignments (Any two)**

- Write a paragraph on the topic suggested and frame five questions from it for making unseen passage. Also write the suitable answers for the questions framed.
- Write a self-composed poem/dialogue writing on any current issue.
- Visit a book store for young children, go through the available reading material including exercise books, puzzles etc. and make a list of useful material for developing early literacy skills.
- Make an attractive invitation card for any occasion or prepare your bio-data to be submitted for the vacancy created in any reputed organization.

**Suggested Readings:**


- Anderson, R.C. (1984). Role of the reader's schema in comprehension learning and memory.
- Anderson, In R.C., Osborn, J & Tierney, R.J. (Eds.), Learning to read in American Schools: Basal Readers and content texts, Psychology Press.
- Bhatt, H (n. d). The diary of a school teacher. An Azim Premji University Publication. Retrived from www.arvindguptatoys.com/arvindgupta/diary-schoolteacher-eng.pdf.
- Grellet, F (1981). Developing Reading Skills: A Practical Guide to Reading Comprehension exercises. Cambridge University Press.
- Sabyasach; B. (1997). The Mahatma and the Poet: Letters and Debates Between Gandhi and Tagore. National Book Trust.
- Tagore, R. (2003) Civilization and progress. In Crisis in civilization and other essays, New Delhi: Rupa & Co.
- Vygotsky, L. (1997) Interaction Between Learning and Development. In
- Gauvain, M. & Cole, M. (Eds.) Readings on the Development of Children, New York: WH Freeman & Company.
- Peter Hannon. Reflecting on Literacy in Education, Routledge Publication
- Gillie Bolten. Reflective Practices: Writing and professional development. Sage Publication
- Williams R. Smalzer. Write to be Read Teacher's manual: Reading, Reflection and Writing. Cambridge University Press.
- Deborah Brandt. Literacy and Learning: Reflection on Writing, Reading, and Society. Wiley Publishers.
- Jane West berg PhD and Hilliard Jason MD. Fostering Reflection and Providing Feedback: Helping Others Learn from., Springer Publications
- Andrea Izzo. Research and Reflection: Teacher Take Action for Literacy Development, Information age Publication
- Judy Richardson, Raymond Morgan, Charlene Fleener. Reading to Learn in the content Areas, Cinage learning.

**Practicum: III**

**(Cultural Activities, Sports and Yoga)**

**Course Code: BED351** **Credit: 1 (L-0, T-0, P-2)**

**Contact Hours:30** **MM: 50**

After going through the course the teacher trainee will be able:

- To explain and define concept of cultural activities, sports and yoga To understand role cultural activities in teaching learning process To analyze the differences cultural activities, sports and yoga.
- To analyze the importance of cultural activities, sports and yoga in school education.
- To develop skills needed to perform cultural activities, sports and yoga.
- To organize various cultural, sports and yoga activities. **Course Outline:**

It will have three components-

1. Participation in various cultural, sports and yoga activities such as-
    a. Singing (solo and group)
    b. Dancing (solo and group)
    c. Playing musical instruments
    d. Card making
    e. Poster making (drawing and painting)
    f. Slogan writing
    g. Mehndi making
    h. Best out of waste
    i. Rakhi making and pot decoration
    j. Pooja thali decoration
    k. Poem recitation
    l. Indoor games activities
    m. Outdoor sports activities
    n. Yoga camp etc.
2. Report writing for each activity organized by dept. with your participation details.
3. Participation in Viva voce at the end of semester.

**Note: For successful completion of the course, all three components are compulsory.**

# Semester: IV

**Course Code:** **Credit: 04 (L-3, T-1, P-0)**

**Contact Hours: 60** **MM: 100**

## Basics of Organic Chemistry – II
## BEB406

After going through the course the teacher trainee will be able to –

- Analyze the structures, properties of organic molecules
- Synthesize organic compounds of desirable properties
- Successfully demonstrate & perform the quantitative estimation of functional groups

**Course Outline:**

**Unit I: Functional Groups**

- Nomenclature and Classification, structure and bonding, methods of formation, physical properties and chemical reactions of Alcohols, Phenols, Ethers, Aldehydes, Ketones, Halides, Nitro compounds and Carboxylic acids.
- Mechanisms of reactions

**Unit II: Organometallic Compounds**

- Organomagnesium compounds: The Grignard reagents-formation, structure and chemical reactions
- Organozinc compounds: formation and chemical reactions
- Organolithium compounds: formation and chemical reactions
- Organosulphur Compounds: Nomenclature, structural features, methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides and suiphaguanidine

**Unit III: Heterocyclic Compounds**

- Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives.
- Comparison of basicity of pyridine, piperidine and pyrrole.

