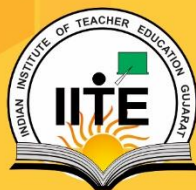
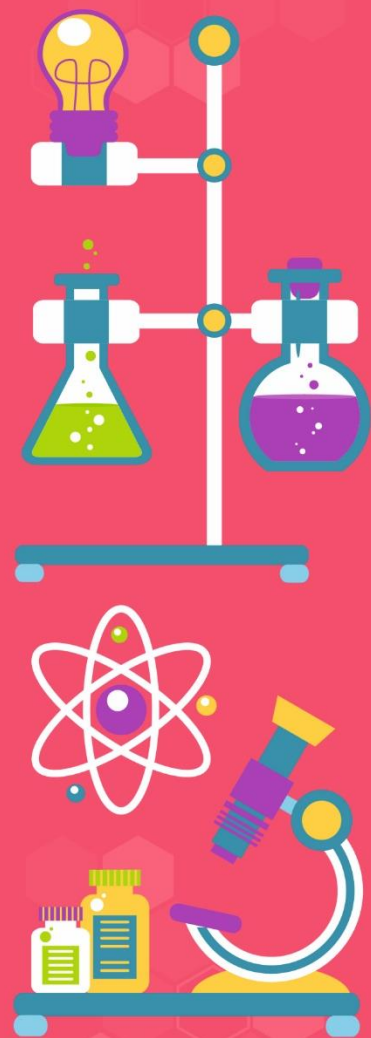
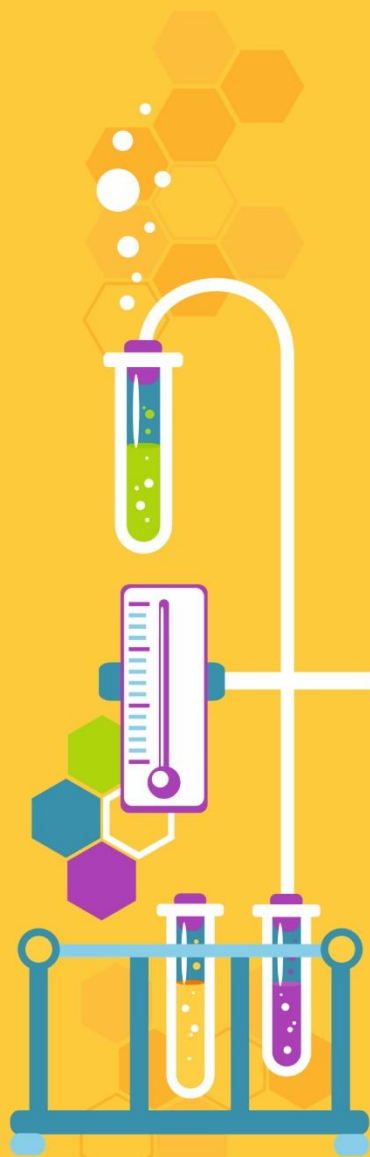
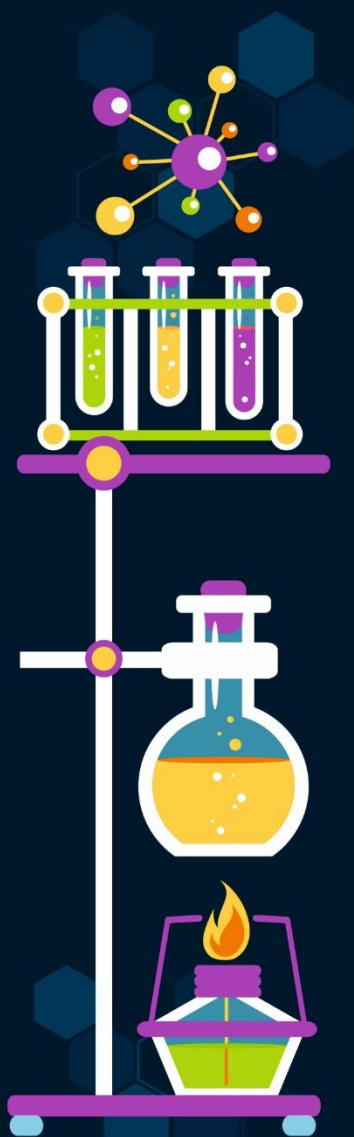


M.Sc., M.Ed. (Chemistry) Syllabus



॥ न हि ज्ञानेन सदृशं पवित्रमिह विद्यते ॥

INDIAN INSTITUTE OF TEACHER EDUCATION,
GANDHINAGAR (GUJARAT)

Indian Institute of Teacher Education

Gandhinagar (Gujarat)

Regulations for M.A. M.Ed./M.Sc. M.Ed. Programme

1.0 Programme, Duration and its equivalence:

1.1 Programme and Duration: M.A. M.Ed./M.Sc. M.Ed. Programme is an integrated teacher education programme.

1.1.1 M.A. M.Ed. is a postgraduate integrated PG programme and is entitled 'Master in Arts and Master in Education'. This programme is of three years' duration and each year comprises 2 semesters. Each semester consists of 18 weeks of instructions, i.e. 108 instructional days. There shall be 216 days for instruction in a year.

1.1.2 M.Sc. M.Ed. is a post-graduate integrated PG programme and is entitled 'Master in Science and Master in Education'. This programme is of three years' duration and each year comprises 2 semesters. Each semester consists of 18 weeks of instructions, i.e. 108 instructional days. There shall be 216 days for instruction in a year.

1.2 Equivalence:

1.2.1 The programme contents related to M.A., M.Ed. is equivalent to PG Programme in Arts and equivalent to M.A. degree and M. Ed. is Masters in Education equivalent to M.Ed. degree.

