Gyan Vihar School of Education

Suresh Gyan Vihar University

Mahal, Jagatpura, Jaipur-302025

Curriculum B.Sc.B.Ed. (PCM)

for

Academic Session

2024-28

Semester – I, II, III, IV, V, VI, VII, VIII

GYAN VIHAR SCHOOL OF EDUCATION
Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM)
EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: I Semester: I AUTUMN/PAVAS

S. No.	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	**University Core**								
1	PC-101	Proficiency and Co-Curricular Activities-I	2	-			-	100	
2	UC-105	Anandam-An Exercise in Trusteeship (A-ET)	2			2		100	
3	UC-111	English Language -I	2	2			3	30	70
4	UC-101	Environmental Studies	2	2			3	30	70
5	UC-103	Human Values & Ethics	1	2			3	30	70
6	UC-113	Elementary Computers	3	3			3	30	70
B	**Program Core**								
1	SM-101	Seminar/Workshop /Tutorial	2	-			-	100	
C	**Program Elective**								
1	SC 113	Chemistry-I (Fundamentals of Chemistry-I)	3	3	0	0	3	30	70
2	SC117	Physics-I (Mechanics)	3	3	0	0	3	30	70
3	SC119	Mathematics-I(Calculus)	3	3	0	0	3	30	70
4	SC 121	Mathematics-II (Three Dimensional Coordinate Geometry and Vector Calculus	3	3	0	0	3	30	70
05	SC 167	Chemistry-I Lab	2	0	0	4	3	70	30
6	SC 165	Physics-I Lab	2	0	0	4	3	70	30
		TOTAL	**28**						

NOTE: The University Electives are apart from minimum credits required for award of degree.

L= Lecture **T=Tutorial** **CIE=Continuous Internal Evaluation**
S= Seminar **P= Practical** **ESE= End Semester Examination**

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GYAN VIHAR SCHOOL OF EDUCATION
Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM)
EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: I Semester:II SPRING/BASANT

S. No.	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	**University Core**								
1	UC-104	Indian Heritage & Culture	3	3			3	30	70
2	UC-108	English Language – II	2	2			3	30	70
3	PC-102	Proficiency and Co-Curricular Activity-II	2					100	
4	UC-102	Cyber Security (Basics)	3	3			3	30	70
B	**Program Core**								
1	SM -102	Workshop /Seminar /Tutorial	2					100	
C	**Program Electives**								
1	PY-112	Physics-II(Mathematical Physics and Special theory of relativity)	4	3	1	-	3	30	70
2	PY-114	Physics-III (Optics)	4	3	1	-	3	30	70
3	PY-162	Physics-II Lab	2	-	-	2	3	70	30
4	CY-112	Chemistry-II (Fundamentals of chemistry-II)	4	3	1	-	-	30	70
5	CY-162	Chemistry-II Lab	2	-	-	2	3	70	30
6	MA-112	Mathematics-III (Algebra)	4	3	1	-	3	30	70
7	MA-114	Mathematics-IV (Differential Equations	4	3	1	-	3	30	70
	TOTAL		37						

NOTE: The University Electives are apart from minimum credits required for award of degree.

L= Lecture **T=Tutorial** **CIE=Continuous Internal Evaluation**
S= Seminar **P= Practical** **ESE= End Semester Examination**

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GYAN VIHAR SCHOOL OF EDUCATION
Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM)
EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: II Semester:III Autumn/PAVAS

S. No	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	**University core**								
1	PC-201	Proficiency and Co-Curricular Activities-III	2	0	0	0	0	100	-
2	EM-201	Employability Skills-I	1	0	2	0	3	100	-
		B Program Core							
1	ED-207	Basic in Education	4	4			3	30	70
2	TP-201	Pre Internship –I A	2					100	
3	SM -201	Seminar/Workshop /Tutorial	2					100	
C	**Programe**	**Electives**							
1	SC 235	Physics -IV(Thermodynamics and Statistical Physics)	4	3	1	0	3	30	70
2	SC 237	Physics-V (Electricity and Magnetism)	4	3	1	0	3	30	70
3	SC 271	Physics Lab- III	2	0	0	2	3	70	30
4	SC 221	Chemistry –III (Inorganic Chemistry – I)	4	3	1	0	3	30	70
5	SC 223	Chemistry –IV (Organic chemistry -I)	4	3	1	0	3	30	70
6	SM 265	Chemistry- III Lab	2	0	0	2	3	70	30
7	SC 231	Mathematics –V (Numerical Analysis and Theory of Probability)	4	3	1	0	3	30	70
8	SC 233	Mathematics –VI (Discrete Mathematics)	4	3	0	0	3	30	70
		Total	**39**						

NOTE: The University Electives are apart from minimum credits required for award of degree.

L= Lecture **T=Tutorial** **CIE=Continuous Internal Evaluation**
S= Seminar **P= Practical** **ESE= End Semester Examination**

Members of BoS, Education **Convener, BoS Education**

GYAN VIHAR SCHOOL OF EDUCATION
Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM)
EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: II Semester: IV Spring/BASANT

S. No.	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	**University Core**								
1	EM- 202	Employability Skills-II	1		1		3	100	
2	PC -202	Proficiency in Co-curricular Activities-IV	2					100	
B		**Program Core**							
1	ED-254	Contemporary India and Education	4	4			3	30	70
2	TP-202	Pre Internship –I B	2					100	
3	SM -202	Seminar/Workshop /Tutorial	2					100	
C	**Program Elective**								
1	SC-246	Physics –VI (Electronics and Solid-State Devices)	4	3	1	0	3	30	70
2	SC-248	Physics- VII (Solid State Physics)	4	3	1	0	3	30	70
3	SC-268	Physics Lab- IV	2	0	0	2	3	70	30
4	SC-234	Chemistry- V (Physical Chemistry-I)	4	3	1	0	3	30	70
5	SC-262	Chemistry -IV Lab	2	0	0	2	3	70	30
6	SC-242	Mathematics -VII (Real Analysis)	4	3	1	0	3	30	70
7	SC-244	Mathematics -VIII (Operation Research)	4	3	1	0	3	30	70
		Total	**35**						

NOTE: The University Electives are apart from minimum credits required for award of degree.

L= Lecture T=Tutorial CIE=Continuous Internal Evaluation

S= Seminar P= Practical ESE= End Semester Examination

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GYAN VIHAR SCHOOL OF EDUCATION
Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM)
EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: III Semester: V (AUTUMN/PAVAS)

S. No.	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	**University Core**								
1	EM- 301	Employability Skills-III	1		2		3	100	
2	PC -301	Proficiency in Co-curricular Activities-V	2					100	
B		Program Core							
1	TP-301	Pre Internship –II A	2					100	
2	ED-301	Curriculum and School	4	4				30	70
3	ED-303	ICT-A Tool in teaching learning-I	2	2				30	70
4	SM -301	Seminar/Workshop /Tutorial	2					100	
B	**Program Elective: I**								
1	PY-311	Physics-VIII (Nuclear Physics)	4	3	1	0	3	30	70
2	PY-361	Physics-V Lab: Project	1	0	0	2	3	70	30
3	CY-311	Chemistry VI (Inorganic Chemistry-II)	4	3	1	0	3	30	70
4	CY-361	Chemistry -V Lab	1	0	0	2	3	70	30
5	MA-311	Mathematics –IX (Linear Algebra)	4	3	1	0	3	30	70
6	MA-313	Mathematics –X (Complex Analysis)	4	3	1	0	3	30	70
D	**Program Electives: II**								
1	**ED-305**	Understanding a discipline – Maths	3	3			3	30	70

		Total	**34**						

NOTE: The University Electives are apart from minimum credits required for award of degree.

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GYAN VIHAR SCHOOL OF EDUCATION
Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM)
EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: III Semester:VI Spring/BASANT

S. No.	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	**University Core**								
1	EM- 302	Employability Skills-IV	1		2		3	100	
2	PC -302	Proficiency in Co-curricular Activities-VI	2					100	
B		**Program Core**							
1	ED-302	Yoga Education	2	2			3	30	70
2	TP-302	Pre Internship –II B	2					100	
3	SM -302	Seminar/Workshop /Tutorial	2					100	
C	**Program Elective**								
1	SC-374	Physics-IX (Classical &Quantum Mechanics)	4	3	1	0	3	30	70
2	SC-372	Physics-VI Lab: Project	2	0	0	2	3	70	30
3	SC-346	Chemistry VII (Physical & Misc Chemistry-II)	4	3	1	0	3	30	70
4	SC-348	Chemistry VIII (Organic Chemistry-II)	4	3	1	0	3	30	70
5	SC-368	Chemistry -VI Lab	2	0	0	2	3	70	30
6	SC-312	Mathematics –XI (Number Theory)	4	3	1	0	3	30	70
7	SC-314	Mathematics –XII (Statics and Dynamics)	4	3	1	0	3	30	70
D	**Program Electives: II (Any**								

	two)								
1	ED-304	Pedagogy of a school Subject (Part-I) Physics -I	3	3	0	0	3	30	70
2	ED-306	Pedagogy of a school Subject (Part-I) Mathematics - I	3	3	0	0	3	30	70
3	ED-308	Pedagogy of a school Subject (Part-I) Chemistry- I	3	3	0	0	3	30	70
		Total	**39**						

NOTE: The University Electives are apart from minimum credits required for award of degree.

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GYAN VIHAR SCHOOL OF EDUCATION

Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM)

EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: IV Semester: VII AUTUMN/PAVAS

S. No.	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	Program Core								
1	TP-401	School Internship-III	18			36		70	30
2	TP-403	Research Based Project	1			2		100	
3	TP-405	Understanding the self	1			2		100	
		Total	**20**						

NOTE: The University Electives are apart from minimum credits required for award of degree.

L= Lecture T=Tutorial CIE=Continuous Internal Evaluation

S= Seminar P= Practical ESE= End Semester Examination

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Teaching and Examination Scheme for 4-year B.Sc.B.Ed. (PCM).

EFFECTIVE FROM ACADEMIC SESSION 2024-28

Year: IV Semester: VIII Spring/BASANT

S. No.	Course Code	Course Name	Credits	Contact Hrs/Wk.			Exam Hrs.	Weightage (in%)	
				L	T/S	P		CIE	ESE
A	**University Core**								
1	EM 402	Group Discussion, Aptitude & Reasoning-II	1		2		3	100	
2	EM 402	Employability Skill	1					100	
B		Program Core							
1	ED-408	Creating an Inclusive School	4	4			3	30	70
2	ED-410	Major Concerns and issues in Indian Education	4	4			3	30	70
3	ED-412	Assessment of learning	4	4			3	30	70
4	ED-414	Learner and learning	4	4			3	30	70
5	ED-422	ICT – A Tool in teaching Learning-II	2			4	3	70	30
6	TP-402	Post Internship	4			8		100	
B	**Program Elective (Any two)**								
1	ED-416	Pedagogy of a school Subject (Part-II) Physics -II	3	3	0	0	3	30	70
2	ED-418	Pedagogy of a school Subject (Part-II) Mathematics - II	3	3	0	0	3	30	70
3	ED-420	Pedagogy of a school Subject (Part-II) Chemistry - II	3	3	0	0	3	30	70
		Total	**30**						

NOTE: The University Electives are apart from minimum credits required for award of degree.

L= Lecture T=Tutorial CIE=Continuous Internal Evaluation

S= Seminar P= Practical ESE= End Semester Examination

Members of BoS, Education **Convener, BoS Education**

EXAMINATION SCHEME- B.Sc-B.Ed.
EXAMINATION SCHEME-B.Sc.B.Ed. (PCM)

1. **Program core & Program Elective Papers:** Program core & Program Elective Papers shall be evaluated as follows:-

Practical Exam	Internal (CIE)	External (ESE)
100	70	30

External marks will be awarded at the end semester theory examination.
Internal marks will be awarded on the following basis.

I & IIMid Term	Weekly Test	Graded Assignment	Total
10	10	10	30

2. **ICT- A Tool in Teaching Learning-II (VIII - Semester):**

ICT- A Tool in Teaching Learning-II Exam shall be evaluated under the following head:

Practical Exam	Internal (CIE)	External (ESE)
100	70	30

Components of CIE of ICT- A Tool in Teaching Learning-II:

• Mid-Term with viva	30
• Attendance	20
• File work, presentation & Overall performance	20
	70

Components of ESE of ICT- A Tool in Teaching Learning-II:

• Performance of the practical/quiz	20
• Viva-voce	10
	30

3. **<u>SEMINAR/PRESENTATION/WORKSHOP</u>**

Seminar/presentation/ workshop: Shall be evaluated internally.
Work shall be evaluated on the following topics/ other relevant area:

(a) Instructional planning (lesson plan, unit plan & yearly plan)
(b) Formulation of instructional objectives and content analysis
(c) Teaching skills
(d) Measurement and evaluation
(e) Innovative teaching

(f) Preparation of teaching aids
(g) Reading and reflecting on text (EPC)
(h) Creative writing
(i) Reading reflection
(j) Improving listening skills
(k) Language and curriculum

Components of CIE of Seminar / Workshop / Presentation/tutorial (I & II Semester):

• Attendance	25
• Presentation skills	25
• Report submission/ File Work	30
• Participation in the activities	20
	100

**Elective Subjects Presentations and File Work (I & II Semester)*

**2 Credits (INTERNAL)*

Components of CIE of Seminar / Workshop / Presentation/tutorial (III & IV Semester):

• Attendance	25
• Presentation skills	25
• Report submission/ File Work	30
• Participation in the activities	20
	100

Components of CIE of Seminar / Workshop / Presentation/ Tutorial (V & VI Semester):

• Attendance	25
• Presentation skills	25
• Report submission/ File Work	30
• Participation in the activities	20
	100

Seminar /Workshop/ Presentation/Tutorial (III Semester):

S. No.	Seminar /Workshop/ Presentation	Internal/ External Assessment
1.	Instructional planning (lesson plan, unit plan & yearly plan)	2 credits (Internal)
2.	Formulation of instructional objectives and content analysis	

3.	Teaching skills	

Seminar /Workshop/ Presentation/Tutorial (IV Semester):

S. No.	Seminar /Workshop/ Presentation	Internal/ External Assessment
1.	Measurement and evaluation	2 credits (Internal)
2.	Innovative teaching	
3.	Preparation of teaching aids	

Seminar /Workshop/ Presentation/tutorial (V Semester):

S. No.	Seminar /Workshop/ Presentation	Internal/ External Assessment
1.	Reading and reflecting on text (EPC)	2 credits (Internal)
2.	Creative writing	
3.	Reading reflection	
4.	Improving listening skills	
5.	Language and curriculum	

Seminar /Workshop/ Presentation/tutorial (VI Semester):

S. No.	Seminar /Workshop/ Presentation	Internal/ External Assessment
1.	Action Research	2 credits (Internal)
2.	Diagnostic Testing	
3.	Remedial Teaching	
4.	Improving listening skills	
5.	Language and curriculum	

4. PRE-INTERNSHIP

***Pre-Internship will not be conducted in I & II Semester.*

***Pre-Internship-I (A) will not be conducted in schools in III Semester.*

Components of CIE of Pre-Internship-I (A) (III - Semester):

• Microteaching skill practice	50
• Introduction of lesson plan	25
• Introduction of unit plan	25
	100

**10 Micro Teaching Skills x 5=50 Marks*

Components of CIE of Pre-Internship-I (B) (IV - Semester):

• Demonstration lesson	40
• One week regular observation of any regular teacher	30
• Regular visits to schools	30
	100

Components of CIE of Pre-Internship-II (A) (V – Semester):

• Preparation of Innovative lesson plans	50
• Delivery of Innovative lesson plans in the schools	50
	100

**2 Innovative Lessons x 25=50 Marks*
**Delivery of 2 Innovative Lessons x 25=50 Marks*

Components of CIE of Pre-Internship-II (B) (VI – Semester):

• Delivery of Lesson Plan of both Pedagogy	50
• Observation of day to day school activities and Preparation of detail report of any two activities	30
• Conduction of any two co-curricular activities	20
	100

**Delivery of 2 pedagogy Lesson plans x 25=50 Marks*
**School Activities-6 x 5=30 Marks*
**Two Co-Curricular activities-2x10=20 Marks*

Evaluation of School Internship-III (VII - Semester):

Total	Internal (CIE)	External (ESE)
100	70	30

Components of CIE of school internship (teaching practice):

• Attendance	10
• Daily lessons	30
• Discussion lesson(criticism)	10
• Block Teaching	20

	70

Components of ESE of school internship (teaching practice):

• Lesson planning in the diary	10
• Presentation during teaching	10
• Teaching Aids	05
• Closure of the lesson	05
	30

Components of CIE of Post-Internship-IV (VIII - Semester):

• Organization of educational exhibition and fairs	25
• Formation of different clubs	20
• Community based project work	25
• Preparation of Journal/ School Magazine / Wall magazine	30
	100

*Note: Pre-internship- I, II and post-internship IV will be evaluated internally for 100 marks.

Semester – VII

School Internship-III (TP – 401) (12 weeks)

S. No.	Teaching Practice and Practical Work	Internal/ External Assessment
1.	Regular class room teaching delivery of 25 lessons in each subject (25*2 = 50 lessons)	18 credits (Internal+ External)
2.	Participation of co-curricular activities	
3.	Observation of teaching of peers (20 in each discipline and its report preparation)	
4.	Evaluation of lesson plans	
5.	Diagnostic test followed by remedial teaching	
6.	Involvement of student in lesson with the regular teacher in all day to day functioning along with teaching	
7.	2- discussion lessons	
8.	Exhibition of teaching aids	
9.	Organization of school trips	
10.	Research based project (action plan/ survey)	2 credits (Internal)
11.	Understanding the self- Conduction of various activities related to yoga, meditation, life skills, values and peace for school students as per instructions given by schools (EPC)	2 credits (Internal)

12.	2 - final lessons	

Semester – VIII

Post-internship – IV (TP– 402) (2 weeks)

S. No.		Internal / External Assessment
1.	Organization of educational exhibition and fairs	4 credits (Internal)
2.	Formation of different clubs	
3.	Community based project work	
4.	Preparation of Journal/ School Magazine/ Wall magazine	

SURESH GYAN VIHAR UNIVERSITY
Accredited by NAAC with 'A' Grade

DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

ENGLISH LANGUAGE - I	**[UC-111]**

I-SEM. B.Sc.B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-2 CREDITS-2	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To enable the student to:

1. Have an understanding of grammar
2. Make themselves aware of various professional writing

UNIT	Course Contents	
I	Grammar Sentences, Prepositions, Subject-verb agreement, Correct Usage- Tenses, Active & Passive, Modals, Direct and indirect Speech, Idioms, Determiners	6
II	Vocabulary Building Introduction, Synonyms, Antonyms, Homophones, Homonyms, Words Often Confused, One Word Substitution, Affixes, Select Vocabulary of about 300-500 new words	6
III	Verbal Communication Definition, Working with customers, developing professional telephone skills & improving informal communication	6
IV	Professional Writing Writing Official/ Business/ Formal letters; Writing Application and CV; Writing for Official Meetings Report Writing- Size of the Report, Kinds of Reports, How to write Reports, Format for reporting Technical Proposals: Parts, Types, Writing of Proposal, Significance.	6
V	Composition Paragraph Writing- Parts of a paragraph, Writing a good paragraph, Characteristics of a good paragraph; Developing Outlines, Note- making, Review Writing	6
Reference Books	Sasikumar ,V. Dutta And Rajeevan, A course In Listening And Speaking-I Foundation Books,2006. Sawhney, Panja and Verma Eds. English At The Workplace Macmillan 2003. Singh,R.P., Professional Communication, OUP 2004. Judith Leigh. CV's and Job Applications, OUP 2004. Arthur Waldhorn and Arthur Zeiger, English Made Simple, Rupa and Co. Gunashekar Ed. A Foundation Enhlish Course For Undergrautes, Bookiciefi, Hyderabad. Quirk and Greenbaum, A University Grammar of English Longman 1973.	
Recommended by BOS on :		

SURESH GYAN VIHAR UNIVERSITY
Accredited by NAAC with 'A' Grade

DETAILED SYLLABUS

2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Elementary Computers	**[UC-113]**

I-SEM. B.Sc.B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To enable the student to:

This course aims to give a general understanding of how a computer works, Aware about operating system, various Computer Languages and number system, Give a general understanding of Internet, information technology, e-commerce and Networks

UniT-I	**Introduction** **hours**
Types of computers and generations .Basic architecture of computers and its building blocks .Input-Output devices, Memories, Overview, definition and function of operating system, need of operating System,	
UNIT-**II**	**Classification of Computer Languages,** **hours**
Machine, assembly and high level languages .Brief idea of operating system, Assembler, compiler and interpreter, Number Systems :Binary, octal, decimal and hexadecimal representation of numbers. Integers and floating point numbers. Representation of characters	
UNIT **-III**	**An overview of information technology**, **hours**
difference between data and information, quality, of information, Information system. Introduction to internet: www, web browser, search engine, email, open source software's, Search Engine optimization	
UNIT-**IV**	**Introduction to e-commerce7 hours**
Introduction to e-commerce and its advantage, Types of E-Commerce, B2B, B2M, M2B, M2M, Electronic payment system, E-governance, Introduction to Information Security, cryptography, digital signature and smart card technology,	
UNIT-**V**	**Introduction to LAN, WAN, MAN:7 hours**
Transmission mediaData transmission type: Introduction to OSI reference model, Analog and digital signals,, Network topologies, client-server architecture, ISDN, Broad Band	
Text Book	Computer Fundamentals: Architecture and Organization, by B Ram, New Age International Publisher
Reference Books	**Recommended Books:** Computer Fundamentals: Architecture and Organization, by B Ram, New Age International Publisher 1. Information Technology and the Networked Economy, Second Edition **By**McKeown, Patrick G. 2. Internet & Intranet Engineering, Tata McGraw Hill company.