**Unit IV: Polynuclear aromatic compounds**

- Criterion of Aromaticity: Huckel's rule and its application to homonuclear and heteronuclear compounds.
- Polynuclear Aromatic Compounds: Preparation and properties of the following compounds: naphthalene (including structure elucidation), anthracene and phenanthrene.

**Unit V: Organic Synthesis via Enolates**

- Organic Synthesis via Enolates Acidity of of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate by Claisen condensation,
- Keto-enoltautomerism of ethyl acetoacetate, Synthetic applications of acetoacetic ester, Alkylation of 1.3-dithianes. Alkylation and acylation of enamines

**Suggested Reading:**


- Organic Chemistry, **Morrison and Boyd**, Prentice Hall.
- Organic Chemistry, **L.G. Wade** Jr. Prentice Hall
- Fundamentals of Organic Chemistry **Solomons and Fryle**, John Wilev.
- Organic Chemistry, Vol. I, II and III **S.M. Mukherji, S.P. Singh and R.P. Kapoor**

**Course Code:** **Credit: 04 (L-3, T-1, P-0)**

**Contact Hours: 60** **MM: 100**

- Organic Chemistry: **Morrison and Boyd**, Prentice Hall of India Pvt. Ltd. New Delhi Organic Chemistry, **Arun Bahl & B. S. Bahl**, S.Chand& Co. New Delhi Standard Methods of Chemical Analysis, W.W. Scott, The Technical Press.
- Experimental Organic Chemistry, Vol.Iand II, P.R. Singh, D.S> Gupta and K.S. Bajpai, Tata McGraw Hill.
- Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.

# ZOOLOGY IV
# BEB 409

**Credit: 04 (L-3, T-1, P-0)** **Contact Hours: 60**
**MM: 100**

**Course Objectives:**

1. To learn out the major ideas and current experimental approaches to cell and developmental biology, and in the process will illustrate how molecular approaches complement classical cell biology in finding out the details of how cells carry out their basic processes.
2. To learn the knowledge the spread of genes through populations and the role of natural selection in predator-prey relationships, polymorphism and mimicry.
3. To study the phenomenon of dominance, laws of segregation, independent assortment of genes.
4. To understand the different types of genetic interaction, incomplete dominance, codominance, inter allelic genetic interactions, multiple alleles and quantitative inheritance etc.
5. Understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material.

**Unit 1. Concept and theories of evolution:**Basic concept of Evolution, Origin of life, evidences of evolution **Mendelian genetics and its extension:** Mendel's experiments and Principles of Inheritance, Chromosome theory of inheritance, Incomplete dominance and co-dominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy.

**Unit 2. Linkage, crossing Over and Chromosomal Mapping:** Linkage and crossing over, Recombination frequency as a measure of linkage intensity, two factor and three factor crosses, Interference and coincidence, chromosome mapping, Somatic cell genetics - an alternative approach to gene mapping.

**Unit 3. Population Genetics:** Allele frequencies, Genotype frequencies, Hardy-Weinberg Law, role of natural selection, mutation, genetic drift.

**Unit 4. Sex Determination and extranuclear inheritance:** Sex determination in *Drosophila*: Chromosomal theory, origin of Gynanders and Intersexes, Genic balance. Sex determination in human: Gene Dosage Compensation and Molecular basis of X-chromosome inactivation, sex linkedInheritance. Cytoplasmic inheritance: Sigma factor in *Drosophila*, Kappa particle inheritance. Chromosomal aneuploidy in human beings. , Theories of evolution: Lamarckism/ Neo- Lamarckism, Darwinism/ Neo-Darwinism, Mutation theory and Modern synthetic theory.