1.2.2 The programme contents related to M.Sc., M.Ed. is equivalent to PG Programme in Science and equivalent to M.Sc. degree and M.Ed. is Masters in Education equivalent to M.Ed. degree.

1.2.3 Students who pass this programme are considered eligible to pursue Research Studies in Education in the Centre of Education of Indian Institute of Teacher Education and also eligible for Ph.D. in relevant subject at the centres specified by University.

2.0 Eligibility for admission to M.A., M.Ed./M.Sc., M.Ed.

2.1 Eligibility for admission to M.A., M.Ed.

The candidates seeking admission to the M.A., M.Ed. programme should have passed following Examinations from the IITE or any of the universities recognised by UGC.

1. B.A., B.Ed. from IITE, or
2. Graduate in any of the subjects of Arts discipline and B.Ed.

2.1 Eligibility for admission to M.Sc., M.Ed.
The candidates seeking admission to the M.Sc., M.Ed. programme should have passed following Examinations from the IITE or any of the universities recognised by UGC.

1. B.Sc., B.Ed. from IITE, or
2. Graduate in any of the subjects of Science Faculty and B.Ed.

2.3 Admission to the Course

There shall be pre-entry test for the course and merit shall be prepared as per the norms regulated by university time by time.

3.0 Scheme of Instruction:

There will be six semesters and students will have to learn following subjects in two broad areas of curriculum in Education.

1. PG Course in respective academic programme, and
2. PG Course in Teacher Education

Details of courses and scheme of study, duration, etc. are annexed herewith in Annexure-1.

3.1 PG Course in respective academic programme

There are two basic PG Academic Programmes and they are M.A. and M.Sc. The following subjects shall be offered in these two categories; they are:

- i. English (M.A.),
- ii. Botany (M.Sc.),
- iii. Chemistry (M.Sc.),
- iv. Maths (M.Sc.), and
- v. Physics (M.Sc.)

There are three categories of courses being offered and title of the papers are annexed herewith in Annexure: 2.

3.1.1 Core Compulsory: There are 16 Core Compulsory Courses in each.

3.1.2 Core Optional: There are 8 Core Optional Courses in each and student has to opt any of the 4 courses.

3.1.3 Innovation in Research: There are courses of 16 credits leading to subject specific dissertation.

3.2 PG Course in Teacher Education

PG Course in Teacher Education is integrated teacher education programme leading to PG Degree of M.Ed.

There are four categories of courses being offered and title of the papers are as under.

3.2.1 Core Compulsory

- 1. Methods of Education Research-1**
- 2. Methods of Education Research-2**
- 3. Psychological Foundations of Education-1**
- 4. Psychological Foundations of Education-2**
- 5. Philosophical Foundations of Education**
- 6. Sociological Foundation of Education**
- 7. ICT in Education**
- 8. Teachers Education**
- 9. Principles and Techniques of Learning**
- 10. Principles and Techniques of Teaching**
- 11. Psychological Testing**

3.2.2 Core Optional

- 1. Measurement and Evaluation**
- 2. Educational Management**
- 3. Yoga Education**
- 4. Guidance and Counselling**
- 5. Educational Statistics**
- 6. Curriculum Development**

3.2.3 Core Practicum

- 1. Preparing Theme Papers and its Presentation**
- 2. Administration of Psychological Tests and Preparation**
- 3. Presentation of Teaching Learning Material**
- 4. Internship**

3.2.4 Core Research Studies

Dissertation

4.0 Attendance

Every student has to attend a minimum of 80% of the classes conducted of each course. If a candidate has failed to put in a minimum of 80% attendance in a course, he is deemed to have dropped the course and is not allowed to write the semester end examination of that course. He has to attend the classes of that course in the subsequent years whenever it is offered.

The vice-chancellor has discretionary powers to condone attendance if he feels that such absence was due to unavoidable circumstances and students may make up the study with the help of writing assignments and other curricular activities during holidays or weekends of the semester. But in no case such absence would be more than 35 % during each semester.

5.0 Medium of Instruction:

The medium of instruction and examination shall be English.

6.0 Course Structure for Integrated Teacher Education Programme

6.1 Course Structure of M.A., M.Ed.- Indian Institute of Teacher Education

7.0 Assessment and Evaluation: CCE (Continuous and Comprehensive Evaluation):

There will be continuous and comprehensive evaluation for the M.A., M.Ed. /M.Sc. M. Ed. Course. The learners will be evaluated internally as well as externally. As the university has adopted CCE module for the evaluation, the pattern scheme for evaluation will be as under:

7.1 Scheme of Evaluation:

There are two categories for evaluation:

7.1.1 Internal Evaluation: (30 % of Marks)

Internal evaluation will include assignment, project, seminar and test. The ratio of marks will be 1:1:1:3 for each. There will be written submission for assignment and project and seminar will be group activity and participation of learner will be ad-judged by the subject teacher concerned. The detailed Marks statement of each shall be submitted to Examination Section on or before the last day of the respective semester.

7.2.2 External Evaluation: (70 % of Marks)

External evaluation will be semester end examination, theoretically and/or practically as case may be, conducted by the university at the end of each semester.

7.4 Assessment

7.4.1 The following table shows how the marks will be calculated for the final evaluation:

Pa- per/C ode	Credit	Internal Evaluation					External Evalua- tion			Total	GP	Letter Grade	GPA
		ment/Practical - Assgn	Project	Seminar	Test	Total	Theory	Practical	Total				
	Cr	I01	I02	I03	I04	Int	ETh	EPr	Ext	GrT	GP	GP	
###						=I01+ I02+ I03+ I04		If any	=ETh + EPr			See table below	
						≥ 20			≥ 30	Int+ Ext	GrT/10		=GP x Cr

The student is eligible for Total, if there are more than 20 marks in Internal and 30 marks in External Evaluation.