	3. Information Technology by AjitPoonia. 4. Information Technology by D.P. Sharma
Mode of Evaluation: (Percent Weightage)	Assignment/Quiz/Viva-Voce/student seminar/written examination/PPT
Recommended by BOS on :	
Approved by Academic Council on:	

SURESH GYAN VIHAR UNIVERSITY
Accredited by NAAC with 'A' Grade

DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Environmental Studies	**[UC-101]**

I-SEM. B.Sc.B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-2 CREDITS-2	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To enable the student to:

The learning objective of course is: To create an understanding regarding the eco system, To gain knowledge about relation between environment and human races.

Unit-I	**Man & Environment**
Man & Environment: Definition of Environment & its various components. Ecosystem concepts. Dependence of Man on nature for its various needs. Human population growth & its impacts on environment. Environment & human health. Environmental concerns including climate change, Global warming, Acid Rain, Ozone layer Depletion etc. Environmental ethics. Traditional ways of utilizing various components of environment. Sustainable developments.	
Unit- II	**Natural Resources**
Natural Resources: Forest resources, Mining, Dams & their effects on forests & tribal people. Water resources-over utilization of water, floods, droughts and conflicts over water resources. Mineral Resources- Use of various minerals for Human welfare & environmental effects of mining. Food resources -World food problem. Impacts of changing Agriculture practices on Environment. Energy Resources- Renewable and non renewable energy Resources & exploration of alternative energy sources. Land Resources- land degradation, soil erosion, desertification and soil contamination.	
Unit-III	**Ecosystems**
Ecosystems: Structure & function, energy flow, food chains, food webs, Ecological pyramids. Basics of forest grasslands, desert & aquatic ecosystem (Ponds, Streams, Lakes, Rivers, Oceans & Estuaries)	
Unit-IV	**Biological Diversity**
Biological Diversity: Genetic, species & ecosystem diversity, Values of Biodiversity, Global, National & Local Biodiversity. Hot-spots of Biodiversity, threat to biodiversity. Endangered & endemic species of India. Conservation of biodiversity in situ & ex-situ	
Unit-V	**Environment pollution**
Environment pollution: Causes, effects & control of- Air pollution, Water pollution, Soil pollution, Noise Pollution, Thermal pollution & Nuclear Hazards. Solid wastes & their Management. Disaster Management-Flood, Drought, Earthquake, Landslides etc.	
Reference books/Text Books	1. Agarwal KC, 2001. Environmental Biology, Nidi Publishers Ltd. Bikaner. 2. Bharucha Erach, 2003. The Biodiversity of India, Mapin Publishing Pvt. Ltd, Ahmedabad – 3. Brunner RC, 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480pgs. 4. Clark RS, Marine Pollution, Clanderson Press, Oxofrd (TB). 5. Cunningham WP, Cooper TH, Gorhani E & Hepworth MT, 2001.

	Environmental Encyclopaedia, Jaico Publishing House, Mumbai
Mode of Examination	Assignment/Quiz/Viva-Voce/student seminar/written examination/PPT
Recommended By BOS on:	
Approved by academic council on:	

SURESH GYAN VIHAR UNIVERSITY
Accredited by NAAC with 'A' Grade

DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Human values and Ethics	UC-103
SCHEDULE PER WEEK LECTURES-2 CREDITS-2	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

The learning objective of course is:

1) To understand meaning, nature and scope of ethics and values
2) To learn about human rights.
3) To learn individual and society.
4) To understand the basic of Indian ethics
5) To learn the basics of professional ethics.

Unit-I	**Introduction:**
Definition of Ethics and Values, Character and Conduct , Nature and Scope of Ethics ,Uses of Ethics	
Unit- II	**Human Rights:**
Rules and Regulations, Rights and Duties, Integrity and Conscience, Civil rights, Human rights. Fundamentals rights.	
Unit-III	**Individual and Society:**
Theories of Society, Social Relationships and Society,Individuals behavior in diverse group and social groups**,** Environmental ethics and nature.	
Unit-IV	**Indian Ethics:**
Lesson from Mahatma Gandhi , Society and Trusteeship, Indian constitution, Directive Principles of State	
Unit-V	**Professional Ethics:**
Human Goals , Ethics in Public Administration, , Ethics and Civil Servants , Ethical Values and Management	
Reference books/Text Books	1. Govindarajan M (Author) 2013. Professional Ethics and Human Values. Kindle Edition. 2. R.S. Naagarazan. 2016. A Textbook on Professional Ethics and Human Values. New Age International. 3.Jayshree Suresh 2003. Human Values and Professional Ethics Paperback. S. Chand publisher
Mode of Examination	Assignment/Quiz/Viva-Voce/student seminar/written examination/PPT
Recommended By BOS on:	

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DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I(Autumn)**

Fundamentals of Chemistry-I	**[CY 111]**
I-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Atomic Structure: Recapitulation**: Bohr's theory Time independent Schrodinger equation (H Ψ = EΨ). Schrodinger equation for hydrogen atom. Radial and angular nodes and their significance. Radial distribution functions (1s and 2s AO). Significance of quantum numbers, orbital angular momentum and quantum numbers mr and ms. Shapes of s, p and d AO. Electronic configurations of the elements. Concept of exchange energy. Relative energies of AO, Anomalous electronic configurations.	07
2	**Covalent bonding:** VB Approach: Concept of hybridization and VSEPR theory. Resonance and resonance energy Molecular Orbital Approach : LCAO method, bonding and anti bonding MOs and their characteristics for s-s, s-p and p-p combination of atomic orbital's, non- bonding combination of orbital's ,MO treatment of homo nuclear diatomic molecules of 1st and 2nd periods and hetero nuclear diatomic molecules such as CO, NO and NO+	08
3	**Fundamentals of Organic Chemistry**: Cleavage of Bonds: Homolysis and Heterolysis. Structure, shape and reactivity of organic molecules Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect, Resonance and Hyperconjugation. Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions free radicals. Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Huckel's rule	06

4	**Stereochemistry: Conformations** ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newman, Sawhorse and Fischer representations. Concept of chirality (up to two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). Threo and Erythro; D and L; cis - trans nomenclature; R/ S (for up to 2 chiral carbon atoms) and E / Z Nomenclature (for up to two C=C systems).	07
5	**Aliphatic Hydrocarbons** Alkanes: Preparation: Catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. Reactions: Free radical Substitution: Halogenations. Alkenes: Preparation, Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis alkenes (Partial catalytic hydrogenation) and trans alkenes.	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1 Barrow, G. M. Physical Chemistry Tata McGraw-Hill (2007).
2. Castellan, G. W. Physical Chemistry 4th Ed. Narosa (2004).
3. Mahan, B. H. University Chemistry 3rd Ed. Narosa (1998).
4. I. L. Finar: Organic Chemistry (Vol. I & II), E. L. B. S.
5. R. T. Morrison & R. N. Boyd: Organic Chemistry, Prentice Hall.
6. Arun Bahl and B. S. Bahl: Advanced Organic Chemistry, S. Chand

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DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Physics-I (Mechanics)	**[PY-111]**
I-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- The students will introduce about the forces, angular momentum and knowledge about the Constraint.
- The course will give knowledge about the general parameter like velocity, acceleration.
- The course provide the students about the knowledge of M.I.
- The course provide the students about the knowledge of hollow cylinder and solid Cylinder.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Work and Energy Theorem** Work and Kinetic Energy Theorem. Conservative and Non-Conservative Forces. Potential Energy. Energy Diagram. Stable and Unstable Equilibrium. Gravitational Potential Energy. Elastic Potential Energy. Force as Gradient of Potential Energy. Work and Potential energy. Work done by Non-conservative Forces. Law of Conservation of Energy. Elastic and Inelastic Collisions between particles. Centre of Mass and Laboratory Frames..	07
2	**Rotational Dynamics** : Angular Momentum of a Particle and System of Particles. Torque. Conservation of Angular Momentum. Rotation about a Fixed Axis. Moment of Inertia. Calculation of Moment of Inertia for Rectangular, Cylindrical, and Spherical Bodies. Kinetic Energy of Rotation. Motion involving both Translation and Rotation	08
3	**Elasticity :** Hooke's law- Stress-strain diagram - Elastic moduli-Relation between elastic constants- Poisson's Ratio-Expression for Poisson's ratio in terms of elastic constants- Work done in stretching & work done in twisting a wire- Twisting couple on a cylinder- Determination of Rigidity modulus by static torsion- Torsional pendulum-Determination of Rigidity modulus and moment ofinertia - q, η &□ by Searles method.	06

4	**Gravitation :** Newton's Law of Gravitation. Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant). Kepler's Laws (statement only). Satellite in circular orbit and applications.	07
5	**Inertial and non-Inertial systems** : Reference Frames: Inertial Frames and Galilean Transformations. Galilean Invariance and Conservation Laws. Non-inertial Frames and Fictitious Forces. Uniformly Rotating Frame. Physics Laws in Rotating Coordinate Systems. Centrifugal forces: Coriolis Force and its Applications. Components of Velocity and Acceleration in Cylindrical and Spherical Coordinate Systems	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Daniel Kleppner, Robert J. Kolenkow: An introduction to mechanics, McGraw-Hill, 1973.
2. Charles Kittel,Walter Knight: Malvin Ruderman,Carl Helmholz, Burton Moyer, Mechanics Berkeley physics course.
3. D. S. Mathur: Mechanics, S. Chand & Company Limited, 2000.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Physics-I Lab	**[PY-111]**

B.Sc. B.Ed.
SCHEDULE PER WEEK
CREDITS-2
Practical -3

LIST OF EXPERIMENTS

1. Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
2. To determine the height of a building using a Sextant.
3. To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c)Modulus of rigidity.
4. To determine the Moment of Inertia of a Flywheel.
5. To determine g and velocity for a freely falling body using Digital Timing Technique.
6. To determine Coefficient of Viscosity of water by Capillary Flow Method(Poiseuille's method).
7. To determine the Young's Modulus of a Wire by Optical Lever Method.
8. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
9. To determine the elastic Constants of a wire by Searle's method.
10. To determine the value of g using Bar Pendulum

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

MATHEMATICS-I (Calculus)	**[MA-111]**

I-SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

- To give exposure to computational techniques and applications of differentiation and integration.
- To develop a competent working knowledge of the main concepts and methods introduced.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Differential Calculus:** Derivative of length of an arc. Pedal equations,Curvature (various formulae), Centre of curvature and Chord of curvature .Envelopes.	7
2	**Differential Calculus:** Partial differentiation, Total differential coefficient, Change of variables, Euler's theorem for homogeneous functions.Maxima and Minima of functions of two variables. Lagrange's method of undermined multipliers.	7
3	**Differential Calculus:** Asymptotes.Multiple points. Curve tracing of standard curves (Cartesian and Polar curves)	
4	**Integral Calculus:** Rectification, Areas.Volumes and Surfaces of solids of revolution.	8

5	**Integral Calculus:** Double integrals in Cartesian and Polar coordinates, Change of order of integration. Triple integration. Application of double and triple in integrals in finding areas and volumes. Dirichlet's integral.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Elements of Differential Calculus by Sharma, Gokhroo, Saini
- Elements of Integral Calculus by Gokhroo, Saini, Agrawal
- Differential Calculus by Gorakh Prasad..
- Integral Calculus by Gorakh Prasad.
- Mathematical Analysis by Gabriel Klambauer.
- Differential Calculus: RBD Publication.
- Integral Calculus: RBD Publication.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Mathematics-II (Three Dimensional Coordinate Geometry and Vector Calculus)	**[MA-113]**

I-SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

The objective is to develop a competent working knowledge of the main concepts and methods introduced.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Dimensional Coordinate Geometry:** **Calculus:** Sphere, Plane section of a sphere, Tangent plane. Pole and Polar plane. Orthogonal spheres. Radical plane and Radical Centre.	7
2	**Dimensional Coordinate Geometry:** Cone, Reciprocal Cone, Right-circular cone, Enveloping cone.Cylinder, Right circular cylinder, Enveloping cylinder.	7
3	**Dimensional Coordinate Geometry:Central Conchoids:** Ellipsoid ,Tangent plane, Condition of tangency for a plane, Director Sphere, Polar planes, Polar lines, Section with a given centre. Normal's, Conjugate diameters and Diametral planes and their properties.	8
4	**Vector Calculus:** Scalar point function, Vector point function. Differentiation and Integration of vector point function.Directional derivative. Gradient, Divergence and Curl. Line, Surface and Volume integrals.	7

5	**Vector Calculus:** Theorem of Gauss, Green, Stokes (without proofs) and problems based on these theorems.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Analytical solid Geometry by Golas,Tandon,Bhargava.
- A Text Book of Vector Calculus by Gaur ,Mathur , GoyalDifferential Calculus by Gorakh Prasad..
- Analytical Solid Geometry by Shanti Narain.
- Elementary Treatise on coordinate Geometry of three dimensions by R.J.T. Bell.
- Elements of Coordinate Solid Geometry by Gupta ,Bansal.
- Coordinator Geometry (3D) : RBD Publication
- Vector Analysis byChatterjee (PHI Learning)

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Chemistry-I Lab	**[CY 161]**	

I-SEM. B.Sc. B.Ed.
SCHEDULE PER WEEK
CREDITS-2
Practical -3

S.No	Name of Experiment
01	1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
02	2. Estimation of oxalic acid by titrating it with KMnO4.
03	3. Estimation of water of crystallization in Mohr's salt by titrating with KMnO4.
04	4. Estimation of Fe(II) ions by titrating it with K2Cr2O7 using internal indicator.
05	5. Estimation of Cu(II) ions iodometrically using Na2S2O3.
06	1. Detection of extra elements (N,S,Cl,Br,I) in organic compounds (containing upto two extra elements)
07	2. Separation of mixtures by Chromatography: Measure the Rf value in each case (combination of two compounds to be given
08	a. Identify and separate the components of a given mixture of 2 amino acids (glycine, aspartic acid,
09	glutamic acid, tyrosine or any other amino acid) by paper chromatography. b. Identify and separate the sugars present in the given mixture by paper chromatography.

Reference Books:

1. Vogel's Qualitative Inorganic Analysis, A.I. Vogel , Prentice Hall ,7th Edition.
2. Vogel's Quantitative Chemical Analysis, A.I. Vogel , Prentice Hall ,6th Edition.
3. Textbook of Practical Organic Chemistry, A.I. Vogel , Prentice Hall, 5th edition.

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DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-I (Autumn)**

Physics-I Lab	**[PY-161]**

B.Sc. B.Ed.
SCHEDULE PER WEEK
CREDITS-2
Practical -3

LIST OF EXPERIMENTS

10. Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
11. To determine the height of a building using a Sextant.
12. To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c)Modulus of rigidity.
13. To determine the Moment of Inertia of a Flywheel.
14. To determine g and velocity for a freely falling body using Digital Timing Technique.
15. To determine Coefficient of Viscosity of water by Capillary Flow Method(Poiseuille's method).
16. To determine the Young's Modulus of a Wire by Optical Lever Method.
17. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
18. To determine the elastic Constants of a wire by Searle's method.
10. To determine the value of g using Bar Pendulum

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DETAILED SYLLABUS
2024-2028

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

English Language – II	**UC-108**
SCHEDULE PER WEEK LECTURES-2 CREDITS-2	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To enable the student to:

1. Have an understanding of grammar
2. Make themselves aware of various professional writing

UNIT	**Course Contents**	**Total Contact Hours = 31**
I	**Commercial Correspondence:** a) Style and Construction b) Significant Commercial terms and Phrases c) Letter of Inquiry d) Letter of Quotation e) Letter of Order f) Letter of Execution of Order g) Letter of Complaint h) Letter of Collection i) Circular Letter j) Application for Agency	**6**
II	**Official Correspondence:** Official Letter a) Semi-Official Letter b) Memorandum Journalistic Competitions on Commercial Topics: a) Editorial Note on a Commercial Topic b) Letter to the Editor on Economic and Commercial Topics c) Script Writing for the Media d) Journalistic Report Writing, Press Release e) Writing Advertisement Copy f) Writing for Internet Precise Writing	**6**
III	**Theme Writing (Report writing/Academic and Journalistic writing)**	**7**
IV	**Paragraph Writing and Essay writing**	**6**
V	**Advanced Comprehension**	**6**

Recommended by BOS on		

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DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

Fundamentals of Chemistry-II	**[CY 112]**
II-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

Unit	Contents of the Course	Hrs
I	**Chemical Thermodynamics:** (a)State of a system, state variables, intensive and extensive variables, concept of heat and work, First Law of thermodynamics. Calculation of work (w), heat (q), changes in internal energy (ΔU) and enthalpy(ΔH) for expansion or compression of ideal gases under isothermal and adiabatic conditions Calculation of w, q, ΔU and ΔH for processes involving changes in physical states. (b)Thermo chemistry. Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution.	8
II	**Chemical Equilibrium:** (a)Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. (b)Distinction between ΔG and ΔGɵ, Le Chatelier's principle. Relationships between Kp, Kc and Kx for reactions involving ideal gases.	7
III	**Ionic Equilibrium :** **(a)**Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common in effect, (b)Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.	7
IV	**Aromatic hydrocarbons** (a)Preparation of benzene from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid. Reactions of benzene): Aromatic electrophilic substitution: nitration, halogenations and sulphonation. Friedel Craft's reaction (alkylation and acylation). Side chain oxidation of alkyl benzenes (Upto 4 carbons on benzene). (b)Organic Halogen Compounds Types of Nucleophiles Substitution (SN^2, SN^1) reactions. Preparation of Alkyl Halides from alkenes and alcohols. Reactions: hydrolysis, nitrite & nitro formation, nitrile & iso-nitrile formation. Williamson's ether synthesis: Elimination and substitution.	8

V	**Aliphatic and Aromatic Hydroxy Compounds** (a)Alcohols: Preparation: Ester hydrolysis, Reduction of aldehydes, ketones, carboxylic acid and esters. Reactions: With sodium, HX, Oppeneauer oxidation Diols: oxidation of diols. Pinacol-Pinacolone rearrangement. (b)**Phenols**: Preparation and Reactions, acidic nature : Electrophilic substitution: Nitration, halogenations and sulphonationn. Reimer - Tiemann Reaction, Gattermann-Koch Reaction,	8
Total Hours		38

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Reference Books:

1. Vogel's Qualitative Inorganic Analysis, A.I. Vogel , Prentice Hall ,7th Edition.
2. Vogel's Quantitative Chemical Analysis, A.I. Vogel , Prentice Hall ,6th Edition.
3. Textbook of Practical Organic Chemistry, A.I. Vogel , Prentice Hall, 5th edition.
4. Practical Organic Chemistry, Mann F. G. & Saunders B. C, Orient Longman, 1960

DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

Physics-II (Mathematical Physics and Special theory of relativity)	**[** PY-112 **]**

II-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- To understand the linear equations, vector spaces, matrices, linear transformations, determinants, eigen value, eigenvectors, etc.
- To Learn to use Laplace transform methods to solve differential equations.
- To introduce the Fourier series and its application to the solution of partial differential equations.
  To understand the special theory of relativity.

Unit	**Contents of the Subject**	**No. of Teaching Hrs required**
1	**Curvilinear Coordinate system and Tensor** : Curvilinear coordinate system; orthogonal curvilinear coordinate system and scale factor; gradient of scalar field; divergence and curl of a vector field; Relations among all three coordinate systems; Jacobian; Tensor: Invariant, contravariant, covariant and mixed tensor, Metric tensor, Fundamental operations of tensors.	07
2	**Special Theory of Relativity :** Dirac Delta Function; Fourier Series; Michelson Morley Experiment; General and special theory of relativity; Lorentz transformation and its consequences and geometrical interpretation; World line, space time interval, space like and time like vectors and macrocasuality; Relativistic Doppler's effect.	08
3	**Relativistic dynamics and electrodynamics** : Four vector formulation; four velocity, four momentum and four force vectors; Four momentum conservation; Transformation between laboratory and centre of mass frame of reference; Transformation of C frame to L frame of reference; Kinematics of decay products of unstable particles; threshold reaction energy; pair production; Compton effect; Law of conservation of charge and equation of continuity; Lorentz transformation of charge and current densities; Lorentz transformation of four potentials; Lorentz transformation of an electric field and magnetic field.	06

4	**Differential equations of second order and special functions :** Differential equation; Linear differential equation with variable coefficients and series solution method; Legendre differential equation; Rodrigue's formula; orthogonality relation of Legendre equation; Bessel differentia lequation; Hermite differential equation; Laguerre differential equation.	07
5	**Partial differential equation and boundary value problems :** Laplace equation in two and three dimensional cartesian coordinates; Laplace equation in spherical coordinate system; Helmholtz equation in circular cylindrical coordinates; wave equation in spherical coordinates.	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms :10marks

30marks

Recommended Books:

1. Mathematical Physics & Special Theory of relativity by P. Dashora and D. Bhatnagar, RBD pub.
2. Mathematical physics by M.P. Saxena, S.S. Rawat, P.R. Singh, CBH publishing.
3. Mathematical Physis by H.K. Dass, Rama Verma, S.Chand Publication

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DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

Physics-III (Optics)	[PY-114]
II-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- To understand basic concepts and principles of geometrical, physical and modern optics.
- To help students understanding the nature of light, its propagation and interaction with matter.
- To help students in handling and aligning the optical elements and operate the devices and equipment.