**Course Code:** **Credit: 04 (L-3, T-1, P-0)**

**Contact Hours: 60** **MM: 100**

**Unit5. Mechanism of evolution:**Organic variations, Isolating Mechanisms, Natural selection (Example: Industrial melanism), Types of natural selection (Directional, Stabilizing, Disruptive), Artificial selection, Speciation: concept and modes

**Suggested readings:**


1. Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). *Principles of Genetics.* VIII Edition. Wiley India.
2. Snustad, D.P., Simmons, M.J. (2009). *Principles of Genetics.* V Edition. John Wiley and Sons Inc.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). *Concepts of Genetics.* Edition. Benjamin Cummings.
4. Russell, P. J. (2009). *Genetics- A Molecular Approach.* III Edition. Benjamin Cummings.
5. Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. *Introduction to Genetic Analysis.* IX Edition. W. H. Freeman and Co.
6. Ridley, M. (2004). *Evolution.* III Edition. Blackwell Publishing.
7. Barton, N. H., Briggs, D. E. G., Eisen, J. A., Goldstein, D. B. and Patel, N. H. (2007). *Evolution.* Cold Spring, Harbour Laboratory Press.
8. Hall, B. K. and Hallgrimsson, B. (2008). *Evolution.* IV edition. Jones and Bartlett Publishers
9. Campbell, N. A. and Reece J. 13. (2011). *Biology*. IX Edition, Pearson Benjamin, Cummings.
10. Douglas, J. Futuyma (1997). *Evolutionary Biology*. Sinauer Associates.


**Course Outcomes:**

After completing the course, the students will be able to:

1. Understand the cell division, chromosome segregation and chromosome structure.
2. Understand the structure of nucleic acids, gene expression, mutation, selection and migration.
3. Understand the gene expression and gene regulation in Eukaryotes.
4. Explore the applications of gene mutation, repair and breeding methods in plants
5. Understand nuclear genome organization as well as genes and gene numbers.

## BOTANY 4

## BEB410-Ecology, Plant Physiology, Evolution and Paleobotany

**Credit: 04 (L-3, T-1, P-0)** **Contact Hours: 60**

**MM: 100**

**Course Objectives:**

1. To study the properties of water and soil of different areas.
2. To study the aquatic and terrestrial micro-flora.
3. To maintain a biodiversity record of a given area.
4. To learn the taxonomy and embryology of higher plants.
5. To understand the introduction to the major principles of evolutionary theory, and ranges from the origins of life and mode of survival
6. The origin and diversification of plant groups through Earth's history.
7. Geologic time periods in Earth's history.
8. The ecological changes and impacts of plants on the Earth.
9. To determine the age of fossils and importance of pollen.

**UNIT I:Introduction to Ecology**: definition, community and ecosystem, Inter-relationships between living world and environment, biosphere, biomes, ecosystem components (abiotic and biotic). Environment related

**Course Code:** **Credit: 04 (L-3, T-1, P-0)**

**Contact Hours: 60** **MM: 100**

concepts and laws (theory of tolerance, laws of limiting factors). Community characteristics: organization and concept of habitats and niche. Bioenergetics.Biogeochemical and Hydrological cycles.

**UNIT II: Plant-water relations:** importance of water to plant life, physical properties of water; imbibition, diffusion and osmosis; absorption and transport of water; transpiration; physiology of stomata. **Mineral nutrition:** essential macro and micro elements and their role; mineral uptake; deficiency symptoms.

**UNIT III: Transport of organic substances:** mechanism of phloem transport, source-sink relationship, factors affecting translocation. **Photosynthesis:** significance, historical aspects, photosynthetic pigments, action spectra and enhancement effects, concept of two photosystems, Z-scheme, photo- phosphorylation; Calvin cycle, C4 pathway, CAM plants. **Respiration:** Glycolysis, Kreb Cycle and ETS System; photorespiration.

**UNIT IV: Growth and development:** definitions, phases of growth and development; seed dormancy; plant movements; the concept of photoperiodism; physiology of flowering, florigen concept; physiology of senescence; fruit ripening. auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of discovery, mechanism of action; photo-morphogenesis; phytochromes in a brief.

**UNIT V: Origin of life:** elementary knowledge of theories related to evolution of life; types of evolution; speciation; population genetics, HW Equilibrium; Genetic drift. **Plant fossils:**fossils and fossilization, kinds of fossils-impressions, casts, molds, petrifactions and coal ball; **Geological time scale,** Importance of Paeleobotany

**Suggested Reading:**


1) Plant Metabolism (2nd Edition). Dennis, D.T., Turpin, D.H., Lefebvre, D.D. and Layzell (eds.). 1997: Longman, Essex, England.
2) Life Processes in Plants. Galston, A.W. 1989: Scientific American Library, Springer-Verlag, New York, USA.
3) Introduction to Plant Physiology. Hopkins, W.G., 1995: John Wiley & Sons, Inc., NewYork, USA.
4) Plant Physiology. Mohr, H. and Schopfer, P. 1995: Springer-Verlag, Berlin Germany.