7.4.2 Conversion to GP and letter Grade

Marks in Percentage	GP	Explanation	Grade
85 and Above	8.5-10	Outstanding	O +
70-84	7-8.4	Excellent	O
60-69	6-6.9	Very Good	A
55-59	5.5-5.9	Good	B +
50-54	5-5.4	Fair	B
40-49	4-4.9	Average	C
0-39	0 -3.9	Dropped	D

7.4.7 Final Result

Marks in Percentage	Grade	Result
85 and Above	O +	First class with Distinction
70-84	O	
60-69	A	First Class
55-59	B +	High Second Class
50-54	B	Second Class
36-49	C	Pass Class
0-35	D	Dropped

7.4.8 CGPA

Cumulative Grade Point Assessment (CGPA) will be average SGPA of the all six semesters and Final Degree will awarded on the basis of CGPA.

7.4.9 Examinations

7.4.9.1 There shall be examinations at the end of each semester, for odd semesters (i.e., I, III and V Semesters) after end of respective semesters; for even semesters (i.e., II, IV and VI Semesters) after end of respective semesters. Any candidate who fails to clear any of the examinations may take subsequent examination to be held as per regulations.

7.4.9.2 The candidate will be allowed to keep semesters on until he/she clears pre-ceding semesters of previous year

7.4.9.3 The candidate will be allowed to attempt twice after completion of the third year of the M.A., M.Ed./M.Sc. M.Ed. Course. It means student will be allowed two more years for clearing all semesters which are not cleared in last four semesters of the course if he/she is not detained earlier.

If any of the students is detained earlier may not get opportunity of two at-tempts; those who are detained once will have one more year to clear and those who are detained twice will have no more attempts to clear them.

The Vice-chancellor of the University on his/her sole discretion may allow any of the students who have been given more two chances as per the regulations, one more year to clear courses on request satisfying him the reasons for not clearing examinations for said course.

Annexure: Format of question paper

Indian Institute of Teacher Education, Gandhinagar

Semester-End Examination

May 20- .

Semester: .

Subject:

Course Name:

Date:

Total Marks: 70

Time:

Note: All the questions are compulsory and carry equal marks.

Specify your option/s clearly.

Q:1 Answer following questions. (Short Answer Questions) 14

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

(Equal weightage should be given to all units)

Q: 2 Answer following question in 800 words only: 14

(From Unit I, paper setter may frame one question or two questions of 7 marks each. For 7 marks question word limit is 400 words)

OR

Q: 2 Answer following question in 800 words only:

(From Unit I, paper setter may frame one question or two questions of 7 marks each. For 7 marks question word limit is 400 words)

Q: 3 Answer following question in 800 words only: 14

(From Unit II, paper setter may frame one question or two questions of 7 marks each. For 7 marks question word limit is 400 words)

OR

Q: 3 Answer following question in 800 words only:

(From Unit II, paper setter may frame one question or two questions of 6 marks each. For 7 marks question word limit is 400 words)

Q: 4 Answer following question in 800 words only: 14

(From Unit III, paper setter may frame one question or two questions of 7 marks each. For 7 marks question word limit is 400 words)

OR

Q: 4 Answer following question in 800 words only:

(From Unit III, paper setter may frame one question or two questions of 7 marks each. For 7 marks question word limit is 400 words)

Q: 5 Answer following question in 800 words only: 14

(From Unit IV, paper setter may frame one question or two questions of 7 marks each. For 7 marks question word limit is 400 words)

OR

Q: 5 Answer following question in 800 words only:

(From Unit IV, paper setter may frame one question or two questions of 7 marks each. For 7 marks question word limit is 400 words)

Annexure 2: General Layout of the Papers/Courses Offered

Paper No	Biology	Chemistry	Maths	Physics	English		Nature of Course	Credits
21001	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
21002	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
21003	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
21004	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
21005	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
21031	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	IR	Innovation in Research	4
22006	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
22007	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
22008	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
22009	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
22010	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
22032	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	IR	Innovation in Research	4
23011	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
23012	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
23113	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	4
23213	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	
23033	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	IR	Innovation in Research	4
24014	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
24015	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
24116	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	4
24216	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	
24034	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	IR	Innovation in Research	4
25017	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
25118	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	4
25218	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	
26019	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CC	Core Compulsory	4
26120	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	4
26220	21001BIO	21001CHE	21001MAT	21001PHY	21001ENG	CO	Core Optional	
Total Credits								96

Annexure 2.3 M.Sc. (Chemistry), M.Ed.