To help students in applying the fundamental concepts of optics in lasers, fiber optics, holography etc.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Nature and Behaviour of Light: Wave Theory**: Introduction and History; Four important theories to explain the nature of light: Corpuscular Theory, Wave Theory, Electromagnetic theory, Quantum Theory; Basic Properties of light: Reflection, Refraction, Dispersion, Velocity of light, refractive index, optical path, dual nature; Fermat's principle of least time: deduction of laws of reflection and refraction; Introduction to wave optics: Oscillations and waves, travelling waves, wavefront and wave surface; Mathematical presentation of travelling wave; General wave equation; Complex representation of a plane wave; Wave packet and bandwidth; Fourier series and transforms; Group and Phase velocity; Maxwell's equation; Wave equation for free space; Uniform plane waves; Boundary conditions for light waves: normal incidence and oblique incidence.	07
2	**Interference** :Superposition of Waves; Interference; Young's Double slit experiment – Wavefront division; Coherence; Conditions for Interference; Fresnel Biprism; Interference due to transmitted light; Haidinger Fringes; Newton's rings: Determination of wavelength of monochromatic light; Michelson Interferometer: Construction and working. Determination of wavelength of light and wavelength separation of two nearby wavelengths.	08

3	**Diffraction :Fresnel Diffraction**. Huygens-Fresnel Theory; Fresnel's Assumptions; Distinction between Interference and Diffraction; Diffraction at Circular Aperture; Diffraction at an Opaque circular disc; Diffraction pattern due to straight edge and narrow slit.**Fraunhoffer Diffraction**. Fraunhoffer diffraction at single slit; Fraunhoffer diffraction at a circular aperture; Fraunhoffer diffraction at double slit; Plane diffraction grating.	06
4	**Polarization** : Preferential direction in wave; Polarized light; Types of polarized light; Production of linearly polarized light; Superposition of waves linearly polarized at right angles; Retarders or wave plates; Production of elliptically polarized light; production of circularly polarized light, Analysis of polarized light; Polarizer and analyzer.	07
5	**LASER, Holographyand Optical Fiber : LASER**. Attenuation of light in an optical medium; Interaction of light with matter; Spontaneous and stimulated Emission; Population Inversion; LASER Principle- Einstein's coefficients, Types of LASER- He-Ne LASER, Ruby LASER. Application of lasers.**Holography**. Principle of Holography: Theory; Important properties of Hologram; Advances; Applications. **Optical Fiber**. Total Internal reflection; Optical Fiber; Propagation of light through optical fiber; Fractional refractive index change; Numerical aperture; Modes of propagation; Classifications of optical fibers; Merits of optical fiber	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Optics by Ajoy Ghatak, The Mc Graw Hill Companies
- Optics by Subrahmanyam and BrijLal, S. Chand & Co.
- Fundamentals of Optics by Jenkin's A. Francis & White E Harvey, Mc Graw Hill Inc

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DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

Mathematics-III (Algebra)	**[** MA-112**]**

II-SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

The objective of this course is to develop the learning capabilities and problem solving skills of talented students at the mathematically deeper and more rigorous level.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Groups** Definition and simple properties of groups, Order of an element of a group. Cyclic group, Permutation group.	7
2	**Subgroups :**Subgroups, Cosets. Lagrange's theorem on order of subgroups of a finite order group..	7
3	**Homomorphism and Isomorphism :** Homomorphism and Isomorphism, Cayley's theorem. Normal subgroups and Quotient groups. Fundamental theorem on homomorphism.	7
4	**Rings , Integral domains and Fields :** Definition and simple properties of Rings, Subrings, homomorphism of rings. Embedding rings. Integral domains and Fields. Characteristics of an integral domain and field.	7
5	**Ideals and Quotient Rings :** Ideals and Quotient Ring. Maximal ideal and Prime ideal. Principal Ideal domain. Field of quotient's of an integral domain. Prime fields.	8
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Elements of Abstract Algebra by Sharma, Gokhroo, Saini
- Topics is Algebra by N. Herstain.
- Basic Algebra (Vol. I & II) by N.Jacobson.
- Modern Algebra by S. Singh

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DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

Mathematics-IV (Differential Equations)	**[MA-114]**

II-SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

To develop a competent working knowledge of the main concepts and methods introduced.

To develop a competent working knowledge of the main concepts and methods introduced.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Differential Equations :**Linear differential equations and equations reducible to linear form. Exact differential equations and equations, which can be made exact. First order but higher degree differential equations solvable for x, y and p. Clairauts form and Singular solutions.	7
2	**Differential Equations :**Linear differential equations with constant coefficients. Homogeneous linear differential equations. Simultaneous differential equations.	7
3	**Differential Equations :**Linear differential equations of second order with variable coefficients. Solution by transforming the equation by changing the dependent variable and independent variable . Method of variation of parameters.Normal's, Conjugate diameters and Diametral planes and their properties.	8
4	**Differential Equations :**Partial differential equations of first order. Lagrange's form. Standard forms. Charpits method.	7

5	**Differential Equations :**Homogeneous and non-homogeneous linear partial differential equations with constant coefficients.Equationsreducible to equations with constant coefficient's.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Differential Equations Vol. I byBansal,Dhami.
- Differential Equations Vol. II byBansal,Dhami.
- Introductory course in Differential Equations by D.A. Murray.
- An Introduction to Ordinary Differential Equations by E.A. Codington.
- Elements of Differential Equations by Gokhroo, Saini, Agrawal.
- Differential Equations (Vol. I & II) : RBD Publications
- Introduction to Partial Differential Equations byFolland (PHI Learning)

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DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

Chemistry-II Lab	**CY-162**	**C (L, T, P) = 2 (0, 0, 3)**
II-SEM. B.Sc. B.Ed. **SCHEDULE PER WEEK** **CREDITS-3** **Practical -3**		

S.No	Name of Experiment	
01	Determination of enthalpy of ionization of acetic acid.	
02	Purification of organic compounds by crystallization (from water and alcohol) and distillation.	
03	Criteria of Purity: Determination of melting and boiling points	
04	Bromination of Phenol/Aniline	
05	Benzoylation of amines/phenols	
06	3. Preparations: Mechanism of various reactions involved to be discussed..	
07	2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide	
08	Recrystallisation, determination of melting point and calculation of quantitative yields to be done.	

Reference Books:

1. Textbook of Practical Organic Chemistry, A.I. Vogel , Prentice Hall, 5th edition.
2. Practical Organic Chemistry, Mann F. G. & Saunders B. C, Orient Longman, 1960.
3. Senior Practical Physical Chemistry, B.D.Khosla, R. Chand & Co.
4. Vogel's Qualitative Inorganic Analysis, A.I. Vogel , Prentice Hall ,7th Edition.
5. Vogel's Quantitative Chemical Analysis, A.I. Vogel , Prentice Hall ,6th Edition.
6. Textbook of Practical Organic Chemistry, A.I. Vogel , Prentice Hall, 5th edition.
7. Practical Organic Chemistry, Mann F. G. & Saunders B. C, Orient Longman, 1960.

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DETAILED SYLLABUS
2024-28

Department: School of Education **Year: I**

Program Name: Integrated (B.Sc + B.Ed.) Four Year Programme **Semester-II (Spring)**

Physics-II (Mathematical Physics and Special theory of relativity)	**[** PY-162 **]**

II-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- To understand the linear equations, vector spaces, matrices, linear transformations, determinants, eigen value, eigenvectors, etc.
- To Learn to use Laplace transform methods to solve differential equations.
- To introduce the Fourier series and its application to the solution of partial differential equations.
  To understand the special theory of relativity.

Unit	**Contents of the Subject**	**No. of Teaching Hrs required**
1	**Curvilinear Coordinate system and Tensor** : Curvilinear coordinate system; orthogonal curvilinear coordinate system and scale factor; gradient of scalar field; divergence and curl of a vector field; Relations among all three coordinate systems; Jacobian; Tensor: Invariant, contravariant, covariant and mixed tensor, Metric tensor, Fundamental operations of tensors.	07
2	**Special Theory of Relativity :** Dirac Delta Function; Fourier Series; Michelson Morley Experiment; General and special theory of relativity; Lorentz transformation and its consequences and geometrical interpretation; World line, space time interval, space like and time like vectors and macrocasuality; Relativistic Doppler's effect.	08
3	**Relativistic dynamics and electrodynamics** : Four vector formulation; four velocity, four momentum and four force vectors; Four momentum conservation; Transformation between laboratory and centre of mass frame of reference; Transformation of C frame to L frame of reference; Kinematics of decay products of unstable particles; threshold reaction energy; pair production; Compton effect; Law of conservation of charge and equation of continuity; Lorentz transformation of charge and current densities; Lorentz transformation of four potentials; Lorentz transformation of an electric field and magnetic field.	06

4	**Differential equations of second order and special functions :** Differential equation; Linear differential equation with variable coefficients and series solution method; Legendre differential equation; Rodrigue's formula; orthogonality relation of Legendre equation; Bessel differentia lequation; Hermite differential equation; Laguerre differential equation.	07
5	**Partial differential equation and boundary value problems :** Laplace equation in two and three dimensional cartesian coordinates; Laplace equation in spherical coordinate system; Helmholtz equation in circular cylindrical coordinates; wave equation in spherical coordinates.	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms :10marks

30marks

Recommended Books:

1. Mathematical Physics & Special Theory of relativity by P. Dashora and D. Bhatnagar, RBD pub.
4. Mathematical physics by M.P. Saxena, S.S. Rawat, P.R. Singh, CBH publishing.
5. Mathematical Physis by H.K. Dass, Rama Verma, S.Chand Publication

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics-V (Numerical Analysis and Theory of Probability)	**[MA-211]**

III-SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

The students will be equipped with a number of commonly used numerical algorithms , knowledge and skills in performing numerical computation using MATLAB.

Unit	Contents of the Subject	No. of Teaching Periods required
1	Finite Differences and Interpolation Differences. Relation between differences and derivatives. Newton`s formulae for forward and backward interpolation. Divided differences. Newton`s divided difference. Interpolation formulae . Lagrange`s interpolation formula.	7
2	Central differences , Numerical Differentiation and Integration Central differences. Gauss`s Stirling`s and Bessel`s interpolation formulae. Numerical Differentiation. Derivatives from interpolation formula. Numerical integration. Newton-Cote`s formula. Trapazodial rule, Simpson`s one-third, Simpson`s three-eight and Gass quadrature formula	7

3	Numerical solutions : Numerical solution of algebraic and transcendental equations. Bisection Method. Regula-Falsi method. Method of iteration. Newton-Raphson method. Gauss eliminationand Iterative methods for solving system of linear algebraic simultaneous equations. Solution of ordinary differential equations of first order with initial and boundary conditions using Picard`s and modified Euler`s method.	8
4	Theory of Probability :Mathematical definition of probability. Addition and Multiplication theorems of Probability. Probability of atleast one event. Conditional probability. Baye`s theorem. Random variable, Mathematical expectation, Mean, Variance and Moment Generating Functions.	7
5	Discrete and Continuous Probability Distribution: Discrete Probability Distribution : Binomial and Poisson`s distribution. Mean , Variance and M.G.F. of Binomial and Poisson`s distribution. Continuous Probability Distribution : Rectangular and Normal distribution. Mean and Variance of Normal distribution. Area under Normal curve.	7
	Total	36

Note: Scheme of CIE

Class tests : 10marks

Graded Assignments : 10marks

Two Mid Terms : 10marks

30marks

Recommended Books:

Numerical Analysis by J.L.Bansal and J.P.N.Ojha

Elements of Mathematical Statistics by D.C.Gokhroo, S.L.Bhargava, S.M.Agrawal

Numerical Analysis by P.C.Biswal

Numerical Methods for scientists and Engineers by Sankara Rao

Numerical Methods for scientific and Engg. Comp. by M.K.Jain, S.R.K.Iyengar ,R.K.Jain

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics-VI(Discrete Mathematics)	**[**MA-213**]**

III-SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

Discrete mathematics is a bridge connecting mathematics with various branches of Computer Science.

Discrete mathematics is of genuine use in Computer Science and hence a study of this branch of mathematics is of great importance to the students of Computer Science.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Sets and Propositions , Relations and Functions :** Cardinality,Principal of inclusion and exclusion. Mathematical Induction.Binary relations, Equivalence relations and Partitions. Partial ordered relations and Lattices.	6
2	**Algebraic Structures , Boolean Algebra :** Groups, Rings, Integral domains. Fields (Definitions, simple examples and elementary properties only) Lattices and Algebraic structure, Duality, Distributive and Complemented Lattices. Boolean Lattices.	8
3	**Computability and Formal Languages** Ordered sets, Languages, Phrase, Structure, Grammars, Types of Grammars and Languages. Discrete numeric functions and Generating functions . Recurrence relations and Recursive Algorithms, Linear Recurrence relation with	8

	constant coefficients. Homogeneous solutions. Particular solution, Total solution.	
4	**Graphs** Basic terminology, Multigraphs, Weighted graphs, Paths and Circuits, Shortest paths , Eulerian paths and circuits. Travelling Salesman problem. Union, Join, Product and composition of graphs.	7
5	**Trees , Digraphs :** Properties, Spanning tree, Binary and Rotted tree **:** Simple digraph, Asymmetric digraphs. Symmetric digraphs and complete digraphs. Digraph and Binary relations. Matrix representation of graphs and digraphs.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Discrete Mathematics by Chauhan and Pandey
- Graph Theory by G.N.Purohit
- Discrete Mathematics by N.Chandrasekaran&M.Umaparvathi
- Discrete Mathematics and Graph Theory by P.C.Biswal
- Discrete Mathematics with Graph Theory by Goodaire& Parmenter 4. Graph Theory with Applications by C.Vasudev (New Age Pub.)

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Chemistry –III (Inorganic Chemistry-I)	**[CY 211]**
III-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 Tutorial -1 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

1. To encourage Inorganic aspects of Chemistry and knowledge is added
2. To develop knowledge by teachingKnowledge dissemination

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Atomic Structure: Recapitulation**: Bohr's theory Time independent Schrodinger equation (H Ψ = EΨ). Schrodinger equation for hydrogen atom. Radial and angular nodes and their significance. Radial distribution functions (1s and 2s AO). Significance of quantum numbers, orbital angular momentum and quantum numbers mr and ms. Shapes of s, p and d AO. Electronic configurations of the elements. Concept of exchange energy. Relative energies of AO, Anomalous electronic configurations.	07
2	**Covalent bonding:** VB Approach: Concept of hybridization and VSEPR theory. Resonance and resonance energy Molecular Orbital Approach : LCAO method, bonding and antibonding MOs and their characteristics for s-s, s-p and p-p combination of atomic orbital's, non- bonding combination of orbital's ,MO treatment of homonuclear diatomic molecules of 1st and 2nd periods and heteronuclear diatomic molecules such as CO, NO and NO+	08
3	**Fundamentals of Organic Chemistry**: Cleavage of Bonds: Homolysis and Heterolysis. Structure, shape and reactivity of organic molecules Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect, Resonance and Hyperconjugation. Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions free	07

	radicals. Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Huckel's rule	
4	**Stereochemistry: Conformations** ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newman, Sawhorse and Fischer representations. Concept of chirality (up to two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). Threo and Erythro; D and L; cis - trans nomenclature; R/ S (for up to 2 chiral carbon atoms) and E / Z Nomenclature (for up to two C=C systems).	07
5	**Aliphatic Hydrocarbons** Alkanes: Preparation: Catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. Reactions: Free radical Substitution: Halogenations. Alkenes: Preparation, Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule); cis alkenes (Partial catalytic hydrogenation) and trans alkenes.	07
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Basic Inorganic Chemistry F.A. Cotton. G. Wilkinson and P.L. Gaus. Wiley.
2. Concise Inorganic Chemistry, J.D. Lee ELBS.
3. Concepts of Models Inorganic Chemistry B.Douglas. D.McDaniel and J.Alexander, John Wiley.
4. Inorganic Chemistry. D.E. Shriver P.W. Atkins and C.H. Langfor, Oxford.
5. Inorganic Chemistry, W.W. Porterfield Addison Wesley.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Chemistry –IV(organic Chemistry-I)	**[CY 213]**
III-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

To create an understanding regarding principle of spectroscopy,

To gain knowledge about heterocyclic compound,

To have understanding about bimolecular, able to understand polymer.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**NMR Spectroscopy :**Proton magnetic resonance spectroscopy (1H-NMR): Nuclear Shielding and Deshielding, Chemical shift and molecular, spin-spin splitting and coupling constants, Interpretation of NMR spectra, of simple organic molecules such as ethyl bromide, ethanol, acetaldehyde, ethyl acetate, toluene, and acetophenone.	**09**
2	**HeterocyclicCompounds :**Introduction, MO Picture, Aromatic Characteristics, Methods for preparation and chemical reactions of Pyrrole, furan, and thiophene, with particular emphasis on the mechanism of electrophilic substitution. Diels-Alder reaction of furan. Pyridine: synthesis and Mechanism of its Nucleophilic substitution reactions.	07
3	**Organic Synthesis via Enolates :**Organic Synthesis via Enolates: Acidity of alpha Hydrogen in reactive methylene compounds, Alkylation of diethyl Malonate and ethyl acetate. Synthetic applications of ethyl acetoacetate and malonic ester. Claisen condensation and keto-enol tautomerism.	06

4	**Biomolecules :**Carbohydrates: Classification and Nomenclature and structure and synthesis of Glucose and fructose. Ribose and Deoxyribose, Interconversion of mannose, glucose and fructose. Classification of Amino Acids. Peptides, Proteins and Nucleic Acids: Structure and nomenclature of Peptides and Proteins, Constituents of Nucleic Acids.	07
5	**Synthetic polymer and Synthetic Dyes :**Synthetic Polymers: Addition and chain growth polymerization. Free radical and ionic polymerization. Condensation and step growth polymerization. Polyester, polyamides, Phenol-formaldehyde resins, urea formaldehyde resins. Natural and synthetic rubber. Ziegler-Natta Catalyst. Synthetic Dyes: Classification Color and constitution (electronic concept). Classification of dyes. Chemistry and synthesis of Methyl orange, Congo red and Malachite green, phenolphthalein, fluorescein, alizarin and indigo.	07
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. I. L. Finar : Organic Chemistry (Vol. I & II), E. L. B. S.
2. R. T. Morrison & R. N. Boyd : Organic Chemistry, Prentice Hall.
3. Arun Bahl and B. S. Bahl : Advanced Organic Chemistry, S. Chand
4. Peter Sykes: A Guide Book to Mechanism in Organic Chemistry, Orient Longman.
5. Jonathan Clayden, Nick Geeves, Stuart Warren, organic chemistry, Oxford University Press

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Physics-IV (Thermodynamics and statistical Physics)	**[** PY-211**]**
III-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- To understand basic concepts and principles of geometrical, physical and modern optics.
- To help students understanding the nature of light, its propagation and interaction with matter.
- To help students in handling and aligning the optical elements and operate the devices and equipment.

To help students in applying the fundamental concepts of optics in lasers, fiber optics, holography etc..