**CO:** By the end of this course, students will be able to:

- Know the methods for plants preserve and fossilize.
- Understand the origin and diversification of plant groups.
- Understand geologic time scale.
- To determine the age of fossils.
- To know how age of fossil can be determine by pollens.

## Chemistry Lab IV

**Course Code: BEB451** **Credit: 01 (L-0, T-0, P-2)**
**Contact Hours: 30** **MM: 50**
**Course Outline:**

**Instrumentation:**

1. Separation of green leaf pigments(spinach leaves may be used )
2. Detection of Nitro group by reduction.
3. To separate given organic mixture for three components and identify each component.
4. To isolate Caffeine from tea.
5. Detection of functional groups:- -COOH, -CHO, -OH and
6. Detection of special elements.
7. Extraction of clove oil from cloves steam distillation.

| **Organic Derivatives:-** | | **Preparation, Crystallization and Physical Constant:-** | |
|---|---|---|---|
| i)Acetyl Derivatives | : | a) Aniline | b) Salicylic Acid |
| ii) Benzoyl Derivatives | : | a) Aniline | b) β-naphthol |
| iii) Hydrolysis Derivatives | : | a) Ethyl Benzoate | b) Aspirin |
| iv) Bromo-Derivatives | : | a) Phenol | b)CinnamicAcid |
| v) Reduction Derivatives | : | a) m-dinitrobenzene | |
| vi) Osazone Derivatives | : | a) Sucrose | b) Glucose |

**Note: Experiments may be added/deleted subject to availability of time and facilities**

## ZOOLOGY Lab-IV

**Course Code:BEB453** **Contact Hours: 60**
**Credit: 02 (L-0, T-0, P-4)** **MM: 50**

**Course Outline: LAB BASED ON ZOOLOGY**

Biochemistry.
(a) Demonstration of counting of cells (blood and protozoan) by haemocytometer, haemoglobinometer, pH meter, Colorimeter.
(b) Basic principle and types of chromatagrahy.
(c) working Basic principle and of an electrophoretic apparatus .
(d) Basic principle and working of an centrifuge. Endocrinology (a) spots, comments on prepared histological slides Animal Behavior.
Introduction to Ethology and Psychobiology.

**Course Code:** **Credit: 04 (L-3, T-1, P-0)**

**Contact Hours: 60** **MM: 100**

Patterns of behavior (taxes, reflexes, instinct and motivation).

Biorhythms; learning and memory imprinting their role. Study of migration of fishes Schooling and shoaling& birds.

## Botany Lab-IV

**Course Code:BEB453** **Contact Hours: 60**

**Credit: 02 (L-0, T-0, P-4)** **MM: 50**

**Practicals:**

1 Respirometre
2. Osmosis by using goat bladder/parchment paper
3. Process of endo-osmosis/exo-osmosis
4. Imbibition by using gram seeds
5. Transpiration by using Ganong's photometer
6. Photosynthesis by inverted funnel method
7. Ascent of sap water moves through xylem raising the solution
8. Four leaf method
9. Bell Jar experiment
10. Quadrate Method (Density, Abundance, frequency and plant population density)
    Soil $P^H$, Water absorption capacity of Soil and Bio-mass
11. Types of fossils and modes of preservation.
12. Systematic study of fossil plants through ages- Stromatolites, Precambrian biota, *Cooksonia*, *Rhynia*, *Lepidodendron*, *Sigillaria*, *Lepidophlois*, *Sphenophyllum*, Calamites, members of Filicopsida-Coenopteridales members of Lyginopteridales, Medullosales, Glossopteridales: *Vertebraria* root, Bennettitales, Cycadales, Ginkgoales, Pentoxylales, Cordaitales, Coniferales. Tertiary and Quaternary angiosperm plant remains.

**CO: By the end of this course, students will be able to:**

- Learn about the physiological and ecological characters of plants.
- Understand with plant water relationships by the osmosis, diffusion and imbibition in plants.
- Learnt about respiration, transpiration and photosynthesis in plants.
- Understand with the diversity of plants.
- Under stand with the types of soil, water absorption capacity of plants etc .

**Course Code:**

## Learning, Teaching and Assessment

**Course Code: BED401** **Credit: 4 (L-3, T-1, P-0)**

**Contact Hours: 60** **MM: 100**

After going through the course the teacher trainee will be able to:

- Comprehend the theories of learning their applications for teaching children
- Analyze the learning process, nature and theory of motivation
- Describe the stages of teaching and learning and the role of teacher
- Situate self in the teaching learning process
- Analyze the scope and role of assessment in teaching learning process Use various assessment strategies.