Sr. No	Semester	Paper No.	Theory/ Theory & Practical/ Tutorial	Title of Paper/course	Credit	To be Included as core/ Elective	Marks for Evaluation	
							Internal	External
1	I	21001CHE	Theory & Practical	Organic Chemistry -1	4	Core	30	70
2		21002CHE	Theory & Practical	Inorganic Chemistry-1	4	Core	30	70
3		21003CHE	Theory & Practical	Physical Chemistry-1	4	Core	30	70
4		21004CHE	Theory & Tutorial	Molecular spectroscopy-1	4	Core	30	70
5		21005CHE	Theory & Practical	Environmental chemistry-1	4	Core	30	70
6		21031CHE	Theory	Foundation course on research in chemical sciences-1	4	Core	30	70
7	II	22006CHE	Theory & Practical	Organic Chemistry -2	4	Core	30	70
8		22007CHE	Theory & Practical	Inorganic Chemistry-2	4	Core	30	70
9		22008CHE	Theory & Practical	Physical Chemistry-2	4	Core	30	70
10		22009CHE	Theory & Tutorial	Molecular spectroscopy-2	4	Core	30	70
11		22010CHE	Theory & Practical	Environmental Chemistry-2	4	Core	30	70
12		22032CHE	Theory	Foundation course on research in chemical sciences-2	4	Core	30	70
13	III	23011CHE	Theory & Practical	Heterocyclic chemistry	4	Core	30	70
14		23012CHE	Theory & Practical	Advanced Inorganic chemistry	4	Core	30	70
15		23113CHE	Theory & Practical	Analytical Chemistry	4	Elective	30	70
16		23213CHE	Theory & Practical	Statistical thermodynamics	4	Elective	30	70
17		23033CHE	Theory	Foundation course on research in chemical sciences-3	4	Core	30	70
18	IV	24014CHE	Theory & Tutorial	Natural Products	4	Core	30	70
19		24015CHE	Theory & Practical	Synthetic Dyes	4	Core	30	70
20		24116CHE	Theory & Practical	Polymer Chemistry	4	Elective	30	70
21		24216CHE	Theory & Practical	Nuclear chemistry	4	Elective	30	70
22		24034CHE	Theory	Foundation course on research in chemical sciences-4	4	Core	30	70
23	V	25017CHE	Theory & Practical	Medicinal Chemistry	4	Core	30	70
24		25118CHE	Theory & Tutorial	Instrumental techniques	4	Elective	30	70
25		25218CHE	Theory & Practical	Industrial chemistry	4	Elective	30	70
26	VI	26019CHE	Theory & Tutorial	Disconnection Approach	4	Core	30	70
27		26120CHE	Theory & Practical	Synthetic Drugs	4	Elective	30	70
28		26220CHE	Theory & Tutorial	Solid State Chemistry	4	Elective	30	70

Annexure 2.5 M.Sc. (Chemistry), M.Ed.

Sr. No	Semester	Paper No.	Theory/ Theory& Practical/ Tutorial	Title of Paper/course	Credit	To be Included as core/ Elective	Marks for Evaluation	
							Internal	External
1	I	21001CHE	Theory & Practical	Organic Chemistry -1	4	Core	30	70
2		21002CHE	Theory & Practical	Inorganic Chemistry-1	4	Core	30	70
3		21003CHE	Theory & Practical	Physical Chemistry-1	4	Core	30	70
4		21004CHE	Theory & Tutorial	Molecular spectroscopy-1	4	Core	30	70
5		21005CHE	Theory & Practical	Environmental chemistry-1	4	Core	30	70
6		21031CHE	Theory	Foundation course on re-search in chemical sciences-1	4	Core	30	70
7	II	22006CHE	Theory & Practical	Organic Chemistry -2	4	Core	30	70
8		22007CHE	Theory & Practical	Inorganic Chemistry-2	4	Core	30	70
9		22008CHE	Theory & Practical	Physical Chemistry-2	4	Core	30	70
10		22009CHE	Theory & Tutorial	Molecular spectroscopy-2	4	Core	30	70
11		22010CHE	Theory & Practical	Environmental Chemistry-2	4	Core	30	70
12		22032CHE	Theory	Foundation course on re-search in chemical sciences-2	4	Core	30	70
13	III	23011CHE	Theory & Practical	Heterocyclic chemistry	4	Core	30	70
14		23012CHE	Theory & Practical	Advanced Inorganic chemistry	4	Core	30	70
15		23113CHE	Theory & Practical	Analytical Chemistry	4	Elective	30	70
16		23213CHE	Theory & Practical	Statistical thermodynamics	4	Elective	30	70
17		23033CHE	Theory	Foundation course on re-search in chemical sciences-3	4	Core	30	70
18	IV	24014CHE	Theory & Tutorial	Natural Products	4	Core	30	70
19		24015CHE	Theory & Practical	Synthetic Dyes	4	Core	30	70
20		24116CHE	Theory & Practical	Polymer Chemistry	4	Elective	30	70
21		24216CHE	Theory & Practical	Nuclear chemistry	4	Elective	30	70
22		24034CHE	Theory	Foundation course on re-search in chemical sciences-4	4	Core	30	70
23	V	25017CHE	Theory & Practical	Medicinal Chemistry	4	Core	30	70
24		25118CHE	Theory & Tutorial	Instrumental techniques	4	Elective	30	70
25		25218CHE	Theory & Practical	Industrial chemistry	4	Elective	30	70
26	VI	26019CHE	Theory & Tutorial	Disconnection Approach	4	Core	30	70
27		26120CHE	Theory & Practical	Synthetic Drugs	4	Elective	30	70
28		26220CHE	Theory & Tutorial	Solid State Chemistry	4	Elective	30	70



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 1110100</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education</p> <p style="text-align: right;">Credit:4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Methods of Research in Education-1</p>	
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Objective of the course:

- Explain the meaning, characteristics and steps of research
- Present various types of researches and sources and library skills
- Enlist criteria and sources for selection of research problem
- Explain operational definition, variable and hypothesis
- Prepare research proposal
- Develop various types of tools
- Explain various sampling techniques

Unit	Sub Unit	Content	Credit										
1	1.0 1.1 1.2 1.3 1.4 1.5	Concept of Educational Research Meaning, characteristics Education Research, Steps of the research process Types of research: (a) Basic, Applied and Action research (b) Qualitative and Quantitative research Areas of educational research Types of sources Library skill? Reading skill and note taking skill	1										
2	2.0 2.1 2.2 2.3 2.4 2.5	Selection Of The Research Problem And Concept Of Variables And Hypotheses Criteria for selection of research problem and sources Defining operationally the related terms of research problem Meaning and Types of variables Meaning and Types of hypothesis Bases for hypothesis construction	1										
3	3.0 3.1 3.2 3.3 3.4 3.5 3.6	Tools of Research Psychological Test: (a) types and its uses (b) construction procedure Questionnaire: (a) types, format and guidelines for questions and questioner?, (b) advantages and disadvantages Interview: (a) types of interview such as individual and group, structured and unstructured (b) Administration of interview Rating Scales: types, format and guidelines for constructing Rating Scales Measurement of Attitude: Thurston and likert technique us meaning of checklist, Q-sort and semantic differential Standardization of research tools: Reliability, Validity and Norms	1										
4	4.0 4.1 4.2 4.3 4.4	Sampling Techniques Meaning of population and sample Importance of sampling Characteristics of a good sample Sampling Technique: (a) Probability Sampling: Simple random sampling, stratified random sampling, systematic sampling, cluster sampling (b) Non-probability sampling: incidental Sampling, purposive sampling, quota sampling.	1										
Assessment & Evaluation		Credit	Internal					External			Total O/o 70		
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam				
		4	0	5	5	5	15	30	Theory	Practica I		Total	70



Indian Institute of Teacher Education, Gujarat.