Unit	**Contents of the Subject**	**No. of Teaching Hrs required**
1	**Kinetic Theory of Matter** : Matter and its states; Postulates of Kinetic theory of gases. Ideal Gas and its equation; Expression for the pressure exerted by a gas; Derivation of gas equation; Derivation of gas laws: Boyle's law, Charles law, Regnault's law; Avogadro's hypothesis; Grahm's law of diffusion; Brownian motion; Degree of freedom; Maxwell's law partition of energy; Adiabatic expansion of ideal gas. Difference between real and ideal gas; Change of state and continuity; Andrew's experiment on carbon dioxide: Critical constants; Bahaviour of gases at high pressure; Boyle Temperature; Van der Waals equation of state; Critical coefficient. Expression for mean free path; Transport phenomena and the governing laws; coefficient of each transport phenomena and their inter-relation.	09

2	**Thermodynamics-I**: Thermodynamic system and its types; Zeroth law of thermodynamics; 1st law of thermodynamics; specific heat of gases; Applications of first law: specific heat of gas, isochoric process, isobaric process, adiabatic process; Reversible and irreversible process; Heat engine; Carnot's cycle and heat engine; Second law of thermodynamics; Carnot's theorem and its proof; Entropy, Physical concept of entropy; Change of entropy in reversible and irreversible cycle; T-S diagram; Entropy of perfect gas.	07
3	**Thermodynamics-II** Thermodynamic Variables and their types; Maxwell's thermodynamic relations; Thermodynamic potentials and their significance; Relation of thermodynamic potentials with their variables; Applications of Maxwell's thermodynamic relations: specific heat equation, Clausius-Clapeyron's equation, Joule Thomson Cooling; T.dS equations. Concept of absolute zero; Different methods of liquefaction: Method of freezing mixture, Evaporation of liquid under reduced pressure, adiabatic expansion of gas, Joule Thomson expansion, regenerative cooling, Adiabatic demagnetization of a paramagnetic salt; Third law of thermodynamics: Nernst's theorem.	06
4	**Radiation** :Radiation and Thermal Radiation; Pervost's theory of heat exchange; Blackbody; Kirchoff's law; Pressure of radiation; Stefan Boltzman's law, Distribution of Energy in Black body spectrum; Wien's displacement law; Rayleigh-Jeans law; The failure of classical theory; Planck's Quantum Postulates. Planck's radiation law and deduction of Stefan's law, Wien's law and Rayleigh-Jeans law; Pyrometer; Solar constant; Temperature of the Sun; Pyrheliometer.	07
5	**Statistical Physics** : Statistical basis of thermodynamics; Probability; Principle of equal a priori probability; Some basic rules of probability theory; Permutations and Combinations; Macrostate and microstate; Thermodynamic probability; Constraints on a system; Accessible states; Static and dynamic systems; Most probable state; Degree of freedom; Position, momentum and phase space; Mu and Gamma space; Fundamental postulates of statistical mechanics; Statistical ensembles; Equilibrium between two systems in thermal contact; Boltzmann's entropy probability relation; Boltzmann's Canonical Distribution law; Partition function; Relation between partition function and thermodynamic quantities; Three kinds of particle; Maxwell-Boltzmann statistics applicable to ideal gas; Maxwell-Boltzmaan Energy Distribution law; Applications of Maxwell-Boltzmann Energy Distribution law; Mean, RMS and Most Probable Speeds; Limitations of Maxwell-Boltzmann Method; Gibbs Paradox; Bose-Einstein Statistics; Fermi-Dirac Statistics	07
	Total	**60**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

l. Heat and Thermodynamics: K.W. Zeemansky.
2. Thermal Physics: B.K. Agarwal.
3. Heat and Thermodynamics: Brij Lal and N. Subramanyam.
4. Heat and Thermodynamics: Dayal, Verma and Pandey.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Physics-V (Electricity and Magnetism)	PY-213
III-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- Gain deeper understanding of Electricity and Magnetism.
- Advance skills and capability for formulating and solving problems.
- Increase mathematical and computational sophistication

Unit	Contents of the Subject	No. of Teaching Periods required
1	**Electrostatics**: Electric charge; Conservation of Charge; Coulomb's law; Charge distributions; Flux; Gauss's law; Field of spherical charge distribution; Electric Potential: Line integral of electric field; Potential difference and potential function; Potential of charge distribution; Gradient of a scalar function; divergence of a vector function; The Laplacian, Laplace equation; Curl of a vector function; Stokes' theorem	07
2	**Electric field and electric currents** :Conductors and insulators; Conductors in electrostatic field; Capacitance and Capacitors; Energy stored in a capacitor; Electric current and current density; Steady current and charge conservation; Electrical conductivity and Ohm's law; Electromotive force and the voltaic cell; Variable currents in capacitors and resistors; Alternating current; alternating current networks; Admittance and impedance; Power and energy in alternating circuits	08

3	**Magnetic force and field**: Magnetic forces; Measurement of charge in motion; Force on a moving charge; Definition and properties of Magnetic field; Field of any current carrying wire; Fields of rings and coils; Change in B at a current sheet; Electric conduction in a magnetic field: Hall effect. .	06
4	**Electric field and magnetic field in matter** :Dielectrics; The moments of a charge distribution; The potential and field of dipole; The torque and the force on a dipole in an external field; Atomic and molecular dipoles; Induced dipole moment; permanent dipole moment; A dielectric sphere in a uniform field. Response of various substances to a magnetic field; The absence of a magnetic charge; the field of current loop; the force on a dipole in an external field; Electronic spin and magnetic moment; Magnetic susceptibility; The magnetic field caused by magnetized matter; the field of a permanent magnet; di, para and Ferromagnetism.	07
5	**Electromagnetic induction :**Faraday's discovery; conducting rod moving through a uniform magnetic field, Loop moving through a nonuniform magnetic field; stationary loop with the field source moving; Universal law of induction; Mutual inductance; Reciprocity theorem; Self inductance; Energy stored in a magnetic field.	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

l. Electricity and Magnetism: Purcell and Morin, Cambridge University press.
2. Electricity and Magnetism: Brij Lal and N. Subrahmanyam, S.Chand Publications.
3. Electricity and Magnetism: R. Murugeshan, S. Chand Publications.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

BASICS IN EDUCATION	**[ED-207]**

III-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives: To acquaint pupil teacher with the:

CO1. Understand the fundamental concepts, nature, and significance of education.
CO2. Explore the philosophical underpinnings of education.
CO3. Investigate how different philosophical perspectives impact education.
CO4. Recognize education as a social subsystem and its functions.
CO5. Understand the concept and importance of autonomy in education.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Education in modern context:** 1. Meaning, concept and nature of education. 2. Need, importance and scope of education. 3. Aims of education, 4. Forms of education (formal, informal, and non- formal) 5. Agencies in education: family, community, school, state and religious institutions.	12
2	**Philosophical basis of education:** 1. Meaning, concept and need of educational philosophy. 2. Educational implication of Philosophical thoughts of: a) Geeta, Quran. b) Bible and Gurugranth sahib. 3. Educational implication of Philosophical thoughts of: a) Mahatama Gandhi and Ravindra Nath Tagore. b) Swami vivekanand.	12

3	**Implication of Educational Philosophy of the following schools:** 1. Idealism, Naturalism and Pragmatism. 2. Humanism, Buddhism and Jainism. In relation to aims, curriculum, teaching methods, pupil - teacher relationship and discipline.	12
4	**Education in socio-cultural context:** 1. Education as a sub-system of social system. 2. Functions of education. 3. Social aspects of education: education as a social process of social change, social stratifications, social mobility, and modernization. 4. Concept of culture: cultural lag, composite culture, role of education in preservation, transmission and enrichment of culture.	12
5	**Autonomy of Teacher and Learner:** 1. Concept and meaning of autonomy. 2. Need and importance of autonomy. 3. Types of autonomy. 4. Autonomy of teacher and learner. 5. Hindering factors in autonomy and remedies for promoting autonomy.	12
	Total	**60**

Course Outcomes:

CO1. Students will be able to explain the meaning, scope, and relevance of education in contemporary society.
CO2. Students will analyze and apply educational implications from texts such as the Geeta, Quran, Bible, Gurugranth Sahib, Mahatma Gandhi's writings, Ravindranath Tagore's ideas, and Swami Vivekananda's philosophy.
CO3. Students will compare and contrast the educational implications of idealism, naturalism, pragmatism, humanism, Buddhism, and Jainism.
CO4. Students will analyze education's role in social change, stratification, mobility, and modernization. They'll also explore cultural aspects related to education.
CO5. Students will identify hindrances to autonomy and propose strategies to promote autonomy for both teachers and learners.

Practicum/ Graded Assignments:

1. Visit to the different types of denominational schools and prepare the report on any one of the activity.
2. Preparation of collage or scrape book of eminent educationist.
3. Preparation of a chart of different schools of philosophies related to educational components.
4. Discussion on the topic "Autonomy of the teacher".

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms :	:	10marks
		30marks

Recommended Books:

1. Bhatia, B.D. (1981); The theory and practice of education,Doaba House, Bookseller and Pub., Delhi
2. Bhatia, Kamal Bhatia, Baldeo (1994);The Philosophical and Sociological Foundation of Education,Doaba House, Bookseller and Pub., Delhi.
3. Chaube, S.P. (1997); Land marks in modern Indian education, Himalaya Pub. , Delhi.
4. Murthy, S.K. (2008); Philosophical Foundation of Education, Vinodpustak mandir,Agra.
5. Saxena Radha, Sharma G.N., Shastri Ine (2000);UbherteHuaiBharatiyaSamaj Mein Shiksha and Shikshak,Classic Pub., Jaipur.
6. Shrivatav S.N., Rai C.P. (1996); AdhunikBharatiyaSamaj Mein Shiksha, Niraj Pub., Rohtak .
7. Carr, D. (2005); Making sense of education: An introduction to the Philosophy and theory of education and teaching, Routledge.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

PRE-INTERNSHIP – II (2 weeks)	**[TP- 201]**

B.Sc.B.Ed. III Sem	**EVALUATION**
SCHEDULE PER WEEK PRACTICAL-4 CREDITS-2	EXAMINATION TIME = (3) HOURS [CIE (100)]

S. No.	**Pre-preparation of teaching practice**	**Internal/ External Assessment**
1.	Preparation of lesson plans -2 in each subjects	2 credits (Internal)
2.	Preparation of unit plan-1 in each subject	
3.	Delivery of lesson plans in the schools (2 in each subject)	
4.	Conduction of art and craft, dance and music, drawing and painting classes in the school and preparation of detail report of these activities.	

5. **Seminar/presentation/ workshop:** Shall be evaluated internally.
   Work shall be evaluated on the following topics/ other relevant area:
   (a) Instructional planning (lesson plan, unit plan & yearly plan)
   (b) Formulation of instructional objectives and content analysis
   (c) Teaching skills
   (d) Measurement and evaluation
   (e) Innovative teaching
   (f) Preparation of teaching aids
   (g) Reading and reflecting on text (EPC)
   (h) Creative writing
   (i) Reading reflection
   (j) Improving listening skills
   (k) Language and curriculum

Components of CIE of Seminar /Ws/ Presentation/tutorial (I & II Semester):

• Attendance	25
• Presentation skills	25
• Report submission/ File Work	30
• Participation in the activities	20
	100

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

III-SEM. B.Sc. B.Ed.

Chemistry- III LabCY-261

EVALUATION

SCHEDULE PER WEEK

Practical -3

S.No	Name of Experiment	
01	Determination of enthalpy of ionization of acetic acid.	
02	Purification of organic compounds by crystallization (from water and alcohol) and distillation.	
03	Criteria of Purity: Determination of melting and boiling points	
04	Bromination of Phenol/Aniline	
05	Benzoylation of amines/phenols	
06	3. Preparations: Mechanism of various reactions involved to be discussed..	
07	2. Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide	
08	Recrystallisation, determination of melting point and calculation of quantitative yields to be done.	

Reference Books:

8. Textbook of Practical Organic Chemistry, A.I. Vogel , Prentice Hall, 5th edition.
9. Practical Organic Chemistry, Mann F. G. & Saunders B. C, Orient Longman, 1960.
10. Senior Practical Physical Chemistry, B.D.Khosla, R. Chand & Co.
11. Vogel's Qualitative Inorganic Analysis, A.I. Vogel , Prentice Hall ,7th Edition.
12. Vogel's Quantitative Chemical Analysis, A.I. Vogel , Prentice Hall ,6th Edition.
13. Textbook of Practical Organic Chemistry, A.I. Vogel , Prentice Hall, 5th edition.

14. Practical Organic Chemistry, Mann F. G. & Saunders B. C, Orient Longman, 1960.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Physics-III Lab	**[**PY-261**]**

SCHEDULE PER WEEK

CREDITS-2

Practical -3

LIST OF EXPERIMENTS

1. To verify the zeroth law of thermodynamics and to calculate the point of equilibrium.
2. To measure Stefan's constant using blackbody radiation method.
3. To study the dependency of resistance of a semiconductor on temperature by four probe method.
4. Thermal conductivity of a good conductor by Searle's method.
5. Determination of thermal conductivity of a card-board by Lee's disc method.
6. Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current, (d) Capacitances, and (e) Checking electrical fuses.
7. To study the characteristics of a series RC Circuit.
8. To determine an unknown Low Resistance using Potentiometer.
9. To determine Ballistic constant K of a moving coil BG with a standard condenser of known capacity.
10. To determine the high resistance by method of leakage of a condenser with the help of BG.

SURESH GYAN VIHAR UNIVERSITY
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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics –VII (Real Analysis)	**[**MA-212**]**

IV-SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

In the recent years the set theoretic concepts, the terminology and symbols associated with it are widely used in almost all branches of mathematics. So much so that one who is not familiar with these concepts, terminology and symbols cannot make any headway into the study of recently developed branches of mathematics, so called modern mathematics

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Real Numbers :** Real numbers as complete ordered field, Limit point , Bolzano-Weierstrasstheorem.Closed and Open sets. Union and intersection of such sets. Concept of compactness. Heine-Borel theorem. Real sequences, limit and convergence of a sequence. Monotonic sequences. Real sequences, limit and convergence of a sequence. Monotonic sequences. Real numbers as complete ordered field, Limit point , Bolzano-Weierstrass theorem. Closed and Open sets. Union and intersection of such sets. Concept of compactness. Heine-Borel theorem. Rea l sequences, limit and convergence of a sequence. Monotonic sequences.	7

2	**Cauchy`s sequence ,Darboux`s and Rolle`s theorem.**  Cauchy`s sequences. Subsequences, Cauchy`s general principle of convergence. Properties of continuous functions on closed intervals. Properties of derivable functions. Darboux`s and Rolle`s theorem.	7
3	**Riemann integration :** Riemann integration, Lower and Upper Riemann integrals, Riemann integrability.Mean value theorem of integral calculus. Fundamental theorem of integral calculus.	7
4	**Sequence and series of functions :** Sequence and series of functions, Pointwise and Uniform convergence. Cauchy`s criterion, Weierstrass M-test, Abel`s test, Dirichlet`s test for uniform convergence of series of functions. Term by term differentiation and integration.	7
5	**Matric space :**Definition and examples. Subspace of a metric space, Product space, Continuous mappings, Sequence in a matric space. Cauchy`s sequence, Complete matric space, Baire`s theorem. Compact sets and Compact spaces, connected metric spaces.	8
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Elementary Real Analysis by D.C.Gokhroo, S.R.Saini, J.P.N.Ojha
- Real Analysis by Dipak Chatterjee
- Real Analysis byH.L.Royden
- Principals of Real Analysis byS.C.Malik

SURESH GYAN VIHAR UNIVERSITY
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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics –VIII (Operation Research)	**[**MA-214**]**

IV SEM. B.Sc-B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

All the engineers in industry and business organizations are being continuously pressed for improving production and sales in reducing human efforts and to lower production costs to with stand increasing competation. This requires the use of rigorous methods of decision making, such as optimization techniques which result into more efficient and economical activities.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Linear Programming :** The Linear Programming problem. Graphical solution of Linear Programming problems. Basic solution. Some basic properties of convex sets. Theorems based on convex sets. Fundamental theorem of L.P.P. Application of Simplex Method for solution of a L.P.P. to simple problems.	8
2	**Duality of L.P.P. :** Duality. Fundamental theorem of duality. Properties and simple problems of duality. Transportation problems. Transportation algorithm for minimization problem.	7
3	**Assignment Models , Theory of Games** Assignment Models : Mathematical formulation. Hungarian method. Variations of the assignment problem. Travelling salesman problem. Theory of Games : Basic definitions, Minimax(Maximin) criterion	7

	and optimal strategy, Saddle point, Minimax-Maximin principle for mixed strategy games. Fundamental theorem of Game theory. Two-by-two games without saddle point. Arithmetic method for 2x2 games.	
4	**Inventory Models :** Inventory Models :Definition, types of inventory models. Classification of inventory models. Economic ordering quantity(EOQ). EOQ models without shortage, EOQ models with shortage. EOQ models with constraints.	7
5	**Queueing Theory ::** Introduction, Probability distributions in queueing systems. Models : Erlang model, general Erlang model, Model III (M/M/I) : (N/FCFS).	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Elements of Linear Programming by D.C.Gokhroo, S.L. Bhargava, S.R.Saini
- Optimization Techniques by S.K.Jain, D.M.Mehta
- Operations Research:Methods and Practice by C.K.Mustafi
- Mathematical Methods by Dr.S.Sivaiah
- Mathematical Techniques by Jordan, Smith

SURESH GYAN VIHAR UNIVERSITY
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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Chemistry- V (Physical chemistry-I)	**[CY 212]**
IV-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: This course deals with the application of structure and theory to the study of physical aspects including reaction dynamics, isotope effects and molecular orbital theory applied. Electrochemistry for fuel systems of daily life

Unit	Contents of the Subject	No. of Teaching Hrsrequired
1	**Colloidal States**: Definition of colloids, classification of colloids; Solids in liquids (sols): properties – kinetic, optical and electrical; stability of colloids, protective action, Hardy-Schulze law, gold number. Liquids in liquids (emulsions): types of emulsions, preparation, Emulsifier, Liquids in solids (gels): classification, preparation and properties, inhibition, general application of colloids, colloidal electrolytes.	**07**
2	**Chemical Kinetics I** Chemical kinetics and its scope, rate of a reaction, factors influencing the rate of a reaction, concentration dependence of rates, mathematical characteristics of simple chemical reactions – zero order, first order, second order, pseudo order, half life and mean life, electro kinetics phenomena.	08
3	**Chemical kineticsII:** Theories of chemical kinetics. Simple collision theory based on hard sphere model, transition state theory (equilibrium hypothesis), Expression for the rate constant based on equilibrium constant and thermodynamic aspects, Catalysis.Introduction to corrosion, homogeneous theory, forms of corrosion, corrosion monitoring and prevention methods.	06

4	**Electrochemistry** Electrolyte Solutions , Electrical Conductivity , Electrified Interfaces, Equilibrium Electrochemistry , Dynamic Electrochemistry , Electrolysis , Applications of electrolysis, Galvanic cell, electrochemical cell, Nernst equation, electrodes, cell reaction, primary and secondary storage, applications., Biological Electrochemistry.	07
5	**Thermodynamics – II** Statistical thermodynamics , Thermodynamic equilibrium , Quasi-static transfers between simple systems are nearly in thermodynamic equilibrium and are reversible , Non-equilibrium thermodynamics Account in terms of states of thermodynamic equilibrium , Thermodynamic processes between states of thermodynamic equilibrium , Dependent and independent variables for a process,industrial applications of thermodynamics.	08
	Total	**60**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

References and Text Books:

1. R.G. Compton and G.H.W. Saunders, Electrode Potentials Oxford Chemistry Primer
2. A.C. Fisher Electrode Dynamics Oxford Chemistry Primer
3. Barrow, G. M. Physical Chemistry Tata McGraw-Hill (2007).
4. Castellan, G. W. Physical Chemistry 4th Ed. Narosa (2004).
5. Mahan, B. H. University Chemistry 3rd Ed. Narosa (1998).

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Physics-VI(Electronics and Solid-State Devices)	**[**PY-214**]**
IVSEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- To allow students for the understanding how physics grounds and affects the electronics and vice versa
- To help students understanding the importance of electronics in our daily life.
- To allow students understanding the basic concepts and working of electronics.
- To understand the wonder world of Semiconductors and their applications.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Circuit analysis and theorems** : Networks-some important definitions; loop and nodal equations based on DC and AC circuits (Kirchhoff Laws);Ampere- volt conventions; open, close and hybrid parameters of any four terminal networks; Input, output and mutual impendence for an active four terminal network;Superposition Theorem; Thevenin Theorem; Norton Theorem.	07
2	**Semiconductors**: Basic information about Semiconductors; Mass Action law; Charge densities in N and P materials; Conduction by drift and diffusion of charge carriers, P-N Junction; PN diode; V-I characteristics of PN junction diode; capacitance effects.	08
3	**Rectifiers and Filters**: Rectifiers: Half-wave, full wave and bridge rectifier; calculation of ripple factor; efficiency and regulation; Filters: Series inductor, shunt capacitor, L section and π section filters; Voltage regulation: Voltage regulation and voltage stabilization by Zener diode; voltage multiplier.	06

4	**Transistors** :Transistor and transistor bias circuits: Notations and volt-ampere; Characteristics for bipolar junctions transistor; Concept of load line and operating point; Hybrid parameters. Transistor as amplifier: CB; CE, CC configurations; Analysis of transistor amplifiers using hybrid parameters and its gain-frequency response.	07
5	**Solid state Devices :Amplifiers:**Cascade amplifiers, basic idea of direct coupled and R-C coupled amplifiers; "Differential amplifiers. Need of bias and stability of Q point: stability factors, various types of bias circuits for thermal bias stability: fixed bias, collector to base feedback bias and four resistor bias; Amplifier with feedback: Concept of feed back, positive and negative feedback, voltage and current feed back circuits. Advantages of negative feed back: Stabilization of gain, effect of negative feed back on output and input resistance, reduction of nonlinear distortion, effect on gain – frequency response. **Oscillators:** Oscillators: Criteria for self excited and self sustained oscillations, circuit requirement for build-up of oscillation; Basic transistor oscillator circuit and its analysis: Colpitfs and Hartely oscillators, R.C Oscillators, crystal oscillators and its advantages. **Field effect transistors**: Junction field effect transistor (JFET) and metal oxide semiconductor field effect transistor (MOSFET): circuit symbols, biasing and volt-ampere characteristics, source follower operation of JFET, FET as variable voltage resister	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Jacob Millman and ChristoscHailkias, Integrated Electronics.Analog and Digital Circuits and systems: McGraw-Hill Ltd.(1-972)
- Basic Electronics, B.L. Theraja, S. Chand Publication.

SURESH GYAN VIHAR UNIVERSITY
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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Physics-VII (Solid State Physics)	**[PY-214]**
IV-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

To introduce solid state physics to the student and enable them to employ classical and quantum mechanical theories needed to understand the physical properties of solids.

To understand how solid state physics contribute to the existence of a number of important technological developments of importance in our lives now and in the future.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	Crystal Structure : Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors. Lattice with a Basis – Central and Non-Central Elements. Unit Cell. Reciprocal Lattice. Types of Lattices. Brillouin Zones. Types of Bonds. Ionic Bond. Covalent Bond. Van der Waals Bond. Diffraction of x-rays by Crystals. Bragg's Law	07
2	**Elementary Lattice Dynamics:**:Lattice Vibrations and Phonons: Linear Monoatomic and Diatomic Chains. Acoustical and Optical Phonons. Qualitative Description of the Phonon Spectrum in Solids. Einstein and Debye Theories of Specific Heat of Solids. T3 Law	08
3	**Dielectric Properties of Materials:** Dielectric Polarization. Local Electric Field at an Atom. Depolarization Field. Dielectric Constant. Electric Susceptibility. Polarizability. Classical Theory of Electric Polarizability. Clausius- Mosotti Equation. Normal and Anomalous Dispersion. Complex Dielectric Constant.	06
4	**Electrical Properties of Materials:**:Elementary Band Theory of Solids. Bloch Theorm. Kronig-Penney Model. Effective Mass of Electron. Concept of Holes. Band Gaps. Energy Band Diagram and Classification of Solids. Law of Mass Action. Insulators, and Semiconductors. Direct and	07

	Indirect Band Gap. Intrinsic and Extrinsic Semiconductors. p- and n- Type Semiconductors. Conductivity in Semiconductors. Hall Effect in Semiconductors (Qualitative Discussion Only)	
5	**Superconductivity:** Experimental Results; Critical Temperature; Critical magnetic field; Meissner effect; Type I and type II Superconductors; London's Equation and Penetration Depth. Isotope effect. Idea of BCS theory (No derivation): Cooper Pair and Coherence length; Variation of Superconducting Energy Gap with Temperature; Experimental Evidence of Phonons; Josephson Effect.	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Charles Kittel: Introduction to Solid State Physics, 7th Edition, John Wiley and Sons, Inc.
2. A. J. Dekkar: Solid State Physics, Macmillan India Limited, 2000.
3. J. S. Blackmore: Solid State Physics, Cambridge University Press, Cambridge.
4. N. W. Ascroft and N. D. Mermin: Solid State Physics, (Harcourt Asia, Singapore 2003).