**Course Outline:**

**Unit I: Learning and Creativity**

- learning: Meaning, definition, types, laws and steps
- Learning theories: Pavlov, Thorndike, Skinner, Kohler, Hull
- Stages of Learning: Acquisition, Maintenance, Generalization
- Learning curves, Transfer of Learning
- Creativity: Concept, Definition and Characteristics

**Unit II: Teaching Learning Process and Motivation**

- Meaning, Definition, Maxims, Levels and Stages of Teaching (Plan, Implement, Evaluate, Reflect), Difference between teaching and instruction
- Designing instructional strategies, Implications Classroom Teaching and Learning, Teaching support systems
- Models of Teaching- Concept and components, Difference between a method, a model and a strategy of teaching, Social Interaction model and Information-Processing model
- Leadership Role of Teacher in Classroom, School and Community, Factors influencing learning and teaching process,
- Motivation: Nature, Definition and Theories

**Unit III: Overview of Assessment**

- Concept, Meaning and types of Assessment,
- Need and importance of Assessment,
- Perspective on assessment of learning in a constructivist paradigm,
- 'Assessment of Learning' and 'Assessment for Learning': Meaning and difference
- Comparing and contrasting assessment, evaluation, measurement, test and examination

**Unit IV: Approaches to Assessment**

- Formative, summative, grading, continuous and comprehensive assessment. Realistic, comprehensive and dynamic assessment procedures**,** Observation of learning processes by self, by peers, by teacher.
- Self-assessment and peer –assessment, constructing portfolios,
- Commercialization of assessment

**Unit V: Assessment: Strategies and Practices**

- Strategies: (Oral, written, portfolio, observation, project, presentation, group discussion, open book test, surprise test, untimed test, team test, records of learning landmark, cloze set/open set and other innovative measures) Meaning and procedure

- Typology and levels of assessment items: Multiple choice, open ended and close ended; direct, indirect, inferential level
- Analysis, reporting, interpretation, documentation, feedback and pedagogic decisions
- Assessment of diverse learners: Exemptions, concessions, adaptations and accommodations;
- School examinations: Critical review of current examination practices and their assumptions about learning and development;

**Suggested Reading:**


- Amin, N. (2002). Assessment of Cognitive Development of Elementary School Children. A Psychometric Approach, Jain Book Agency, New Delhi.
- Chauhan, S.S. (2013). Advanced Educational Psychology. Jain Book Agency, Delhi.
- King-Sears, E. M. (1994). Curriculum Based Assessment in Special Education. Singular Publishing Group, San Diego, CA.
- Panch, R. (2013). Educational Psychology: Teaching and Learning Perspective, McGraw Hill Education (India) Private Limited, New Delhi.
- Paul, P. (2009). Language and Deafness. Singular publication.
- Salvia, John, Ysseldyke, James, E. And Bolt, Sara. (2007). Assessment in Special and Inclusive Education. Houghton Mifflin Company, Boston.
- Whitcomb, S., & Merrell, K.W. (2012). Behavioral, Social, and Emotional Assessment of Children and Adolescents, Routledge, New York.
- Woolfolk, A., Misra, G., & Jha, A.K. (2012). Fundamentals of Educational Psychology, 11thedn, Pearson Publication, New Delhi.
- Geisinger, K.F. (2013). APA Handbook of Testing and Assessment in Psychology. Available at American Psychological Association, USA.
- Guskey, T. R., & Bailey. J (2000). Grading and Reporting. Thousnad Oaks, CA: Corwin King.
- Howell, K. W., & Nolet, V. (2000). Curriculum-Based Evaluation: Teaching and decision making.Scarborough, Ontario, Canada, Wadsworth.
- McMillan, J. H. (2001). Classroom Assessment: Principles and Practice for Effective Instruction. Allyn and Bacon, London.
- Nevo, D. (1995). School based Evaluation. Pergamon Publishing, Kidlington, Oxford.
- Salvia, J., & Ysseldyke. J.E.(1998). Assessment. (7th ed) Houghton Mifflin, Boston.

## Classroom Management

**Course Code: BED402** **Credit: 2(L-2, T-0, P-0)**

**Contact Hours: 30** **MM: 50**

After going through the course the teacher trainee will be able to:

- Understand the importance of classroom organization and management.
- Appreciate and develop a conducive classroom environment.
- Explain the role of students and teachers in classroom discipline.
- Appreciate the value of quality time management and realize it.
- Mobilize the classroom communication an effective one. Manage indiscipline / inappropriate behavior in the classroom.