M.Sc.M.Ed.

Semester-I

Paper No: 1110100

Compulsory

Subject: Education

Credit:4

: Title of the paper:

Methods of Research in Education-1

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- ત્રિવેદી, એમ.ડી. અને પારેખ, બી.યુ. (૧૯૮૯) શિક્ષણમાં આંકડાશાસ્ત્ર, અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
- દેસાઈ, એચ.જી. અને દેસાઈ, કે. જી. (૧૯૯૭) સંશોધન પદ્ધતિઓ અને પ્રવિધિઓ, અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
- દેસાઈ, એચ.જી. અને દેસાઈ, કે. જી. (૧૯૯૪) મનોવૈજ્ઞાનિક માપન, અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
- પટેલ આર. એસ. (સં) (૨૦૦૮) એમ.એડ. લઘુશોધ નિબંધના સારાંશ: અમદાવાદ, જય પબ્લીકેશન.
- મોદી, ડી.જી. અને અન્યો (૧૯૯૧) સંશોધનોની માધુકરી, ભાવનગર શિક્ષણશાસ્ત્ર ભવન, ભાવનગર યુનિવર્સિટી
- શાહ, દિપીકા બી. (૨૦૦૪) શૈક્ષણિક સંશોધન, અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 1110200</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education</p> <p style="text-align: right;">Credit: 2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Yoga Studies</p>
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Objective of the course:

- To enable the students to understand the philosophy of yoga.
- To enable the students to understand the various types of asanas and its importance.

Unit	Sub Unit	Content	Credit								
1		Yoga-It's Philosophy <ul style="list-style-type: none"> • Introduction and Meaning of yoga • Brief History of yoga • Importance of yoga • Effect of yoga on body and Daily routine of a healthy person. 	0.5								
2		Astang yoga: First four limbs <ul style="list-style-type: none"> • Yama (The five "abstentions"): Ahimsa (non-violence), Satya (Truth, non-lying), Asteya (non-covetousness), Brahmacharya (non-sensuality, celibacy), and Aparigraha (non-possessiveness). • Niyama (The five "observances"): Shaucha (purity), Santosha (contentment), Tapas (austerity), Svadhyaya (study of the Vedic scriptures to know about God and the soul), and Ishvara-Pranidhana (surrender to God). • Asana: Literally means "seat", and in Patanjali's Sutras refers to the seated position used for meditation. • Pranayama ("Suspending Breath"): <i>Prāna</i>, breath, "āyāma", to restrain or stop. Also interpreted as control of the life force. 	0.5								
3		<ul style="list-style-type: none"> • Astang yoga • Second four limbs • -Pratyahara ("Abstraction"): Withdrawal of the sense organs from external objects -Dharana ("Concentration"): Fixing the attention on a single object. -Dhyana ("Meditation"): Intense contemplation of the nature of the object of meditation. • -Samadhi ("Liberation"): merging consciousness with the object of meditation • Relevance of Asthtang yoga. 	0.5								
4		<ul style="list-style-type: none"> • YOG PRACTICES (PRACTICAL) • Pranayams: Bhastrika, anulom-vilom, kapalbhati, bahya, agnisar, bramri, udgit, ujjai shitli, sitkari, na disodhan, karnrogantak, surya bhedi, chandra bhedi etc.) • Asanas; • Standing postures : ga rudasan, tri konasan, dhruvasan, natrajasan. • Sitting postures : yog mudrasan, bau dhp ad masan, va krasan, ar dh mas endrasan, va jrasan, kukutasan, sidhasan, kapotasan, marjarasan • Prone Posture: na ukasan (viprit), bhekanasan, dhanurasan, salbhasan, bhujangasan • Seepine posture: Na ukasan, sarvangasan, halasan, matsyasan, vipritkarni Suryanamaskar • Relaxation exercises and savasana is compulsory between and end of session. 	0.5								
Assessment & Evaluation		Credit	Internal					External			Total
		Sem. End Exam									
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Theory	Practical	
0	2	5	5	5	15	30	35	35	70	70	

REFERENCE BOOKS:

Human physiology and sports science: Dr pradhuman bhatt.
 Exercise physiology: Shree K.R. PATEL
 Yoga its philosophy and practice: Swami Ramdev
 Stress management through yoga : Bharat Thakur
 Pranayama Rahasya : Swami Ramdev
 Aushadh darsan : Swami Ramdev
 Rajrshimuni : Yoga Darshika
 Maharshi Arvind : soul development through yoga, www.pathofdivinelife.org
 Yoga – Its philosophy & Practice - Swami Ramdev
 Yoga dipika - Dr. A.K. Ayaner



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 2110102</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry</p> <p style="text-align: right;">Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Organic Chemistry-1</p>
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Objective of the course:

- To understand fundamentals of Organic Chemistry
- To get familiar with the Energy and kinetics of organic reactions,
- To get knowledge about Derivation for reaction mechanisms
- To know IUPAC nomenclature of cyclic organic compounds