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

CONTEMPORARY INDIA AND EDUCATION	ED-254

IV-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1: Understand school culture's impact on society, classroom dynamics, education's role in fostering socialistic patterns, and gender equality rights.

CO2: Analyze constitutional guarantees related to equality, liberty, justice, secularism, and socialism for marginalized and deprived children.

CO3: Explore the impact of liberalization, globalization, privatization, conflict, violence, global challenges, and UNO's role on Indian education.

CO4: Study Kothari Commission recommendations, National Policy on Education 1986 and its review, and the Right to Education Act (2009-10).

CO5: Examine gender equality, child rights, women empowerment, and educational institutions' role in societal transformation.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**School as a social context:** 1. School culture and issues of society. 2. Class room as a social context. 3. Role of education in developing socialistic patterns. 4. Rights for gender equality and the implication for social change.	12

2	**Constitutional provisions of education in India in relation to** 1. Equality. 2. Liberty. 3. Justice. 4. Secularism. 5. Socialism.	12
3	**Emerging Indian concerns and their educational implications:** 1. Meaning and concept of liberalization, Globalization, Privatization 2. Impact ofliberalization, Globalization, Privatizationon education 3. Education for marginalized groups and socially deprived children.	12
4	**Policies on education:** 1. Kothari commission recommendations and their implementation in the context of education 2. National policy on education 1986, its review 1992. 3. Right to education (2009-10)	12
5	**Issues of contemporary Indian society:** 1. Gender equality and equity. 2. Child rights. 3. Women empowerment. 4. Role of educational institution for creating new social order.	12
	Total	**60**

Course Outcomes:

CO1: Analyze the influence of school culture and education on societal values, including gender equality.

CO2: Critically assess constitutional guarantees and their impact on marginalized children's rights in education.

CO3: Evaluate global influences on Indian education policies and UNO's role in addressing educational challenges.

CO4 : Examine key educational policies like the Kothari Commission recommendations and the Right to Education Ac t.

CO5: Analyze gender equality, child rights, and women empowerment issues in education and propose solutions.

Practicum/ Graded Assignments:

Discussions/ Presentations/ Poster making/ Charts/ Debate/ Symposium:

a) School as a social context.
b) Gender equality.
c) Child rights/ RTE – 2009-10.
d) Women empowerment.
e) Education for marginalized group.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms	:	10marks
		30marks

Recommended Books:

1. Krishna Murti, J. (1973);Education and the significance of life ,B.I. Pub. Pvt. Ltd., New Delhi
2. Mathur, S.S. (1973); A Sociological approach to Indian Education , Vinod pustak mandir,Agra
3. Mohanty Jagannath (1994); Indian Education in the Emerging Society, Sterling publishers, New Delhi.
4. Rawat, P.L. (1965); History of Indian Education, Ram Prasad and Sons, Agra.
5. Saxena, N.R. Swaroop (1981); Principles of Education, Loyal Book Depot., Meerut

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

PRE-INTERNSHIP – II B (12 weeks)	**[TP- 202]**

IV-Sem B.Sc.B.Ed.	**EVALUATION**
SCHEDULE PER WEEK PRACTICAL-4 CREDITS-2	EXAMINATION TIME = (3) HOURS [CIE (100)]

S. No.	**Pre-preparation of teaching practice**	**Internal/ External Assessment**
1.	Preparation of lesson plans -2 in each subjects	2 credits (Internal)
2.	Preparation of unit plan-1 in each subject	
3.	Delivery of lesson plans in the schools (2 in each subject)	
4.	Conduction of art and craft, dance and music, drawing and painting classes in the school and preparation of detail report of these activities.	

SURESH GYAN VIHAR UNIVERSITY
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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Physics-IV Lab	**[**PY-262**]**

SCHEDULE PER WEEK

CREDITS-2
Practical -2

1. Study and plot P-N diode band gap.
2. Study P-N junction diode characteristics.
3. Study of various combinational circuits based on AND/NAND and OR/NOR logic blocks.
4. To study characteristics of a given transistor PNP/NPN (common base & common emitter).
5. To study the frequency response of voltage gain of a RC-coupled transistor amplifier.
6. To verify Kirchhoff's Current and Voltage laws- KCL and KVL.
7. Study of Half wave and Full wave rectifiers and calculate Ripple factor.
8. To Study characteristics of a Field Effect transistor.
9. To study the V-I characteristics of a Zener diode and its use as voltage regulator.
10. To design a CE transistor amplifier of a given gain (mid-gain) using voltage divider bias.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

EVALUATION
SCHEDULE PER WEEK
Practical -3
CREDITS-2

1. Analysis of mixture containing Lead sulphate and Copper chloride
2. Analysis of mixture containing Copper chloride and Cadmium sulphate
3. Analysis of mixture containing Iron sulphideand Aluminum.chloride
4. Analysis of mixture containing Zinc carbonate and Manganese bromide
5. Analysis of mixture containing Cobalt trioxalate and Nickel chloride
6. Analysis of mixture containing Barium chloride and Calcium carbonate
7. Analysis of mixture containing Barium Nitrate and Magnesium fluoride
8. Analysis of mixture containing Lead sulphate and Aluminum chloride
9. Analysis of mixture containing Iron sulphide and Nickel chloride
10. Analysis of mixture containing ammonium nitrate and magnesium chloride

15. **Reference Books:**

1. Vogel's Qualitative Inorganic Analysis, A.I. Vogel, Prentice Hall, 7th Edition.

2. Vogel's Quantitative Chemical Analysis, A.I. Vogel, Prentice Hall, 6th Edition.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics –IX (Linear Algebra)	**[MA-311]**

B.Sc-B.Ed.- Semester-V (Autumn)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

- The objective of this course is to develop the learning capabilities and hone the problem solving skills of talented students at a mathematically deeper and more rigorous level.
- System of liner equations appear in numerous applications of Mathematics studying solution of sets to such system leads to the abstract notions of a vector space and a linear transformation.
- Matrices can be used to represent linear transformation and to do concrete calculations.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Linear Transformations :** Linear Transformations, Operators, Properties of Linear Transformations. Range space and Null space of Linear Transformations. Properties of Linear Transformations.	7
2	**Representation of Transformations by Matrices :** Representation of Transformations by Matrices, Matrices of Identity and Zero Transformations. Matrix of an Inverse Transformation, Change of Basis. Traces of a Linear Transformations of a Finite Dimensional Vector Space.	8

3	**Characteristic Values and Vectors :** Characteristic Values and Characteristic Vectors of Linear Transformation. Cayley- Hamilton Theorem, Diagonalizable Transformations.	7
4	**Inner Product Spaces :** Inner Product Spaces, Cauchy-Schwarz`s inequality. Orthogonal Vectors, Orthogonal Basis, Bessel`s inequality. Gram-Schmidt Orthogonalization process.	7
5	**Bilinear forms :** Bilinear forms, Vector Space of Bilinear forms, Matrices of Bilinear forms, Vector Space and Subspce, Properties of Subspace and direct sum of space. Symmetric Bilinear forms, Skew-symmetric Bilinear forms, Linear combination, basis , linear span.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Linear Algebra by S. D. Sharma, KedarNath Ram Nath& Co.
- Matrix and Linear Algebra by K.B.Datta, Prentice Hall of India Pvt. Ltd.
- Basic Algebra Vol. I & II by N.Jacobson, Hindustan Publishing Company.
- Linear Algebra by K.Hoffman and R.Kunze, Prentice Hall of India Pvt. Ltd.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics –X (Complex Analysis)	**[MA-313]**

B.Sc-B.Ed.- Semester-V (Autumn)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

The students will learn the basic theory and techniques of complex analysis as well as some of its applications. Students will also learn computation of improper integrals.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Complex plane :** Complex plane. Curves and Regions in Complex plane, Jorden curve theorem (Statement only). Extended Complex plane. Stereographic projection. Limits, Continuity and Differentiability of complex functions. Analytic functions, Cauchy-Riemann equations..	7
2	**Complex Integration :** Complex Integration, Complex line integrals, Cauchy Integral theorem, Indefinite integral. Fundamental theorem of Integral calculus for complex functions. Cauchy Integral Formula. Analyticity of the derivative of an analytic function, Morera`s theorem.	8
3	**Theorems and Power Series :** Taylor`s theorem , Laurent`s theorem, Maximum modulus theorem. Power series-Absolute convergence ,Able`s theorem. Cauchy-Hadamardtheorem , Circle and Radius of convergence.	7

4	**Singularities of an analytic function :** Singularities of an analytic function , Branch point, Meromorphic and Entire functions. Riemann`s theorem. Residue at a singularity, Cauchy`s residue theorem. Rouche`s theorem, Fundamental theorem of Algebra.	7
5	**Conformal mapping :**. Conformal mapping. Bilinear transformation and its properties. Elementary mappings :$w(z) = \frac{1}{2}\left(z + \frac{1}{z}\right), z^2, e^z, \sin z, \cos z.$ Evaluation of a real definite integral by contour integration.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Complex Analysis by G.N. Purohit and S.P. Goyal, Jaipur Publishing House.
- Theory of Functions of a Complex Variable by S. Chand & Co. , New Delhi.
- Complex Variables and Applications by R.V.Churchil&J.Brown, McGraw-Hill. New York.
- Complex Variables: Intro. and Application by Marh J.,Ablowitz&A.S.Fokas, Cambridge Uni. Press.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28
SEMESTER : V

Chemistry-VI (Inorganic Chemistry-II))	**[CY 311]**

B.Sc. B.Ed.- Semester-V (Autumn)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 Tutorial -1 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: 1. To train qualified, adaptable, motivated, and responsible Mathematicians who will contribute to the scientific and technological development.
2.To impact knowledge by teaching
3.To advance knowledge by research

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Coordination Chemistry** Coordination Compounds: Nomenclature Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory crystal field theory of transition metal complexes. Application in Industries by Magnetic properties of transition metal complexes	07
2	**Chemistry of Transition Metals:** Properties of d-block elements. Binary compounds (hydrides, carbides and oxides) of the elements of the first transition series and complexes with respect to relative stability of their oxidation states, coordination number and geometry. Chemistry of Elements of Second and Third Transition Series: General characteristics, comparative treatment of Zr/Hf, Nb/Ta, Mo/W in respect of ionic radii, oxidation states. Industrial application of transition metals	08

3	**Inner Transition Elements: Actinides and Lanthanides** :Definition of the f elements; position in the periodic table; Properties of the atoms and ions: ionization energies, electrode potentials, metallic and ionic radii; Colour and electronic spectroscopy; Magnetism; Solid state compounds: halides and oxides; Coordination chemistry of the lanthanides and actinides; Commercial applications;Rare earth Oxides used for Industries.	06
4	**Organometallic compounds; Definition** Nomenclature, Preparation properties and application and bonding of alkyl and Aryl compound. Electronic and Ionic Conduction , Metals, insulators and semiconductors, electronic structure of solids application in electronic and electrical industries. Bonding of ligands, Reactions of organometallic, Electron accountancy, Oxidative addition and reductive elimination, Insertion and α/β-elimination, Industrial organometallic catalysis, Olefin catalysis Organometallic compounds and application in electronic materials.	07
5	**Recent Advances In Inorganic Chemistry** : Borane, Silanes, Inorganic nanotechnology, Zeolite, Bio-inorganic chemistry (must emphasize the metal) Ceramics, Inorganic thin films, Intercalation compounds, Super acids , High-temperature superconductors, nanowire battery, Perovskites nonvolatile memory materials.	08
	Total	**60**

Practicum/ Graded Assignments:

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

References and Text Books:

1. Basic Inorganic Chemistry F.A. Cotton. G. Wilkinson and P.L. Gaus. Wiley.
2. Concise Inorganic Chemistry, J.D. Lee ELBS.
3. Concepts of Models Inorganic Chemistry B.Douglas. D.McDaniel and J.Alexander, John Wiley.
4. Inorganic Chemistry. D.E. Shriver P.W. Atkins and C.H. Langford, Oxford.
5. Inorganic Chemistry, W.W. Porterfield Addison Wesley.
6. Inorganic Chemistry, A.G. Sharpe. ELBS.
7. Inorganic Chemistry, G.L. Miessler and D.A. Tarr, Prentice Hall.
8. Group Theory and Its Chemical Applications: P. K. Bhattacharya
9. Inorganic Chemistry: J. E. Huyee, Principles of Structure & Reactivity, 3rd Ed.
10. Selected Topics in Inorganic Chemistry: W. U. Malik, G. D. Tuli and R. Madan

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DETAILED SYLLABUS
2024-28

Physics-VIII (Nuclear Physics)	**[PY-311]**
B.Sc. B.Ed.- Semester-V (Autumn)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- Impart the knowledge and understanding of Nuclear Physics.
- Apply the basic theory and principles of nuclear physics to the applications.
- To help students in understanding of nuclear reactions such as fission and fusion.
- To explore the interior of nucleus and interaction between nucleons.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Nuclear Structure and Properties :** Thomson Plum Pudding model and its failure; Rutherford Scattering and planetary model; Discovery of Proton and Neutron; Proton-Electron and Proton-Neutron Hypothesis of Nuclei; Classification of Nuclei; Mass of Nuclei and Atomic Mass, Mass defect, Mass excess, Packing Fraction; Binding Energy; Size of Nucleus; Nuclear Spin and angular momentum; Parity of Nuclear states; Nuclear Magnetic Moment and Schmidt lines; Nuclear electrical quadrupole moment; Nuclear Isospin.	09
2	**Nuclear Force and Models :** Properties of Nuclear forces; Meson theory of Nuclear force; Nuclear Potential; Segre Chart: Nuclear stability and N/Z ratio; Liquid drop model; Semi-empirical mass formula; Fermi Gas model; Magic numbers; Evidence of shell structure; Shell model of nucleus; Succes and limitation of shell model.	07

3	**Nuclear Reactions and Reactor :** Basic classification of Nuclear reactions; Types of nuclear reactions; Conservation laws for nuclear reactions; Mass-energy balance and Q-value; The Q-equation (kinematics of nuclear reaction); Nuclear Fusion; Energy released in nuclear fusion; Controlled fusion and its problems. Nuclear Fission; Mechanism (Bohr-Wheeler) of Nuclear Fission; Nuclear reactor; classification of nuclear reactor.	06
4	**Radioactive Decay:** Radioactive decay (one substance); Statistical nature of radioactive decay; Radioactive equilibrium; Radioactive decay (more than one substance); Radioactive series; Applications of radioactivity; Alpha decay: characteristics, kinematics; Geiger Nuttall law; Gamow theory of alpha decay; Beta decay and its spectrum; Pauli' neutrino hypothesis; Kinematics of beta decay; Gamma decay: emission and kinematics.	07
5	**Radiation Detectors :** Energy loss by heavy charged particles, fast electrons and gamma rays in matter; Detectors: Gas-filled detectors, Ionisation chamber, Proportional Counter, Geiger Muller Counter, Scintillation Counter.	07
	Total	**36**

Practicum/ Graded Assignments:

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Nuclear Physics by D. C. Tayal, Himalaya Publishing House
2. Nuclear Physics by S.N., Ghoshal, S.Chand Publication.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28
Semester-V (Autumn)

Chemistry -V Lab	CY-361

EVALUATION
SCHEDULE PER WEEK
Practical -2
CREDITS-2

S. No.	Name of Experiment
1	Estimation of borax - Standard Sodium Carbonate
2	Estimation of Sodium Hydroxide - Standard Sodium Carbonate
3	Estimation of HCl – standard oxalic acid.
4	Estimation of Copper - Standard Copper sulphate
5	Estimation of Potassium dichromate - Standard Potassium dichromate Complexometric
6	Estimation of Magnesium using EDTA.
7	Estimation of Zinc using EDTA.
8	Estimation of ferrous ion using Diphenyl amine / N-Phenylanthranilic acid as indicator. Precipitation titration
9	Estimation of Chloride in neutral medium. (Demonstration - experiment)
10	Estimation of ferrous sulphate – Standard FAS.

Reference Books:

1. Vogel's Qualitative Inorganic Analysis, A.I. Vogel, Prentice Hall, 7th Edition.
2. Vogel's Quantitative Chemical Analysis, A.I. Vogel, Prentice Hall, 6th Edition.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

CURRICULUM AND SCHOOL	**[ED-301]**

B.Sc. B.Ed.- Semester-V (Autumn)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1. Meaning, scope, need and aims of curriculum, Difference & relationship between curriculum and syllabus

CO2. Curriculum at different level and principles of curriculum construction.

CO3. Role of school in executing the curriculum.

CO4. Role of head teacher's management in curriculum engagement. Curriculum frame work ofNCF – 2005.

CO5. Acquaint them with the school support system and state and central agencies- role ofadministration and management.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Introduction to curriculum:** 1. Meaning and concept of curriculum. 2. Need and aims of curriculum in schools. 3. Difference between curriculum and syllabus, and relationship between curriculum syllabus and text book. 4. Visualizing curriculum at different level: national, state, school and class. 5. Principles of curriculum construction.	12
2	**Curriculum development at school level:** 1. Understanding different approaches of curriculum: Subject center approach, Learner center approach and integrated approach. 2. Process of curriculum making: a) Formulating aims and objectives. b) Determinants of curriculum construction. c) Selection criteria for subject matter. d) Organization of subject matter.	12

	e) Instructional material.	
3	**School support system:** 1. Educational administration and management: meaning, concept and difference between administration and management and its role for supporting the schools. 2. Community, society and family as a support system. 3. State agencies: SCERT, State Department of Education and DIET. 4. Central agencies: NCERT, NCTE, CBSE.	12
4	**Curriculum implementation and monitoring:** 1. Reviewing of aims and process of curriculum development 2. Process of curriculum evaluation and revision. 3. Role of government bodies in monitoring of the curriculum. 4. NCF – 2005.	12
5	**School: a site of curriculum engagement/ Implementation** 1. Role of school in executing the curriculum. 2. Essential conditions of school for transecting the curriculum smoothly (physical and human resources). 3. Role of stakeholders- Head/Principal, teachers, management and govt.	12
	Total	**60**

Course Outcomes (CO):

CO1: Understand the **fundamental concepts** of curriculum, including its meaning, scope, necessity, and objectives. Recognize the distinctions and connections between curriculum and syllabus.

CO2: Gain knowledge of curriculum development at various educational levels and comprehend the **principles of curriculum construction**.

CO3: Explore the **active role of schools** in implementing and executing the curriculum effectively.

CO4: Examine the **responsibilities of head teachers** and management in engaging with and supporting the curriculum, in line with the **National Curriculum Framework (NCF) 2005** guidelines.

CO5: Familiarize with the **school support systems**, and the roles played by state and central agencies in curriculum administration and management.

Practicum/ Graded Assignments:

1. Preparation of a CD of different types of curriculum and their importance.
2. P.P. Presentation on process of curriculum making in any subject.
3. Preparation of an observation scale for the roles of school personnel for conduction/ execution of curriculum.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Agarwal, J.C.; School Administration, Surya Publication, Meerut.
2. Aggrawal, J.C. (1990); Curriculum reforms in India, Duaba House, Delhi.
3. Devis I (1976); Objectives in curriculum design, Mc Graw Hill Co., London.
4. J.M. and Chase J.B. (1969); Curriculum principles and social trends, New Art, America US.
5. Kaushik, S.L; Shiksha ka Vikas, Rajasthan Hindi Granth Academy, Jaipur.
6. Kelly, A.V. (1989); The Curriculum: Theory and Practice, Paul Chapman Pub., London.
7. Krug, E. (19857); Curriculum Planning, Harper and Rao, New York.
8. Mahendi, B. Arora, G.L and Goyal, B.R. (1981); Our Curriculum Concern, NCERT, New Delhi.
9. Mamidi, M.R. and Ravishankar, S. (1984); Curriculum development and Educational Technology, Sterling Pub., Delhi
10.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

ICT-A TOOL IN TEACHING LEARNING – I	**[ED-303]**

B.Sc. B.Ed.- Semester-V (Autumn)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-2 CREDITS-2	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1. ICT application in class room and professional development and in teaching learning process.
CO2. Awareness about functioning of computer, concept of hardware and software and educationsoftware, computer memory and its unit.
CO3. Basic features of windows: MS-Office, MS-Excel and preparation of slides.
CO4. Internet and multimedia Concept and its educational uses.
CO5. Role of computer in education system.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Information and communication technologies – an Introduction** a) Meaning and definition of ICT: information and communication basics, nature and scope of a communication system – sender, receiver, message and the medium, one-to-one, one-to-many, and many-to-many communication. b) Information and Communication Technologies in Teaching Learning: Teaching learning contexts and the need for ICT devices and applications. c) Applications of Information and Communication Technologies: Classroom and ICT, Professional development and ICT, School management and ICT.	12
2	**Computer Fundamentals:** 1. General awareness about functioning of Computer- a. Characteristics and uses of Computer in Education (Planning, question paper preparation, evaluation, open learning system) b. Block diagram of Computer c. Classification of Computer 2. Concept of hardware, software and education software. 3. Input/output devices	12

	4. Primary storage devices & secondary storage devices. 5. Computer memory and its units-RAM, ROM bit and byte	
3	**Operating System:** 1. Basic features of Windows 2. Windows and it's accessories a) Explorer b) File Manager c) Paint d) Managing Printing **MS-Office** MS-Word-Text Management, Preparation of Resume, Application, Bio-data, tables & commands **MS-Excel**- Preparation of Table, Chart, formulas & commands **POWER POINT-** Preparation of Slides, Paper Presentation & commands	12
4	**Computer as teaching machine:** a. Computer Aided Instruction (CAI)-Concept and modes b. Concept of other terms like CMI (Computer Managed Instructions) CBI (Computer Based Instructions) CALT Computer Assisted Learning and Teaching) c. Information Technology and Computer (Concept, role, impact on education system) **Internet and Multimedia** 1. Videoconferencing, Chatting, Videocalls, E-Mail, Internet surfing for educational purpose websites, Search Engines. 2. Concept of Multimedia and its educational uses	12
5	**Computer and its role** Role of Computer in Education System – • library Management, • Education and School management, • evaluation system • education and research	12
	Total	**60**

Course Outcomes (COs)

CO1: Acquire skills in **ICT application** for classroom integration, professional development, and enhancement of the teaching-learning process.