**Course Contents:**

**Unit I:Classroom Organization and Environment**

- Concept of classroom organization, Seating arrangement, display area, placing chalk board/white board, OHP, smart class, multimedia
- Meaning and Concept of Classroom Environment, Leadership style of the Class teacher and its influence on teacher role performance, promoting self-esteem among students, Making classroom environment conducive and inclusive
- Classroom climate: concept and components, Factors affecting classroom climate, Classroom climate and pupil achievement.
- Concept of Classroom Dynamics and its implications

**Unit II:Classroom Management**

- Meaning, need and techniques of classroom management, Role of students and teachers in classroom management
- Meaning and significance of discipline, Legal implications of punishment-child's right
- Quality Time management -content delivery, integration of values and life skills, development of cognitive, Affective and psychomotor domains.
- Inappropriate behaviour management- Causes of pupil misbehavior, managing indiscipline / inappropriate behavior in the classroom-preventive and corrective measures, Working towards Selfmanagement

**Unit III:Classroom communication**

- Concept, features and elements of classroom communication
- Barriers to classroom communication -Physical, psychological, organizational, language and background barriers

- Measures to overcome the barriers of communication. Effective classroom communication.

**Suggested Reading:**


- Antriep (2011) Making a school successful, NUEPA; UNESCO-IIEP, New Delhi.
- Aggarwal, J.C. and Gupta, S. (2009) School management, Neha publishers and distributors, New Delhi.
- Bhatnagar, R. P. (2005) Educational technology and management, International publishing house, Meerut.
- Bush, T. (et.al.) (1980) Approaches to School Management, Harper & Row, London
- Christian Jyoti A, (1991) Managing classrooms: An Instructional perspective, The Indian publishers, Ambala Cantt.
- Crowther, Frank (2011) From School improvement to sustained capacity: parallel leadership pathways, Sage Publications, New Delhi.
- Dash, M. and Dash, N. (2008) School management, Atlantic publications, New Delhi.
- Doyle. W, (1986) Classroom organization and Management, in Wittrock (AERA), Handbook of research on teaching, New York, Macmillian.
- J.C. Aggarwal (2002) School Organisation, Administration and Management, Doaba Homes, New Delhi: Kanishka Publishers.
- Oberoi, S.C. (2005) Educational technology, Arya book depot, New Delhi.
- Sanders, Ethel. Ed. (2011) Leading a creative school, Routledge Publications, New Delhi.
- Singh Amarjit, (2006) Classroom Management: A reflective perspective, Kanishka publishers and distributers, New Delhi.
- Tyagi.R.S. (2011) Academic supervision in secondary schools, NUEPA, New Delhi.
- Wrigley, Terry (2011) Changing schools: Alternative ways to make a world of difference, Routledge Publications, New Delhi.
- Aggarwal D.D (2001}: Modern Methods of Teaching Biology. Sarup Teaching Series Sarup & Sons, New Delhi.

## EPC – II: Educational Excursion / Art and Craft Workshop

**Course Code: BED461** **Credit: 1 (L-0, T-0, P-2)**

**Contact Hours: 30** **MM: 50**

After going through the course the teacher trainee will be able:

- To understand the role of Educational Excursion / Art and Craft Workshop.
- To explain the role Educational Excursion / Art and Craft Workshop in teaching learning process To analyze the importance of various activities of Educational Excursion / Art and Craft Workshop.
- To analyze the importance of Educational Excursion / Art and Craft Workshop in school education.
- To develop skills needed for successful organization of Educational Excursion/ Art and Craft Workshop.
- To organize various activities related to Educational Excursion / Art and Craft Workshop.

**Course Outline:**

It will have three components-

1. Participation in all activities of Educational Excursion / Art and Craft Workshop.
2. Report writing for Educational Excursion / Art and Craft Workshop with your participation details.
3. Participation in Viva voce at the end of semester.

**Note: For successful completion of the course all three components (Participation in all activities of Educational Excursion / Art and Craft Workshop, Report writing and Viva Voce) are compulsory.**

**School Internship – I**
**(for School Observation)**

**Course Code: BED461** **Credits: 0**

**Duration: 02 Week** **MM: 50**

**Course Outline**

1. Participation in Internship for School Observation.
2. Recording of class observation of minimum 20 lessons (minimum 10 for each teaching subject).
3. Maintenance of Record of school Internship with brief report about school.
4. Viva – voce. (Internal)

**Note: For successful completion of the course, Participation in all activities of School Internship is compulsory.**