Unit	Sub Unit	Content	Credit									
1		Physical Organic Chemistry: Introduction of atomic orbital, Hybridization, Bonding in carbon compounds, Bond energy in carbon compounds, Electronegativity, Factor affecting, Steric effect, Resonance and hyper conjugation, Acidity and basicity of organic molecules, pK_a & pK_b of organic molecules, Energy and kinetics of organic reactions, Derivation of Hammett equation, Substituent constant σ_x and its physical significance, Reaction constant ρ and its physical significance and aromaticity.	1									
2		Reaction mechanism: Detail method of formation of reactive intermediate such carbocation, carbanion, free radical, carbene, nitrene, Benzyne and their reaction, Substitution reaction, elimination reaction, Rearrangements, Electrophilic and substitution reaction, addition to C=C, Addition to carbon-hetero multiple bonds, Nucleophilic addition to $>C=O$, Electrophilic and substitution reaction in aromatic system, Reactions of ester, carboxylic acid, enamines, active methylene group.	1									
3		IUPAC nomenclature of organic compounds: IUPAC nomenclature of cyclic organic compounds	1									
4		Practical: Organic chemistry-1 Chemical separation of ternary organic compounds	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		3	1	5	5	5	15	30	Theory	Practical		Total

REFERENCE BOOKS:

- A guide to reactions mechanism in organic chemistry, Sixth edition by Peter Sykes
- Advanced organic Chemistry: Reactions, Mechanisms and Structure, Fourth edition by Jerry March
- Organic Nomenclature: A Programmed Introduction, (6th Edition) by James Traynham
- Organic Chemistry by Clayden, Greeves Warren & Wothers—Oxford Press
- Principles of Organic Synthesis: R.O.C Norman & J.M. Coxon (ELBS)
- Modern Methods of Organic Synthesis: W. Carruthers (Cambridge)
- Organic Reaction Mechanism: V.K.Ahluwalia and R.K.Parashar (Narosa)
- Vogel's Text book of Practical Organic Synthesis
- Elementary Practical Organic Chemistry (part-1 to 3) By A. I. Vogel (CBS publication).



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 2110202</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry</p> <p style="text-align: right;">Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Inorganic Chemistry-1:</p>
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Objective of the course:

- To get knowledge of Periodic properties
- To get detailed theoretical aspects of Chemistry of S-block elements and their applications.
- To understand chemistry of p-block elements
- To get idea about molecular and structural properties with potential applications.

Unit	Sub Unit	Content	Credit									
1		Periodic properties and bonding in chemistry: Electro negativity, electron affinity, ionization potential, ionic radii, Effective nuclear charge, Chemical bonding: Ionic bond, covalent bond, hydrogen bond, Shape and hybridization of molecules, Bond order, MO theory of diatomic molecule and Huckel theory for conjugated π -electron systems	1									
2		Chemistry of s elements: Alkali & alkaline earth metals Solutions in non-aqueous Media. Application of crown ethers in extraction of alkali & alkaline earth metals, Organometallic compounds of Li, Mg, Be, Ca, Na	1									
3		Chemistry of p-block elements: Synthesis, Properties, uses & structures, Boron Hydrides, preparation, structure & bonding with reference to LUMO, HOMO, interconversion of lower & higher boranes, Metalloboranes, Carboranes, Allotropes of Carbon, C60 and compounds (fullerenes), Intercalation compounds of Graphite, Carbon nanotubes, synthesis, Properties, structure- single walled, Multi walled, applications, classification of organometallic compounds. Organometallic compounds of B, Si, Sn, Pb, Ga, As, Sb, Bi. Structures, Synthesis, Reactions. Nitrogen activation, Boron nitride, Oxidation states of nitrogen & their interconversion PN & SN compounds Nos, & their redox chemistry, Metal selenides & tellurides, oxyacids & oxoanions of S & N Ring, Cage and Cluster compounds of P- block elements, Silicates, including Zeolites, Interhalogens, Pseudo halogen, synthesis, properties & applications, structure, oxyacids & oxoanions of Halogens Bonding. Synthesis, properties, uses, structure & bonding with respect to VSEPR.	1									
4		Practical Separation of inorganic compounds containing rare earth metal Synthesis of inorganic and purity determination of inorganic compound <ul style="list-style-type: none"> ➤ Cis/trans potassium di-aquo di-oxalato chromate (III) ➤ Chloro penta-amino cobalt (III) chloride ➤ Nitro penta-amino cobalt (III) Chloride ➤ Tris, 2-4 pentanedionato cobalt (III) trihydrate ➤ Potassium tri-oxalato aluminate ➤ Reinecke's salt 	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		Theory	Practical				Total	Theory	Practical	Total		
		3	1	5	5	5	15	30	70	30	100	70

REFERENCE BOOKS:

- Advance inorganic chemistry, F. Albert Cotton, Geoffrey Wilkinson and Carlos A. Murillo, Sixth Edition
- Concise inorganic Chemistry, J D Lee, Fifth Edition
- Inorganic Chemistry Principles of Structure and reactivity, James E Huheey, Ellen A Keiter, Richard L Keiter and Okhil K Medhi
- Text book of Quantitative Analysis, A.I. Vogel 4th Edition
- Electronic Spectroscopy, A. B. P. Lever.



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 2110302</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Physical Chemistry-1</p>
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Objective of the course:

- To get detailed study of Atomic Structure and Periodic classifications
- To get knowledge of Bohr's model of H-atom
- To get familiarize about advanced concepts and applications of Thermodynamics.
- To understand Study of Chemical kinetics of molecular reactions.