CO2: Develop **awareness of computer operations**, including the concepts of hardware, software, educational software, and the units of computer memory.

CO3: Learn the **basic features of Windows**, including the use of MS-Office and MS-Excel, and the creation of presentations.

CO4: Understand the **concepts of the internet and multimedia**, and their educational applications.

CO5: Explore the **impact and role of computers** within the education system.

Practicum/ Graded Assignments:

1. Identifying appropriate media and material for effective use in the transaction of lesson.
2. Critical analysis of Teaching aids and their applications in instruction and learning
3. Critical analysis of a computer based media packages with reference to its use in learning process.
4. Preparation and presentation of slides for teaching any topic at the school level.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms	:	10marks
		30marks

Recommended Books:

1. Reghavan, S.S; Macro Computer in Science and Language teaching, Mysore R.C.E.
2. Osborne A; An Introduction to Micro Computers, Galgolia Book Source, New Delhi.
3. Kaur Harjit; Computer, Aatmaram & Sons, New Delhi.
4. Vakatachamal, S.; Computer ek parichay, Pitambar publication company Pvt. Ltd. New Delhi.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

UNDERSTANDING A DISCIPLINE MATHEMATICS	**[ED-305]**

B.Sc. B.Ed.- Semester-V (Autumn)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives: To acquaint the pupil teacher with the:

CO1 Nature, scope, need and importance of mathematics.

CO2. Contribution of mathematician.

CO3. Different areas in teaching Mathematics at school level**.**

CO4. Aims and objectives of teaching Mathematics and developing skills in maths teachers**.**

CO5 Concepts of Diagnostic and Remedial program and set theories and its functions.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Nature and scope of Mathematics:** a) Mathematics: its meaning, definition, nature and importance. b) Scope and need of Mathematics. c) Need of innovation and creativity in Mathematics. d) History of Mathematics teaching. e) Contribution of Mathematician in: Arya Bhatt, Ramanujan, Euclid, Pythagorous.	9
2	**Different areas in Mathematics teaching at school level:** a) Arithmetic. b) Algebra. c) Trigonometry. d) Geometry. e) Statistics and probability.	9

3	**Aims and objectives of teaching Mathematics:** a) Aims and objectives of teaching Mathematics at secondary level. b) Introduction to Bloom's Taxonomy. c) General and specific objectives. d) Writing instructional objectives of teaching mathematics in behavioral terms. e) Writing instructional objectives of teaching mathematics by giving some suitable examples.	9
4	**Learning in Mathematics Education:** a) Motivating students to learn concepts, concepts formation and concept assimilation. b) Developing logical thinking and scientific temper/attitude in students. c) Involving learners in teaching learning process: Projects, Group Discussions, Investigatory Approach, and Experimental Learning, Problem solving, Riddles, Puzzles. d) Developing skills in Maths teacher.	9
5	**Enrichment Programme:** Diagnostic, Remedial and enrichment programme with respect to the following content areas prescribed in secondary classes of RBSE and CBSE a. Set theory and mathematical structures -Sets, Relations and Functions. b. Statistics-Graphical representation of the statistical data, measures of central tendency, dispersion and coefficient of correlation. c. Axiomatic development of Geometry. Concepts of ray, line segment, angle of a triangle, interior and exterior angles of a triangle.	9
	Total	**45**

Course Outcomes (COs):

CO1: Understand the **nature, scope, necessity, and significance** of mathematics in various fields.

CO2: Recognize the **contributions of mathematicians** throughout history and their impact on the development of mathematical thought.

CO3: Identify the **different areas of teaching mathematics** at the school level and the methodologies applicable to each.

CO4: Comprehend the **aims and objectives of teaching mathematics**, and focus on skill development for mathematics Pupil teachers.

CO5: Grasp the **concepts of diagnostic and remedial programs** in mathematics education, as well as the fundamentals of **set theory** and its functions.

Practicum/ Graded Assignments:

1. Contribution of eminent personalities (Discipline related).
2. Importance of discipline related areas in building up the career (Seminar).

3. Prepare an innovative plan for teaching any topic of your discipline.
4. Prepare the support material of any unit of your discipline.
5. PPP of the recent trends in Mathematics teaching.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms	:	10marks
		30marks

Recommended Books:

1. Agarwal S.M; Teaching of Modern mathematics, Dhanpat Rai and Sons, Delhi.
2. Ryangar and Kuppuswami,N.A.; Teaching of mathematics in the new education, Universal Publication, Delhi.
3. Jagadguru Swami; Sri Bhari Krisna Turthji Vedic mathematics, Moti lal Banarsi das Publisher Delhi.
4. Kapur J.N; Modern mathematics for teachers, Arya Book Depot,New Delhi.
5. Shrivastava and Bhatnagar; Maths Education, Ramesh Book Depot, Jaipur.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics –XI (Number Theory)	**[MA-312]**

B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

The security of our Phone calls, Bank transfers etc. all rely one area of Mathematics i.e. Number Theory.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Divisibility :** Divisibility—Division Algorithm, g.c.d. the Euclidean Algorithm. l.c.m,.Prime, Infinitude of primes, Fundamental theorem of Arithmetic. Fibonacci sequence..	7
2	**Congruence :** Congruence—Linear congruence, Fermat, Little and Wilson`s theorems.Chinese remainder theorem. Fermat`s last theorem.Euler`s factorization, Mersenne`s factorization.	8
3	**Functions :** Number theoretic functions, π and σ-functions.The Mobius function, Greatest integer function.Euler Phi function and the properties of Phi function.	7
4	**Diophantine equations :** Diophantine equations—$ax + by = c,\ ax + by + cz = d,\ x^2 + y^2 = z^2,\ x^4 + y^4 = z^4$. General Integers solution of the equation $x^2 + y^2 + z^2 = w^2 (x, y, z, w = 1)$	7

5	**Quadratics**: Quadratic residues, Quadratic reciprocity. Quadratic congruence.Primitive roots for primes, Composite numbers having primitive roots. Theory of indices.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Elementary Number Theory by David M. Burton, Wm. C. Brown Publishers.
- Elementary Number Theory by G.A.Jones and J.M.Jones, Springer—Verlag.
- Elementary Theory of Numbers by W.Sierpinski, North-Holland,Ireland.
- An Intro. to the Theory of Numbers by Niven, S.H.Zuckerman and L.H.Montgomery, John Wil

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Mathematics –XII (Statics and Dynamics)	**[MA-314]**

B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives:

The objective of this course is to develop the learning capabilities and hone the problem solving skills of talented students at a mathematically deeper and more rigorous level.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Statics :** General Conditions of Equilibrium when more than three forces act on a rigid body. Virtual work, Principle of virtual work for a system of coplanar forces acting on a particle. Principle of virtual work for a system of coplanar forces acting at different points of a rigid body.	8
2	**Statics :** Centre of Gravity. C.G. of an arc, C.G. of a plane area. C.G. of a solid of revolution, C.G. of a surface of revolution, C.G. when the density varies.	7
3	**Dynamics :** Velocity and Acceleration—along radial and transverse directions, along tangential and normal directions. S.H.M., Hooke`s Law. Motion along horizontal and vertical elastic strings.	7
4	**Dynamics :** Motion in resisting medium—Resistance varies as velocity and square of velocity. Motion on a smooth curve in a vertical plane. Motion on the inside and outside of a smooth vertical circle.	7

5	**Dynamics :** Central Orbits—p-r equations, Apses. Time in an orbit, Kepler`s Law of planetary motion. Moment of Inertia—M.I. of rods, Circular rings, Circular disks, Solid and Hollow spheres, Rectangular lamina, Ellipse and Triangle.	7
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

- Elements of Statics by K.C.Sharma, D.C.Gokhroo, S.R.Saini, J.P.H., Jaipur.
- Dynamics byY.N.Gaur, A.K.Mathur, M.C.Goyal, Ramesh Book Depot, Jaipur.
- A Text Book of Statics byR.S.Verma, PothishalaPvt. Ltd., Allahabad
- Principles of Mechanics by J.L.Synge& Griffith, Tata McGraw-Hill.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28
SEMESTER :VI

Chemistry-VII (Physical &MiscChemistry-II)	**[CY-312]**
B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives : This course deals with the application of structure and theory to the study of Solution colligative properties , Nuclear chemistry and heterogeneous system

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Solution and Colligatives :** Expression of Concentration of Solids in Liquids ,Solid Solutions ,Colligative Properties -Relative Lowering of Vapor Pressure ,Raoult's Law Elevation of Boiling Point ,Depression of Freezing Point ,Osmotic Pressure ,Determination of Molecular Masses using Colligative Properties 'Van't Hoff Factor and Calculations involving it ,	07
2	**Nuclear Chemistry:** Nuclear chemistry; Fundamental particles of nucleus (nucleons); Concept of nuclides and its representation; Isotopes, isobars and isotones (with specific examples); Forces operating between nucleons (n-n, p-p, & n-p); Qualitative idea of stability of nucleus (n/p ratio). Radiochemistry: Natural and artificial radioactivity; Radioactive disintegration series, Radioactive displacement law, Radioactive decay rates, Half-life and average life, Nuclear binding energy, Mass defect and binding energy. Nuclear reactions; spallation, nuclear fission and fusion. Application radioactive waste management radioactivity.	08
3	**Phase equilibrium**: Heterogeneous system, Phase diagram of one and two component system. **Surface chemistry:** Interface (chemistry) Surface modification of biomaterials with proteins, Surface finishing, Surface modification, Surface phenomenon, Tribology **electrocardiography. Polarography theory, Ilkovic equation; half wave potential and its significance**	06
4	**Soil and Environmental Biogeochemistry** : Soil Chemistry, Chemistry of Soils: interactions between soil solids, precipitates and solution phases including: mineralogy, ion exchange, adsorption, weathering and buffering, soil colloidal .Soil Humic Substances. **Soil Testing's and salinity**	07

5	**Environmental and Green Chemistry : Environmental Issues** :Go Green ,Consumer Health & Food Safety Concerns , Environmental Disasters, Chemical reactions in environment, Impact of primary and secondary pollutants **Basics of Green Chemistry.** Definition of green chemistry, How green chemistry differs from cleaning up pollution, Green chemistry's 12 principles Green chemistry's roots in the Pollution Prevention Act of 1990 **.**Intellectual property Right	08
	Total	**36**

Practicum/ Graded Assignments:

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 20marks

30marks

References and Text Books:

1 Barrow, G. M. Physical Chemistry Tata McGraw-Hill (2007).
2. Castellan, G. W. Physical Chemistry 4th Ed. Narosa (2004).
3. Mahan, B. H. University Chemistry 3rd Ed. Narosa (1998).

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Chemistry VIII (Organic Chemistry-II)	**[CY -314]**
B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 Tutorial -1 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives : It focuses on the methods used to identify the structure of organic molecules, advanced principles of organic stereochemistry, organic reaction mechanisms, and methods used for the synthesis of organic compounds. Additional special topics include illustrating the role of organic chemistry in biology, medicine, and industry.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Aldehyde and Ketone :** Aldehyde synthesis by deportation or hydrolysis ,Aldehyde synthesis by oxidation of alcohols and rearrangements , 1,3-Dike tone synthesis by oxidation , Insole synthesis Ketone synthesis by oxidation of alcohols, Nucleophilic addition reactions.	07
2	**Carboxylic Acids:** Structure , Acidity, Synthesis , Carboxylic Acid Derivatives : Acryl Transfer Reactions : Background , Acid Chlorides/Anhydrides , Esters Amides , Chemistry of Nitriles : Formation Reactions. Acids, Tartaric acid Citric acid	08
3	**Conjugated Systems**: Molecular Orbital Theory: Conjugated Systems and frontier Molecular Orbital Theory Correlation diagrams, Pericyclic Reactions – Introduction to Electrocyclic– and Cycloadditions reactions, 1,3 and 1,5 Sigmatropic Rearrangements.	06
4	**Polymers :** Thermoplastcs and Thermosetts, polymerization classification, compounding of plastics, Elastomers natural and artificial rubber Industrial application of polymers biodegradable plastics.Industrial Process in polymers injection molding, foaming, reinforcing and fiber spinning.	07
5	**Advanced Organics :** Reaction intermediates and determination of reaction mechanism, concept of medicinal chemistry and drug design. Photochemistry, laws of photochemistry, Jablonski diagram, Norish-I & II reactions, Concept of Spectroscopy, IR, NMR, Mass, Raman and UV-visible spectroscopy for organic compounds, sample handling, instrumentation and applications	08
	Total	**36**

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

References and Text Books:

1. Carey, F. A., and R. J. Sundberg. Advanced Organic Chemistry, Part A: Structure and Mechanisms. 4th Ed. New York, NY: Springer, 2000.
2. Joule, J. A., and K. Mills. Heterocyclic Chemistry. 4th ed. Malden, MA: Blackwell Science, 2000.
3. L. Finar: Organic Chemistry (Vol. I & II), E. L. B. S.
4. R. T. Morrison & R. N. Boyd: Organic Chemistry, Prentice Hall.
5. ArunBahl and B. S. Bahl: Advanced Organic Chemistry, S. Chand
6. Peter Sykes: A Guide Book to Mechanism in Organic Chemistry, Orient Longman.
7. S.M.Mukherjee and S.P.Singh ,Reaction Mechanism in Organic Chemistry,Mc Millan (2004).

Bhupinder Mehta and Manju Mehta, Organic Chemistry, PHI Learning (2009)

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Physics-IX (Classical and Quantum Mechanics)	**[PY-312]**
B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 Tutorial -1 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Objectives: To acquaint pupil teacher with the:

- To acquire the knowledge about the drawbacks of classical mechanics and the origin of quantum mechanics.
- To enable student's understanding about the postulates of quantum mechanics.
- To allow students understanding the basic definitions related to wave function.
  To understand Schrodinger equation and its applications.

Unit	Contents of the Subject	No. of Teaching Hrs required
1	**Basic concept of classical mechanics :** Mechanics of particle, Mechanics of system of particles, Constraints, Holonomic and non-Holonomic constraints, Virtual work, Alembert's principle, Lagrange's equation, Simple applications of Lagrange's formulation-Linear Harmonic Oscillator, Simple pendulum.	07
2	**Failure of Classical Physics and evolution of new concepts :** Spectral radiation; Planck Law; Photo Electric Effect-Einstein's Photo Electric Equation; Compton's Effect; Stability of an atom- Bohr's Atomic theory; de- Broglie hypothesis- wavelength of matter waves; Properties of matter waves; Phase and group velocities; Davisson's & Germer Experiment; Double slit Experiment; Standing de-Broglie waves of electron in Bohr's or	08
3	**Schrodinger Equation :** Limitations of old theory; Wave function, properties and significance; Postulates of Quantum Mechanics; Operators, Eigen function, Eigen values and expected values; Schrodinger time independent and time dependent wave equation;	07
4	**Applications of Schrodinger wave equation** : Application of Schrodinger wave equation to particle in one and three dimensional boxes; Potential step and Potential barriers; Quantum Phenomenon of Tunneling: Tunnel Effect. Tunnel Diode	07

5	**Bound State Problems:** General Features of a Bound Particle System, (1) One DimensionalSimple Harmonic Oscillator: Energy Levels and Wave Functions. Zero Point Energy, (2) Quantum Theory of Hydrogen Atom: Particle in a Spherically Symmetric Potential. Schrodinger Equation. Separation of Variables. Radial Solutions and Principal Quantum. Number, Orbital and Magnetic Quantum Numbers	07
	Total	**36**

Practicum/ Graded Assignments:

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Nuclear Physics by D. C. Tayal, Himalaya Publishing House
2. Nuclear Physics by S.N., Ghoshal, S.Chand Publication.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28
B.Sc. B.Ed.- Semester-VI (Spring)

Chemistry -VI Lab	**CY-362**

EVALUATION
SCHEDULE PER WEEK
Practical -2
CREDITS-2

S. No.	**Name of Experiment**
1	Estimation of borax - Standard Sodium Carbonate
2	Estimation of Sodium Hydroxide - Standard Sodium Carbonate
3	Estimation of HCl – standard oxalic acid.
4	Estimation of Copper - Standard Copper sulphate
5	Estimation of Potassium dichromate - Standard Potassium dichromate Complexometric
6	Estimation of Magnesium using EDTA.
7	Estimation of Zinc using EDTA.
8	Estimation of ferrous ion using Diphenyl amine / N-Phenylanthranilic acid as indicator. Precipitation titration
9	Estimation of Chloride in neutral medium. (Demonstration - experiment)
10	Estimation of ferrous sulphate – Standard FAS.

Reference Books:

1. Vogel's Qualitative Inorganic Analysis, A.I. Vogel, Prentice Hall, 7th Edition.
2. Vogel's Quantitative Chemical Analysis, A.I. Vogel, Prentice Hall, 6th Edition.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

YOGA EDUCATION	**[ED-302]**

B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-2 CREDITS-2	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives: The pupil teacher will be able to understand:

1. **CO1:** Understand the philosophical and psychological aspects of yoga, explore the types of yoga including the Eightfold Path, and recognize the importance of yoga.
2. **CO2:** Study foundational texts like Patanjali Yoga Sutra, Bhagavad Gita, and Yoga Upanishads to understand the principles of yoga.
3. **CO3:** Learn about key practices in yoga including Asanas, Pranayama, Kriyas, and Dhyana (meditation).
4. **CO4:** Explore different types of yoga asanas, understand their advantages, and learn precautions to be taken during yoga exercises.
5. **CO5:** Examine the effects of yoga exercises on various body systems, understand the relationship between yoga and diseases, and explore how yoga contributes to personality development.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Concept of Yoga:** 1. What is yoga? (Philosophical & Psychological aspects) 2. Types of yoga (Eight folder path). 3. Importance of yoga.	**6**
2	**Basis of yoga:** 1. Patanjali yogsutra. 2. Bhagwat Gita. 3. Yog upnishad.	6
3	**Theories of yoga practice:** 1. Asana. 2. Pranayam. 3. Kriyas. 4. Dhayan.	6

4	**Yoga Asans:** 1. Types of yoga asans. 2. Advantage of yoga exercise. 3. Precautions to be taken during yoga and exercise.	6
5	**Health and yoga:** 1. Effect of yoga exercise on different system of body. 2. Yoga and diseases. 3. Personality development through yoga.	6
	Total	**30**

CO1: Gain a comprehensive understanding of yoga's philosophical and psychological dimensions, including the Eightfold Path, and appreciate its significance in personal well-being.
CO2: Acquire insights into foundational yoga texts such as the Patanjali Yoga Sutra and Bhagavad Gita, and understand their principles to deepen yoga practice.
CO3: Familiarize oneself with key yoga practices like Asanas, Pranayama, Kriyas, and Dhyana, and develop proficiency in their application.
CO4: Understand the various types of yoga asanas, their benefits, and learn precautionary measures to ensure safe practice.
CO5: Evaluate the physiological effects of yoga exercises on the body, explore the therapeutic applications of yoga for different health conditions, and recognize its role in holistic personality development.

Practicum/ Graded Assignments:

1. Prepare charts for different asana and exercises.
2. Prepare a presentation on any topic of yoga from syllabus.
3. Visit to different yoga centers and prepare a report.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Bawara, B. V. (1993). Aapki Apni Baat, Haryana: Divine Radiance Publications.
2. Besant, A. (2005) An Introduction to Yoga., New Delhi: Cosmo
3. Iyenger, B.K.S. (1996). Lighter on Yoga. New Delhi: Harper Collins Publishers India Private Limited
4. Larson, J. G. & Bhattacharya, R. S. (2007). Encyclopedia of Indian Philosophies, Vol. XII.Yoga: Gerald James Larson and Ram Shankar Bhattacharya, New Delhi: Motilal Banarsidass Publications.
5. Lata, P. (1996). Intelligence, Creativity, Self-concept and Personality Characteristics of Delinquents and Non-delinquents. Chandigarh: Panjab University.
6. Lzmailovich, Omand, S. (1960). Patanjali Yoga Pradeep. Gorakhpur: Gita Press
7. Rai, V.C. (1989). Effect of Sahaj Yoga Meditation on Cardiac Disorders. Delhi Medical College: Department of Physiology

8. Rao, P. V. K. (1995). Scientific and Psychological Significance of Yoga. Banaras Hindu University: Department of Education
9. Yadav, Y. P. & Yadav, R. (2003). Art of Yoga, New Delhi: Friends
10. Yogacharya,O. S. (2007). Freedom of Body and Mind: Yogasanas, Pranayam and Meditation, New Delhi: Rawat

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

PEDAGOGY OF A SCHOOL SUBJECT MATHEMATICS (Part – I)	**[ED-306]**

B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1: Understand the concept and importance of Mathematics, its scope, aims, and objectives in teaching.

CO2: Define co-relation, explore Mathematics' correlation with other disciplines and school subjects, and recognize contributions of mathematicians.