Unit	Sub Unit	Content	Credit
1	1	Atomic Structure and Periodic classifications: Introduction to atomic structure, Spectra of H-atom, Bohr's model of H-atom, wave nature of electron, atomic orbital, shapes of s, p, and d orbitals, quantum numbers, Pauli Principle, Hund's Rule, periodic classification of elements.	1
2	1	Thermodynamics: Introduction, Importance of thermodynamics, system and type of system, Extensive and intensive property, state of system, function and variables Thermodynamic laws, Type of process, internal energy, Enthalpy, Entropy, Gibbs free energy, Hess's law, bond energy, Maxwell's relations, spontaneity and equilibria, Le Chatelier principle and thermodynamics of ideal and non-ideal gases, and solutions.	1
3	1	Chemical kinetics: Rate expression, order and molecularity, Rate of chemical reactions, order of reactions, half life time of reaction, Arrhenius equation, Activation energy and catalysis, reaction mechanism, enzyme kinetics, salt effects, homogeneous catalysis, photochemical reactions.	1
4	1	Practical <ul style="list-style-type: none"> • Saponification value of oil • Molecular weight determination by steam distillation • Isotherm (Freundlich & Langmuir) of acetic acid on active charcoal • Glycerol radius by viscosity • Surface area analysis by BET method • Experiment of Chemical Kinetics 	1

Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	3	1	5	5	5	15	30	70	30	100	70

REFERENCE BOOKS:

- Atkins Physical Chemistry, Peter Atkins, Julio De Paula
- Physical Chemistry Fourth edition by Robert J. Silbey, Robert A Alberty, Mounji G Bawendi
- Practical physical chemistry, A. Findary, T. A. Kitchner (Longmans, Greenand Co.)
- Experiments in Physical Chemistry, J.M. Wilson, K.J. Newcombe, A. R. Denko. R. M. W. Richett (Pergamon Press)
- Senior Practical Physical Chemistry, B. D. Khosla and V. S. Garg (S. Chand and Co., Delhi.)



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 2110402</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Molecular Spectroscopy-1</p>
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Objective of the course:

- Can get knowledge for fundamental of spectroscopy, define various terms and understand concept of absorption
- Can Calculate the lambda max values for given molecules
- Can Explain the basic principles of IR spectroscopy.
- Can calculate vibrational frequencies of various organic compounds

Unit	Sub Unit	Content	Credit								
1		Fundamentals of spectroscopy: Electromagnetic radiation, electromagnetic spectra, energy levels in molecule, classification of spectroscopic techniques, absorption and emission spectra	1								
2		Ultraviolet-Visible spectroscopy: Introduction to UV-Visible spectroscopy, Beer-Lambert law, Electronic spectra of molecule, Electronic transitions in organic molecule, Factor affecting adsorption bands, Wood ward –Hoffman rules for dienes and α , β -unsaturated compounds	1								
3		Vibrational –Rotational spectroscopy: Principle of IR spectroscopy, Instrumentation, Stretching and bending vibration and IR absorption bands, Infrared spectrum, Characteristic group frequencies of various functional groups, Introduction to Raman spectroscopy, Raman spectrophotometer	1								
4		Tutorial Interpretation of IR and UV spectrograph of various compounds	1								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	3	1	5	5	5	15	30	70	30	100	

REFERENCE BOOKS:

- Spectroscopic Identification of Organic Compounds R. M. Silverstein and F. X. Webster, 6th edition (John Wiley & Sons)
- Introduction to Spectroscopy, D. L. Pavia, G. M. Lampman and G. S. Kriz, 3rd edition (Thomson Brooks/Cole)
- Spectroscopic Methods in Organic Chemistry, D. H. Williams and I. Fleming, 4th edition (McGraw Hill Book Company)
- Organic Spectroscopy – Principles and Applications, Jag Mohan, 2nd edition (Narosa Publishing House)
- Spectroscopy of Organic Compounds, P. S. Kalsi, 5th edition (New Age International Publishers)
- Organic spectroscopy, 3rd edition, W. Kemp, (Palgrave Publication)



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 2110502</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Environmental Chemistry-1</p>
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Objective of the course:

- To get basic understandings of Basic concepts and application of Environmental Chemistry
- To know Hydrosphere and Water resources
- To get familiarize with Lithosphere & Terrestrial environment
- To understand Atmosphere and Biosphere

Unit	Sub Unit	Content	Credit								
1		Hydrosphere: Concepts and scope of study, Environmental Composition, nomenclature of some useful terms, Water resources, Physical and chemical properties of water, sea water model, microbiological processes, organic and inorganic matters in water.	1								
2		Lithosphere & Terrestrial environment: Concentric layers of earth, Physical and Chemical weathering processes, composition of soil, Nitrogen cycle and NPK in soil.	1								
3		Atmosphere: Composition & structure of atmosphere, particles, ions, radicals and chemical reactions in atmosphere. Biosphere: Definition, ecosystem and natural cycles	1								
4		Practical: <ul style="list-style-type: none"> • Water analysis • COD • BOD 	1								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	3	1	5	5	5	15	30	70	30	100	

REFERENCE BOOKS:

1. Environmental Chemistry by J. W. Moore & E. A. Moore, Academic Press Inc. New York, 1976
2. Environmental Chemistry by A. K. De, 4th edition, New Age International Publishers
3. Principles of Environmental Science: Inquiry and Applications by William P. Cunningham & Mary A. Cunningham, 1st edition, 2002, Tata McGraw Hill Publishing Company Ltd., New Delhi
4. Environmental Economics in Theory and Practice, Hanley, Nick, Jason F. Shrogen & Ben White, New Delhi, McMillan – India, 1997
5. A Text book of environmental pollution and control, C. S. Rao, Wiley Eastern Limited, 1993
6. Environmental chemistry – by B. K. Sharma, S. H. Kaur, Goel Publishing House Meerut, 1992
7. Chemistry and the Environmental – Johnson, D. O. Netterville, J. T. Wood, J. C. and James, M., W. B. Saunders Company, Philadelphia