CO3: Recognize characteristics and roles of Mathematics teachers and learners, understand their responsibilities, and explore teacher-learner relationships.

CO4: Define instructional planning, understand its importance, and differentiate between yearly, unit, and lesson plans according to Bloom's Taxonomy.

CO5: Understand pedagogy's concept and importance, classify teaching methods into teacher-centered, student-centered, and participatory methods, and recognize their significance in Mathematics teaching.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Nature scope and aims of teaching Maths:** 1. Concept and meaning of Mathematics. 2. Nature and its scope. 3. Importance of Mathematics teaching in school curriculum. 4. Aims of Mathematics teaching. 5. Objectives of Mathematics teaching.	9
2	**Co-relation with other subjects:** 1. Co-relation: meaning and concept. 2. Correlation of Mathematics with other disciplines. 3. Relationship with other school subjects. 4. Contribution of mathematicians in the area of Mathematics.	9
3	**Teacher and Learner:** 1. Characteristics of Mathematics teacher.	9

	2. Role and responsibilities of Mathematics teacher in teaching learning process. 3. Characteristics of learners. 4. Role and responsibilities of learner. 5. Teacher learner relationship in the classes.	
4	**Instructional planning for Mathematics teaching:** 1. Meaning and concept of Instructional planning (Bloom's taxonomy) 2. Need and its importance. 3. Types of instructional plan: yearly plan. 4. Unit plan. 5. Lesson plan.	9
5	**Methodology of teaching of Mathematics:** 1. Concept need and importance of pedagogy. 2. Types and classification of teaching methods. 3. Types of teachers centered method. 4. Types of student centered method. 5. Types of participatory methods.	9
	Total	**45**

CO1: Comprehend the fundamental concept and significance of Mathematics, elucidate its breadth, objectives, and goals within the educational framework.
CO2: Define co-relation, investigate Mathematics' interdisciplinary connections, and acknowledge the contributions of renowned mathematicians to the field.
CO3: Identify the distinctive attributes and roles of Mathematics educators and learners, discern their respective duties, and cultivate effective teacher-student dynamics.
CO4: Define instructional planning, grasp its critical role, and discern between yearly, unit, and lesson plans aligned with Bloom's Taxonomy to optimize teaching strategies.
CO5: Understand the essence of pedagogy in Mathematics education, categorize teaching methodologies into various frameworks, and appreciate their efficacy in facilitating robust learning experiences.

Practicum/ Graded Assignments:

1. Prepare a plan on career avenues related to the subjects.
2. Prepare the chart with pictures of eminent personalities of the subjects.
3. Observation of teacher and learner behavior in the class.
4. Prepare a program institution based plan on nay unit.
5. Survey on teaching methods used by regular teachers in Schools.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Agarwal S.M; Teaching of Modern mathematics, Dhanpat Rai and Sons, Delhi
2. Ryangar and Kuppuswami,N.A.; Teaching of mathematics in the new education, Universal Publication.
3. Butler and Wren; The teaching of Secondary mathematics, McGraw Hill Book company
4. Jagadguru Swami; Sri Bhari Krisna Turthji Vedic mathematics, Moti lal Banarsidas Publisher Delhi
5. Kapur J.N; Modern mathematics for teachers, Arya Book Depot,New Delhi
6. Mangal,S.K.; Teaching of mathematics, Prakash Brother Ludhiana
7. Kapoor and Saxena; Mathematical Statistic, mS. Chand & Co. New Delhi
8. Sidha,K.S; Teaching of mathematics, Streling pub.Pvt.Ltd,New Delhi
9. ShriVastov and Bhatnagar; Maths Edcuation, Ramesh Book Depot, Jaipur
10. Modern Abstract Algebra; Shanti Narayan, S. Chand & Co. New Delhi

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

PEDAGOGY OF A SCHOOL SUBJECT CHEMISTRY (Part – I)	**[ED-308]**

B.Sc. B.Ed.- Semester-VI (Spring)	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives: To enable the student teacher to:

CO1: Understand the concept and importance of Chemistry, its scope, aims, and objectives in teaching.

CO2: Define co-relation, explore Chemistry's correlation with other disciplines and school subjects, and recognize contributions of famous chemists/scientists.

CO3: Recognize characteristics and roles of Chemistry teachers and learners, understand their responsibilities, and explore teacher-learner relationships.

CO4: Define instructional planning, understand its importance, and differentiate between yearly, unit, and lesson plans.

CO5: Understand pedagogy's concept and importance, classify teaching methods into teacher-centered, student-centered, and participatory methods, and recognize their significance in Chemistry teaching.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Nature scope and aims of teaching chemistry:** 1. Concept and meaning of chemistry 2. Nature and its scope 3. Importance of chemistry teaching in school curriculum 4. Aims of chemistry teaching 5. Objectives of chemistry teaching	**9**
2	**Co-relation with other subjects:** 1. Co-relation: meaning and concept 2. Correlation of chemistry with other disciplines 3. Relationship with other school subjects 4. Contribution of famous chemist/scientist in the area of chemistry	**9**
3	**Teacher and Learner:** 1. Characteristics of chemistry teacher	**9**

	2. Role and responsibilities of chemistry teacher in teaching learning process 3. Characteristics of learners 4. Role and responsibilities of learner 5. Teacher learner relationship in the classes	
4	**Instructional planning for chemistry teaching:** 1. Meaning and concept of Instructional planning. 2. Need and its importance. 3. Types of instructional plan: yearly plan. 4. Unit plan. 5. Lesson plan.	**9**
5	**Methodology of teaching of chemistry :** 1. Concept need and importance of pedagogy. 2. Types and classification of teaching methods. 3. Types of teachers centered method. 4. Types of student centered method. **5.** Types of participatory methods.	**9**
	Total	**45**

Course Outcomes:

CO1: Grasp the essence and significance of Chemistry, delineate its scope, aims, and objectives within the educational framework.

CO2: Define co-relation, explore Chemistry's interdisciplinary connections, and acknowledge the contributions of renowned chemists and scientists to the field.

CO3: Identify the distinct characteristics and roles of Chemistry educators and learners, comprehend their respective responsibilities, and cultivate effective teacher-learner relationships.

CO4: Define instructional planning, recognize its pivotal role in educational efficacy, and distinguish between yearly, unit, and lesson plans to optimize teaching strategies.

CO5: Appreciate the essence of pedagogy in Chemistry education, categorize teaching methodologies into diverse frameworks, and discern their efficacy in fostering comprehensive learning experiences.

Practicum/ Graded Assignments:

1. Prepare a plan on career avenues related to the subjects.
2. Prepare the chart with pictures of eminent personalities of the subjects.
3. Observation of teacher and learner behavior in the class.
4. Prepare a program institution based plan on nay unit.
5. Survey on teaching methods used by regular teachers in Schools.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Yadav, M.S.; Teaching of chemistry, Anmol publication, New Delhi.
2. Yadav, M.S.; Teaching science at Higher Level, Anmol Publications, New Delhi.
3. Misra, D.C.; Chemistry Teaching, Sahitya.
4. Kherwadkal, Anjali; Teaching of Chemistry by Modern Method, Sarup & Sons.New Delhi.
5. Das, R.C; Science Teachg in Schools, Sterling Publishers Pvt.Ltd., New Delhi.
6. Venkataih,S. ; Science education in 21st Century, Anmol Publishers, New Delhi.
7. Rao,D.B.; World Conference on Science Education, Discovery Publishing House, New Delhi.

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DETAILED SYLLABUS
2024-28

PEDAGOGY OF A SCHOOL SUBJECT PHYSICS (Part – I)	**[ED-304]**

VI-Sem B.Sc.B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1: Understand the fundamental concepts and significance of Physics, delineate its scope, and elucidate its pivotal role in the school curriculum.

CO2: Analyze the interdisciplinary connections of Physics, recognize its correlation with other disciplines, and acknowledge the contributions of physicists and scientists.

CO3: Recognize the characteristics and responsibilities of Physics educators and learners, and foster effective teacher-learner relationships.

CO4: Define instructional planning in Physics education, identify its necessity, and differentiate between yearly, unit, and lesson plans to enhance teaching strategies.

CO5: Appreciate the importance of pedagogy in Physics education, classify teaching methods, and discern their efficacy in promoting comprehensive learning experiences.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Nature scope and aims of teaching Physics:** 1. Concept and meaning of physics 2. Nature and its scope. 3. Importance of physics teaching in school curriculum. 4. Aims of physics teaching. 5. Objectives of physics teaching.	**9**
2	**Co-relation with other subjects:** 1. Co-relation: meaning and concept. 2. Correlation of physics with other disciplines. 3. Relationship with other school subjects. 4. Contribution of physicist/scientist in the area of physics.	**9**

3	**Teacher and Learner:** 1. Characteristics of physics teacher. 2. Role and responsibilities of physics teacher in teaching learning process. 3. Characteristics of learners. 4. Role and responsibilities of learner. 5. Teacher learner relationship in the classes.	**9**
4	**Instructional planning for physics teaching:** 1. Meaning and concept of Instructional planning/ 2. Need and its importance. 3. Types of instructional plans: yearly plan. 4. Unit plan. 5. Lesson plan**.**	**9**
5	**Methodology of teaching of physics:** 1. Concept need and importance of pedagogy. 2. Types and classification of teaching methods. 3. Types of teachers centered method. 4. Types of student centered method. 5. Types of participatory methods.	**9**
	Total	**45**

Course Outcomes:

CO1: Develop a thorough understanding of fundamental principles and concepts in Physics, recognizing its importance within the broader context of education.

CO2: Analyze and appreciate the interdisciplinary nature of Physics, identifying its connections with other scientific disciplines and acknowledging the contributions of prominent physicists and scientists.

CO3: Demonstrate an understanding of the roles and responsibilities of both Physics educators and learners, fostering effective communication and collaboration in the teaching-learning process.

CO4: Apply effective instructional planning techniques in Physics education, designing comprehensive yearly, unit, and lesson plans to optimize teaching and learning outcomes.

CO5: Implement diverse pedagogical approaches in Physics teaching, facilitating student-centered learning, and engagement through various teaching methods, thereby promoting a deeper understanding and appreciation of Physics concepts.

Practicum/ Graded Assignments:

1. Prepare a plan on career avenues related to the subjects.
2. Prepare the chart with pictures of eminent personalities of the subjects.
3. Observation of teacher and learner behavior in the class.
4. Prepare a program institution based plan on nay unit.

5. Survey on teaching methods used by regular teachers in Schools.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Hesis, Oburn and Hoffman; Modern Science, The Macmillan Company" New York
2. Thurber W. and A Collette; Teaching Science in Today' ssecondary schools, Boston Allyan and Bacon Inc. New York
3. Magal S.K; Sadharan Science Siksha, Aray book Depot,New Delhi Vaiday,N.
4. The impact of science Teaching; Oxford and IBH Publication Company, New Delhi 1971
5. Richardson S; Science Teaching in Secondary School, Prentice Hall USA
6. Sharma,R.C. and Sukla; Modern Science Teaching', Dhanpat Rai and sons Delhi
7. Taygi S.K. Bhotik; Science Education, Sahitay pakashan,agra.

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SCHOOL OF EDUCATION

DETAILED SYLLABUS

2024-28

School Internship-III	[**TP-401]**

VII-SEM. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK PRACTICAL-36 CREDITS-18	EXAMINATION TIME = (3) HOURS [CIE (70) ESE (30)]

S. No.	**Teaching Practice and Practical Work**	**Internal/ External Assessment**
1.	Regular class room teaching delivery of 25 lessons in each subject (25*2 = 50 lessons)	20 credits (Internal+ External)
2.	Participation of co-curricular activities	
3.	Observation of teaching of peers (20 in each discipline and its report preparation)	
4.	Evaluation of lesson plans	
5.	Diagnostic test followed by remedial teaching	
6.	Involvement of student in lesson with the regular teacher in all day to day functioning along with teaching	
7.	2- discussion lessons	
8.	Exhibition of teaching aids	
9.	Organization of school trips	
10.	Research based project (action plan/ survey)	2 credits (Internal)
11.	Understanding the self- Conduction of various activities related to yoga, meditation, life skills, values and peace for school students as per instructions given by schools (EPC)	2 credits (Internal)

12.	2 - final lessons	

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

CREATING AN INCLUSIVE SCHOOL	**[ED-408]**

VIII-SEM.B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1 Concept and importance of Inclusive, Integrated and Special education

CO2. Meaning and Concepts of children withdiverse needs

CO3 Understand the nature of difficulties encountered by children and prepare conductiveteaching learning environment in inclusive schools.

CO4 Appreciate the need for promoting inclusive practice and the roles and responsibilities ofall concerned personnel.

CO5 Develop critical understanding of the recommendations of various commissions and committees towards teacher preparation for inclusive education.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Inclusive education** 1. Definition, concept and importance of inclusive education 2. Concept and difference of integrated, inclusive education and main stream education. 3. Historical perspective on inclusive education	12

2	**Children with diverse needs-** 1. Concept and meaning of Diverse needs 2. Definition and characteristics of children with sensory (hearing, visual and physically challenged) intellectual(gifted, talented, mentally challenged)developmental disability (autism, cerebral palsy, learning disability) 3. Slow learner and underachiever- meaning, definition, concept and types, characteristics.	12
3	**Preparation for inclusive education** 1. Concept and meaning of diverse needs. 2. Meeting the diverse needs- brief account of existing educational services in India for special, integrated and inclusive education. 3. Building inclusive learning friendly classrooms in relation to teacher and teaching methodologies, class room management and curriculum.	12
4	**Supporting children with diverse needs** 1. Role of teachers and management in an inclusive setting 2. Role of resource teachers, special educators and counselors. 3. Adaptation in instructional objective curriculum and co-curricular activities for meeting diverse needs of children with sensory, intellectual, learning disable, rural, tribal, girls, SC, ST and minority group	12
5	**Other aspect in inclusive education** 1. Assessment in inclusive education system. 2. Recommendation for inclusive education system in India 3. Critical investigation into inclusive education system in India.	12
	Total	**60**

Course Objectives (COs)

CO1: Grasp the fundamentals of Inclusive, Integrated, and Special Education, emphasizing their significance in fostering an equitable learning environment.

CO2: Comprehend the varied needs of children, including those with disabilities, and the importance of adapting educational practices to meet these needs.

CO3: Recognize and address the challenges faced by children with learning difficulties, and create a supportive and effective teaching environment in inclusive settings.

CO4: Value the importance of inclusive education and understand the duties of Pupil teachers and support staff in implementing inclusive practices.

CO5: Critically analyze policy recommendations and guidelines from various commissions and committees to enhance teacher training for inclusive education.

Practicum/ Graded Assignments:

1. Discussion in group, presentation by students and seminar, visit to ashram,schools/institutions with innovation practices, internet.
2. Preparation of status report on education (elementary/secondary) of socially
3. Disadvantaged groups in a district/state region.
4. Evaluation of text books from the social group equality perspective.
5. Preparation of reportIdentification of research topic in the area of education of socially disadvantagedsections and preparation of proposals.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms :		10marks
		30marks

Recommended Books:

1. Chudhary, B. (1992): *Tribal Transformation in India.* Vol.-V, New Delhi.
2. Jain, S.C. (2005): *Education and socio-economic development.* Concept publishing house, New Delhi.
3. Kagan, T.S. (2000): *Worldwide Diversity and Human Rights.* Orient Longman Pvt
4. Ltd., New Delhi.
5. Ogbu, J.U. (1978): *Minorities, education and caste.* Academic Press, New York.
6. Reissman, F. (1962): The Culturally deprived child. Harper and Raw Publishers, New Delhi.
7. Sadavinich, A.R. (2007): *Sociology of Education.* Rutledge, New York.

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

MAJOR CONCERN AND ISSUES IN INDIAN EDUCATION	**[ED-410]**

VIII-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives: On completion of this course the student will be able to:

CO1 Students will be able to understand the concept of peace and peace education, importance and aims.

CO2 Gain insight into the life skills education and need of life skills education, dimensions of life skills education.

CO3 Understand the meaning and concept of human rights education, aims, and status of human rights education.

CO4 Student will be able to understand the gender discrimination scenario in India, gender sensitive life skills approach of education.

CO5 Student will be able to understand the concept of private school versus expensive education wastage and stagnation demerits of contemporize examination system, problem of discipline, single teacher school.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**

1	**Peace education and value education** 1. Meaning & concept of peace and peaceeducation. 2. Principle of peace education. 3. Role of education in peace education role of teacher in peace education. 4. Meaning and concept of values and value education. 5. Role of education in developing values and ethics among students.	12
2	**Life Skills** 1. Meaning of life skills education. 2. Concept of life skills education. 3. Aims of life skills education. 4. Needs of life skills education. 5. Types of life skills education. 6. Dimensions of life skills education.	12
3	**Human rights** 1. Meaning of human rights education. 2. Concept of human rights education. 3. Need of human rights education. 4. Aims of human rights education. 5. Status of human rights in Indian Society. 6. Remedies for the protection of human rights.	12
4	**Gender Sensitizations** 1. Meaning of gender sensitization. 2. Gender discrimination scenario in India. 3. Education for women equality and gender sensitization. 4. Gender sensitive life skills approach of education.	12
5	**Major challenges in Indian education system** 1. Private school versus expensive education. 2. Wastage and stagnation. 3. Demerits of contemporary examination systems. 4. Problem of discipline. 5. Single teacher school.	12
	Total	**60**

Course Outcomes (COs)

CO1: Students will comprehend the concept of peace, the importance of peace education, and its objectives.

CO2: Students will gain insights into life skills education, understand its necessity, and explore its various dimensions.

CO3: Students will grasp the meaning and concept of human rights education, its aims, and the current status of human rights education.

CO4: Students will become aware of the gender discrimination scenario in India and learn about a gender-sensitive life skills approach to education.

CO5: Students will analyze the concept of private vs. public education, the drawbacks of expensive education, issues of educational wastage and stagnation, the demerits of the contemporary examination system, the problem of discipline, and the challenges of single-teacher schools.

Practicum/ Graded Assignments:

- *Prepare a PPT on* Gender discrimination scenario in India.
- *Prepare a CD on* Education for women equality and gender sensitization.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

Sr.No.	Name of Book	Author	Publisher
1	Educating the educators	Sharma M.L.	The Indian publication, Amballa Cantt.
2	Teacher Education, Modern Trends	Chakrabarti, Mohit	Kanishka Publisher, New Delhi
3	Challenges in Teacher Education	Chakrabarti, Mohit	Daya publishing, Delhi
4	Management of Teaching Education	Shrivastava, G.N. Prakash	Concept publishing, New Delhi
5	New directions in the education of Indian teachers	Desai D.M.	M.S. university, Baroda

6	Better Teacher education, Delhi	Pires, E.A.	Delhi University Press
7	Theory –Practical of teacher education in India,	Srivastava R.C.	Allahbad
8	Education of India Teacher	Uday Shankar	New Delhi, Slerling publishers
9	Teacher in emerging Indian society	M.S. Ansari	International publishing home
10	Teacher education in Dillema	Dr. M.S. Singh	Astha publication
11	Challenges in Teacher Education	Dr. M.S. Singh	Astha publication

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

ASSESSMENT OF LEARNING	**[ED-412]**

VIII-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1: Understand the meaning and purpose of assessment, differentiate between measurement and evaluation, and identify objectives of measurement and evaluation.

CO2: Classify assessments based on purpose, scope, attribute measured, nature of information, and mode of response.

CO3: Explore various assessment devices like projects, assignments, cooperative learning, self-assessment, and feedback mechanisms.

CO4: Understand the concept, objectives, and grading system of CCE, and differentiate it from traditional evaluation methods. Explore the role of teachers in CCE.

CO5: Understand the meaning and importance of examinations, examine different examination systems, and types of questions for school examinations.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Concept of assessment:** 1. Meaning and concept of assessment. 2. Purpose of assessment 3. Measurement and evaluation: meaning and concept 4. Interrelationship between measurement and evaluation 5. Objectives of measurement and evaluation.	12

2	**Classification of assessment:** 1. Based on purpose: prognostic, formative, diagnostic and summative. 2. Based on scope : teacher made and standardized 3. Attribute measured: achievement, aptitude, and attitude. 4. Nature of information gathered: qualitative and quantitative. 5. Mode of response: oral, written, practical.	12
3	**Assessment devices:** 1. Use of projects, assignment, worksheet, practical work, activities and seminar and report as assessment devices. 2. Cooperative learning and Participatory assessment. 3. Self, peer and teacher assessment. 4. Feed back to/from student, parents and teachers.	12
4	**Continuous and comprehensive evaluation:** 1. Concept, need and meaning. 2. Objectives and aims of CCE. 3. Grading system of evaluation 4. Difference between CCE and traditional method of evaluation. 5. Role of teachers in CCE.	12
5	**Examination system:** 1. Meaning and its concept. 2. Need and importance 3. Examination system: semester system, Annual system and entrance exam and their influence on students and school system. 4. Different types of questions (objective based) and blue print for school examinations.	12
	Total	**60**

Course Outcomes:

CO1: Gain comprehension of assessment fundamentals, distinguishing between measurement and evaluation, and grasp the objectives behind these processes.

CO2: Categorize assessments based on their purpose, scope, attribute measured, nature of information collected, and mode of response utilized.

CO3: Familiarize with a variety of assessment devices such as projects, assignments, cooperative learning, self-assessment, and feedback mechanisms.

CO4: Comprehend the concept and objectives of Continuous and Comprehensive Evaluation (CCE), discern its grading system, and differentiate it from traditional evaluation methods. Recognize the pivotal role of teachers in CCE implementation.

CO5: Understand the significance of examinations, explore various examination systems, and examine diverse types of questions commonly used in school examinations.

Practicum/ Graded Assignments:

1. Prepare a report on the assessment scheme of SGVU School of Education.
2. Prepare the format of summative and formative assessment.
3. Demonstration of co-operative learning in peer groups.
4. Presentation of comprehensive and continuous evaluation scheme.
5. Preparation of Blue print on any one unit.
6. Preparation of the format for practical/ project evaluation and peer evaluation of participatory learning on the basis of CCE.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

1. Allen L.G. (1995); Educational Psychology and classroom, Washington New York, John Willey and sons Inc. 1966
2. Bansal, V.P. (1958); Text book of Educational Psychology , Allahabad Indian Press
3. Bhatnagar, R.P. ; Educational Psychology , Vishwa Widhya, Pub. Gorakhpur
4. Bernard, M (1972); Psychology of Learning and Teaching , N.Y., Mc Graw Hill
5. Bhatnagar, Suresh (1976); Educational Psychology , Loyal Book Depot., Meerut
6. Blair, Jones and Simpson (1962); Educational Psychology, New York Mc Millon
7. Bhatia, H.R. (1968); Elements of Educational Psychology , Orient Lengman Calcutta
8. Crow L.D. and Crow A. (1973); Educational Psychology, Erassia Pub. House, New Delhi
9. Dorajh N.L. (1970); Advanced Educational Psychology, Allied Pub. Delhi
10. Garrison, K.C. (1956); Psychology of Adolescence , Prentice Hall, New York
11. Hurlock, E.B. (1955); Adolescence development, London Mc Grow Hill Co.
12. John P. , Deccan (1968); The Psychology of learning and instruction , Prentice Hall, India
13. Kundu, Dibaker (1991); Modern education psychology , Prentice Hall , New York
14. Rao Usha (2008); Advanced Educational Psychology, Himalaya Pub. House, Bombay

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

LEARNER AND LEARNING	**[ED-414]**

VIII-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-4 CREDITS-4	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1. Growth and development of learners- concept, Factors effecting development and Dimension of individual development.
CO2. Different psychological attribute and Handling the learners on the basis of Cognitive ability, Disability and adjustment.
CO3. Concept and meaning of learning & nature and factor of learning
CO4. Theories of learning- behavioral, Trial and error, Constructivism, & Gestalt
CO5. Concept and importance of motivation for teachers and learners & Theories of motivation on and Theories of learning- Constructivism, Gestalt, Insight etc.

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Growth and development of learner:** 1. Meaning, concept and difference between growth and development. 2. Factors effecting development. 3. Various stages of development from childhood to adolescence. 4. Dimensions of individual development in relation to physical, cognitive, affective, language and social aspect (in childhood and adolescent). 5. Principles of growth and development.	12

2	**Individual differences among learners:** 1. Meaning and concept of Individual differences. 2. Differences in different psychological attribute: intelligence, aptitude, interest, creativity, values, achievement and personality. 3. Handling the learners with: a) Cognitive ability: Gifted and Slow Learner. b) Disability: Handicapped, Dyslexia. c) Personality: Maladjusted, Delinquent.	12
3	**Learning:** 1. Concept, meaning and classification of learning. 2. Steps in learning process. 3. Nature and characteristics of learning. 4. Factors affecting leaning. 5. Managing the learning and teaching.	12
4	**Theories of learning:** 1. Stimulus response. 2. Insight. 3. Conditioning theory (skinner). 4. Gestalt. 5. Constructivism	12
5	**Learning and Motivation:** 1. Meaning and concept of motivation in learning. 2. Kind of motivation: Extrinsic and Intrinsic Motivation. 3. Characteristics of motivated behavior. 4. Importance of motivation for teachers and learners. 5. Psycho analytic and cognitive field theories of motivation.	12
	Total	**60**

Course Outcomes

CO1: Understand the growth and development of learners, including the concept, various factors affecting development, and dimensions of individual development.

CO2: Identify different psychological attributes and learn strategies for handling learners based on cognitive abilities, disabilities, and adjustment mechanisms.

CO3: Comprehend the concept and meaning of learning, its nature, and the factors that influence the learning process.

CO4: Explore various theories of learning, including behavioral, trial and error, constructivism, and Gestalt principles.

CO5: Recognize the concept and significance of motivation for both teachers and learners, and study different theories of motivation.

Practicum/ Graded Assignments:

1. Observation of any child of age group 12 to upward on different dimensions of development and prepare a report.
2. Administration of any psychological test to identify the peculiar characteristics of the learner.
3. Prepare a plan for motivating the students as per their needs.
4. Administration of a tool to identify the learner styles of learning the different subjects.
5. Preparation of a lesson plan based on constructivism approach.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms :	:	10marks
		30marks

Recommended Books:

1. Agarwal.J.C.; Essentials of Educational Psychology, Vikas Publishing House Pvt. Ltd.
2. Bigge; Learning Theories for Teachers, Harper, N.Y.
3. Blair, Jones and Simpson; Educational Psychology, Macmillan, N.Y.
4. Chauhan, S.S.; Advanced Educational Psychology, Vikas Publication House,N.D.
5. Garrison, K.C. (1956); Psychology of adolescence,Prentice Hall, New York.
6. Mangal, S.K. and Mangal, S. (2005); Child Development, Arya book Depo., New Delhi.
7. Mexer, H.W. (1978); Three theories of child development,Harper and Raw Pub., New York.
8. Pareek, M. (2002); Child development and family relationship, Research Pub., Jaipur.
9. Hurluck E.D. (1965); Adolescence development, Mack Grow Co. Learner.
10. Rao Usha (2008); Advance Educational Psychology,Himalaya Pub. House, Mumbai.
11. Sharma, R.K., Sharma M.S. and Tiwati A. (2006); Psychological Foundation of Child Development, Radha Pub.

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SCHOOL OF EDUCATION

DETAILED SYLLABUS

2024-28

PEDAGOGY OF A SCHOOL SUBJECT PHYSICS (Part – II)	**[ED-416]**

VIII-SEM. B.Sc, B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1 To evaluate and understand the Physics curriculum at secondary and senior secondary levels, analyze the syllabi of the Rajasthan and CBSE boards, and recognize the importance of textbooks and language in Physics education.

CO2 To comprehend the role of instructional support systems, classify various teaching aids, and incorporate audio-visual resources and recent trends in teaching aids.

CO3 To facilitate the establishment of Physics labs, promote experimental work, and engage in organizing science clubs, fairs, and exhibitions for practical learning.

CO4 To understand the concept and importance of co-curricular activities, identify their types, and develop skills for planning and executing these activities in Physics education.

CO5 To integrate innovative methods and current ICT trends into Physics teaching, enhancing the teaching-learning process at the school level..

Unit	**Contents of the Subject**	**No. of Teaching Periods**

		required
1	**Curriculum planning and critical appraisal:** 1. Concept and meaning of physics curriculum at secondary and senior secondary level. 2. Analysis of curriculum and syllabus of physics of Rajasthan board and CBSE board at school level. 3. Need and importance of physics text book. 4. Characteristics of good text book. 5. Language across the curriculum.	9
2	**Instructional support of systems - I:** 1. Meaning: need and importance of instructional support system. 2. Classification and types of teaching aids. 3. Audio visual aids. 4. Preparation of low cost teaching aids. 5. Recent trends in teaching aids.	9
3	**Instructional support of systems - II:** 1. Physics labs and experimental work. 2. Establishment of physics labs at secondary and senior secondary level. 3. Organization of science clubs, fair and exhibition. 4. Excussion field trips and educational tour. 5. Use of community resources.	9
4	**Co-curricular activities:** 1. Meaning and concept of co - curriculum activity. 2. Need and its importance. 3. Classification and its types at school level. 4. Planning, organization and its execution.	9
5	**Innovation and recent trend in TLP:** 1. Concept and meaning of teaching learning process. 2. Innovative method in physics teaching of school level. 3. Need and importance in present context. 4. New trends in teaching physics in relation to ICT.	9
	Total	45

Course Outcomes for Physics

CO1: Students will critically appraise the Physics curriculum, effectively compare the Rajasthan and CBSE board syllabi, and appreciate the role of textbooks and language in Physics education.

CO2: Students will understand and apply instructional support systems, categorize teaching aids, and utilize audio-visual resources, aligning with the latest trends in teaching aids.

CO3: Students will be proficient in setting up Physics labs, conducting experimental work, and organizing science clubs, fairs, and exhibitions for experiential learning.

CO4: Students will grasp the significance of co-curricular activities in Physics, identify their types, and acquire the skills necessary for their planning and execution.

CO5: Students will incorporate innovative methods and ICT trends into Physics teaching, thereby enhancing the teaching-learning process at the school level.

Practicum/ Graded Assignments:

1. Prepare a plan on career avenues related to the subjects.
2. Prepare the chart with pictures of eminent personalities of the subjects.
3. Observation of teacher and learner behavior in the class.
4. Prepare a program institution based plan on nay unit.
5. Survey on teaching methods used by regular teachers in Schools.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms :	:	10marks
		30marks

Recommended Books:

1. Hesis, Oburn and Hoffman; Modern Science, The Macmillan Company" New York
2. Thurber W. and A Collette; Teaching Science in Today' ssecondary schools, Boston Allyan and Bacon Inc. New York
3. Magal S.K; Sadharan Science Siksha, Aray book Depot,New Delhi Vaiday,N.
4. The impact of science Teaching; Oxford and IBH Publication Company, New Delhi 1971
5. Richardson S; Science Teaching in Secondary School, Prentice Hall USA
6. Sharma,R.C. and Sukla; Modern Science Teaching', Dhanpat Rai and sons Delhi
7. Taygi S.K. Bhotik; Science Education, Sahitay pakashan,agra.

SURESH GYAN VIHAR UNIVERSITY
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SCHOOL OF EDUCATION

DETAILED SYLLABUS

2024-28

PEDAGOGY OF A SCHOOL SUBJECT MATHEMATICS (Part – II)	**[ED-418]**

VIII-SEM.B.Sc B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1 To analyze and evaluate the Mathematics curriculum, comparing the Rajasthan and CBSE board syllabi, and understanding the role of textbooks and language in Mathematics education.

CO2 To identify and utilize various instructional support systems, including teaching aids and audio-visual resources, and to develop low-cost materials while keeping up with recent trends.

CO3 To establish and manage Mathematics labs, organize Maths-related events, and incorporate community resources into the educational experience.

CO4 To understand the value of co-curricular activities, their types, and to plan and execute these activities to complement the Mathematics curriculum.

CO5 To adopt innovative methods and current ICT trends in Mathematics teaching to enhance the teaching-learning process.

Unit	**Contents of the Subject**	**No. of Teaching Periods**

		required
1	**Curriculum planning and critical appraisal:** 1. Concept and meaning of Mathematics curriculum at secondary and senior secondary level. 2. Analysis of curriculum and syllabus of Mathematics of Rajasthan board and CBSE board at school level. 3. Need and importance of Mathematics text book. 4. Characteristics of good text book. 5. Language across the curriculum.	9
2	**Instructional support of systems - I:** 1. Meaning: need and importance of instructional support system. 2. Classification and types of teaching aids. 3. Audio visual aids. 4. Preparation of low cost teaching aids. 5. Recent trends in teaching aids.	9
3	**Instructional support of systems - II:** 1. Maths lab and experimental work. 2. Establishment of maths lab at secondary and senior secondary level. 3. Organization of fairs and exhibition related to Maths. 4. Excursion field trips and educational tour. 5. Use of community resources.	9
4	**Co-curricular activities:** 1. Meaning and concept of co - curriculum activity. 2. Need and its importance. 3. Classification and its types at school level. 4. Planning, organization and its execution.	9
5	**Innovation and recent trend in TLP:** 1. Concept and meaning of teaching learning process. 2. Innovative method in Mathematics teaching of school level. 3. Need and importance in present context. 4. New trends in teaching Mathematics in relation to ICT.	9
	Total	45

Course Outcomes

CO1: Students will be able to critically assess and compare Mathematics curricula of the Rajasthan and CBSE boards, recognizing the importance of textbooks and the integration of language in Mathematics education.

CO2: Students will gain proficiency in selecting and applying various instructional supports, including teaching aids and audio-visual resources, and will be capable of creating cost-effective educational materials.

CO3: Students will learn to set up and manage Mathematics labs, effectively organize Maths-related activities, and use community resources to enhance the educational experience.

CO4: Students will understand the significance of co-curricular activities, identify their various types, and develop the ability to plan and implement these activities within the Mathematics curriculum.

CO5: Students will embrace innovative teaching methods and the latest ICT trends to improve the teaching and learning process in Mathematics education.

Practicum/ Graded Assignments:

1. Prepare a plan on career avenues related to the subjects.
2. Prepare the chart with pictures of eminent personalities of the subjects.
3. Observation of teacher and learner behavior in the class.
4. Prepare a program institution based plan on nay unit.
5. Survey on teaching methods used by regular teachers in Schools.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms :	:	10marks
		30marks

Recommended Books:

1. Agarwal S.M; Teaching of Modern mathematics, Dhanpat Rai and Sons, Delhi
2. Ryangar and Kuppuswami,N.A.; Teaching of mathematics in the new education, Universal Publication.
3. Butler and Wren; The teaching of Secondary mathematics, McGraw Hill Book company.
4. Jagadguru Swami; Sri Bhari Krisna Turthji Vedic mathematics, Moti lal Banarsidas Publisher Delhi .
5. Kapur J.N; Modern mathematics for teachers, Arya Book Depot,New Delhi.
6. Mangal,S.K.; Teaching of mathematics, Prakash Brother Ludhiana.
7. Kapoor and Saxena; Mathematical Statistic, mS. Chand & Co. New Delhi.
8. Sidha,K.S; Teaching of mathematics, Streling pub.Pvt.Ltd,New Delhi.
9. ShriVastov and Bhatnagar; Maths Edcuation, Ramesh Book Depot, Jaipur.
10. Modern Abstract Algebra; Shanti Narayan, S. Chand & Co. New Delhi

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SCHOOL OF EDUCATION

DETAILED SYLLABUS

2024-28

PEDAGOGY OF A SCHOOL SUBJECTCHEMISTRY (Part – II)	**[ED-420]**

VIII-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK LECTURES-3 CREDITS-3	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives: To enable the student teacher to:

CO1 To critically analyze and compare the Chemistry curriculum of the Rajasthan board and the CBSE board, emphasizing the importance of textbooks and the role of language in the curriculum.

CO2 To understand the need for instructional support systems, classify teaching aids, and incorporate recent trends in the creation of low-cost and effective teaching materials.

CO3 To establish and utilize Chemistry labs for experimental work, and to engage in the organization of science clubs, fairs, and exhibitions, enhancing learning through practical experiences.

CO4 To appreciate the significance of co-curricular activities in Chemistry education, and to develop skills for their planning and execution to enrich the learning environment.

CO5 To integrate innovative methods and ICT trends in Chemistry teaching, ensuring a modern and effective approach to the teaching-learning process.

Unit	Contents of the Subject	No. of Teaching Periods required
1	**Curriculum planning and critical appraisal:** 1. Concept and meaning of chemistry curriculum at secondary and senior secondary level. 2. Analysis of curriculum and syllabus of chemistry of Rajasthan board and CBSE board at school level. 3. Need and importance of chemistry text book. 4. Characteristics of good text book. 5. Language across the curriculum.	9
2	**Instructional support of systems - I:** 1. Meaning: need and importance of instructional support system. 2. Classification and types of teaching aids. 3. Audio visual aids. 4. Preparation of low cost teaching aids. 5. Recent trends in teaching aids.	9
3	**Instructional support of systems - II:** 1. Chemistry labs and experimental work. 2. Establishment of chemistry labs at secondary and senior secondary level. 3. Organization ofscience clubs, fair and exhibition. 4. Excussion field trips and educational tour. 5. Use of community resources.	9
4	**Co-curricular activities:** 1. Meaning and concept of co - curriculum activity. 2. Need and its importance. 3. Classification and its types at school level. 4. Planning, organization and its execution.	9
5	**Innovation and recent trend in TLP:** 1. Concept and meaning of teaching learning process. 2. Innovative method in chemistry teaching of school level. 3. Need and importance in present context. 4. New trends in teaching chemistry in relation to ICT.	9
	Total	45

Course Outcomes for Chemistry:

CO1: Students will conduct a detailed comparative analysis of the Chemistry curricula of the Rajasthan and CBSE boards, recognizing the essential role of textbooks and language in the curriculum.

CO2: Students will comprehend the necessity of instructional support systems, effectively classify teaching aids, and adopt recent trends in developing cost-efficient teaching materials.

CO3: Students will be skilled in establishing and operating Chemistry labs, and actively participate in organizing science clubs, fairs, and exhibitions for hands-on learning experiences.

CO4: Students will value co-curricular activities as integral to Chemistry education and will be adept at planning and implementing these activities to enhance the educational experience.

CO5: Students will apply innovative methods and ICT trends to Chemistry teaching, ensuring an updated and effective teaching-learning process.

Practicum/ Graded Assignments:

1. Prepare a plan on career avenues related to the subjects.
2. Prepare the chart with pictures of eminent personalities of the subjects.
3. Observation of teacher and learner behavior in the class.
4. Prepare a program institution based plan on nay unit.
5. Survey on teaching methods used by regular teachers in Schools.

Note: Scheme of CIE

• Class tests	:	10marks
• Graded Assignments	:	10marks
• Two Mid Terms :	:	10marks
		30marks

Recommended Books:

1. Yadav, M.S.; Teaching of chemistry,Anmol publication, New Delhi.
2. Yadav, M.S.; Teaching science at Higher Level, Anmol Publications, New Delhi.
3. Misra, D.C.; Chemistry Teaching, Sahitya.
4. Kherwadkal, Anjali; Teaching of Chemistry by Modern Method, Sarup&Sons.New Delhi.
5. Das, R.C; Science Teachg in Schools, Sterling Publishers Pvt.Ltd., New Delhi.
6. Venkataih,S.; Science education in 21st Century, Anmol Publishers, New Delhi.
7. Rao,D.B.; World Conference on Science Education,Discovery Publishing House, New Delhi.

SURESH GYAN VIHAR UNIVERSITY
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SCHOOL OF EDUCATION

DETAILED SYLLABUS

2024-28

ICT – A TOOL IN TEACHING LEARNING –II	**[ED-422]**

VIII-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK PRACTICAL-4 CREDITS-2	EXAMINATION TIME = (3) HOURS MAX. MARKS = 100 [CIE (30) & ESE (70)]

Course Objectives:

CO1 Utilize Windows Explorer, File Manager, Paint, and manage printing.

CO2 Master MS-Word for text management, resume creation, tables, and mail merge.

CO3 Create tables, charts, formulas, and marks sheets in MS-Excel.

CO4 Prepare slides, presentations, and lectures using PowerPoint.

CO4 Develop effective content for slides and presentations

Unit	**Contents of the Subject**	**No. of Teaching Periods required**
1	**Windows' and its accessories** a) Explorer b) File Manager c) Paint d) Managing Printing	**6**

2	**MS-Office-I** MS-Word-Text Management, Preparation of Resume, Application, Bio-data, tables, mail merge & commands of MS-Word	**6**
3	**MS-Office-II** MS-Excel- Preparation of Table, Chart, formulas, Marks Sheet Preparation & commands of MS-Excel	**6**
4	**MS-Office-III** POWER POINT- Preparation of Slides, Paper Presentation, Lecture Preparation & commands of PowerPoint	**6**
5	**Power Point:** Preparation of Slides, Paper Presentation, Lecture Preparation on related subjects.(content based)	**6**
	Total	**30**

CO1: Pupil teachers will **become proficient** in using Windows Explorer, File Manager, Paint, and managing print tasks.

CO2: Pupil teachers will **master** MS-Word for efficient text management, crafting resumes, creating tables, and executing mail merges.

CO3: Pupil teachers will **learn to create** tables, charts, formulas, and mark sheets in MS-Excel.

CO4: Pupil teachers will **prepare** engaging slides, presentations, and lectures using PowerPoint.

CO5: Pupil teachers will **develop** the skills to create effective and impactful content for slides and presentations.

Note: Scheme of CIE

- Class tests : 10marks
- Graded Assignments : 10marks
- Two Mid Terms : 10marks

30marks

Recommended Books:

S.No.	Name of the Book	Author	Publisher
1.	Macro Computer in Science and Language	Reghavan, S.S	Mysore R.C.E

	teaching		
2.	An Introduction to Micro Computers	Osborne A	Galgolia Book Source, New Delhi
3.	Computer	Koor Harjit	Aatmaram& Sons, New Delhi
4.	Computer ekparichay	Vakatachamal, S.	Pitabar publication company P.Ltd New Delhi

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SCHOOL OF EDUCATION
DETAILED SYLLABUS
2024-28

Post Internship –III B	**[TP-402]**

VIII-SEM. B.Sc. B.Ed.	**EVALUATION**
SCHEDULE PER WEEK PRACTICAL-36 CREDITS-18	EXAMINATION TIME = (3) HOURS [CIE (70) ESE (30)]

S. No.	**Teaching Practice and Practical Work**	**Internal/ External Assessment**
13.	Regular class room teaching delivery of 25 lessons in each subject (25*2 = 50 lessons)	20 credits (Internal+ External)
14.	Participation of co-curricular activities	
15.	Observation of teaching of peers (20 in each discipline and its report preparation)	
16.	Evaluation of lesson plans	
17.	Diagnostic test followed by remedial teaching	
18.	Involvement of student in lesson with the regular teacher in all day to day functioning along with teaching	
19.	2- discussion lessons	
20.	Exhibition of teaching aids	
21.	Organization of school trips	
22.	Research based project (action plan/ survey)	2 credits (Internal)
23.	Understanding the self- Conduction of various activities related to yoga, meditation, life skills, values and peace for school students as per instructions given by schools (EPC)	2 credits (Internal)
24.	2 - final lessons	