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-I</p> <p style="text-align: center;">Paper No: 2110602</p> <p style="text-align: center;">Compulsory</p>	<p>Subject: Chemistry Credit: 2</p> <p>: Title of the paper:</p> <p>Foundation Course on Research in Chemical Scinces-1</p>
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Objective of the course:

- To get introduction about Research Methodology
- To get knowledge about scientific research for achieving the targeted hypothetical ideas

Unit	Sub Unit	Content	Credit								
1		INTRODUCTION TO METHODOLOGY: Format of thesis and dissertation, Research article, Reviews, Monographs, Bibliography, Literature search	1								
2		INTRODUCTION TO RESEARCH: Significance of research, Research methods versus methodology, Research and Scientific methods, Defining the research Problem and Research design.	1								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	2	0	5	5	5	15	30	70		70	

REFERENCE BOOKS:

- Kothari, C. R; II ed. (2006), Research Methodology, Methods and techniques; New Age International (p) Ltd., New Delhi. :
- Kumar K. L. (1997), Educational Technology, New Age International (P) Ltd., New Delhi.
- Donald R. Cooper, Pamela S. etc., Business Research Methods, 8th Edition, Tata McGraw Hill Co.Ltd.2006
- Tony Bates A. W. Technology, (2005), E-Learning and Distance Education, New York



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<p style="text-align: center;">M.A.,M.Ed.</p> <p style="text-align: center;">Semester-II</p> <p style="text-align: center;">Paper No: 1210300</p> <p style="text-align: center;">Compulsory</p>	<p>Subject: Education Credit: 4</p> <p>: Title of the paper:</p> <p>Psychological Foundation of Education– 1</p>
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Objective of the course:

- To enable the students to understand concept and process of educational psychology as an applied science.
- To acquaint the learner with the process of development and assessment.
- To enable the learner to understand implications of psychological theories of learning.
- To make the students understand the concept of learning acceleration, learning curve and plateaus of learning curve and their educational implications.
- To enable the students to understand theories of motivation and their educational implications.
- To make the students to understand the concept of information processing.
- To make the students to apply knowledge of psychology in their personal & cognitive development.

Unit	Sub Unit	Content	Credit
1		<p>Educational psychology & cognitive Development</p> <p>Educational Psychology:</p> <ul style="list-style-type: none"> • Definition of Psychology • Concept, Nature and scope of Educational Psychology • Psychology of Instruction: Meaning and its Nature <p>Growth and Development</p> <ul style="list-style-type: none"> • Definition, Meaning & Characteristics of Growth & Development • Principles of Development • Factors Influencing Development <p>Stages of Development</p> <ul style="list-style-type: none"> • Characteristics of each stage • Problems of Adolescence Period <p>Piaget's Theory of Cognitive Development</p> <ul style="list-style-type: none"> • Terminologies : Schema, Cognitive Structure, Reflexes, Organization, Assimilation, Accommodation • Stages of Cognitive Development • Educational Implications of Cognitive Development 	1
2		<p>Learning and Motivation</p> <ul style="list-style-type: none"> • Definition and Characteristics of Learning • Gagne's Hierarchy of Learning: Types and Conditions <p>Learning Curve</p> <ul style="list-style-type: none"> • Meaning, Types, Characteristics & Educational Implications of Learning Curve • Plateaus in Learning Curve; Causes of Plateaus in Learning Curve; Suggestions to Remove Plateaus of Learning Curve <p>Motivation</p> <ul style="list-style-type: none"> • Meaning and factors affecting motivation • Role of motivation in learning • Maslow's self-actualization theory <p>Transfer of Learning</p> <ul style="list-style-type: none"> • Theories of transfer of learning • Educational implication 	1
3		<p>Learning Theory of Thorndike (Trial & Error)</p> <ul style="list-style-type: none"> • Puzzle Box Experiment • Laws of Learning and its educational implications <p>Pavlov's Classical Conditioning Theory of Learning:</p> <ul style="list-style-type: none"> • Experiment, • Process • Findings and Educational Implications <p>Bandura's Theory of Social Learning</p> <ul style="list-style-type: none"> • Meaning and Essentials of Social Learning • Bobo Doll Experiment • Social Learning Process • Educational Implications <p>Bruner's Theory of Discovery Learning</p> <ul style="list-style-type: none"> • Meaning and types of Concept • Meaning of Discovery Learning 	1

4	<ul style="list-style-type: none"> Steps and educational implication 							1			
	Hull's Drive Reduction Theory of learning <ul style="list-style-type: none"> Four Level Learning Theory Postulates for Learning Educational Implications 										
	Tolman's Sign Gestalt Theory of learning <ul style="list-style-type: none"> Meaning of Sign – Gestalt Theory Types of learning Laws of Learning Educational Implications 										
	Information Processing <ul style="list-style-type: none"> Levels of information Model of Information processing Educational Implications 										
Constructivism <ul style="list-style-type: none"> Concept & Characteristics Role of teacher in constructivist learning Educational Implications 											
Assessment & Evaluation	Credit		Internal				External			Total O/o 70	
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical		Total
4	0	5	5	5	15	30	70	0	70	70	

REFERENCE BOOKS:

- Agrawal, J. C. (1994). **Essentials of Educational Psychology**. New Delhi :Vikas Publishing House Pvt. Ltd.
- Anderson, J. (1990) **Cognitive Psychology and its Implications (3rd ed.)**. New York : Freeman.
- Asthana, Bipin. (2009) **Measurement and Evaluation in Psychology & Education**. Agara : Agrawal Publications.
- Bandura, A. (1977) **Social Learning Theory : Upper Saddle River**. New Jersey : Prentice Hall.
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- Gagne, R. M. (1985) **The Conditions of Learning and a Theory of Instruction (4th ed.)**. New York : Holt, Rinehart and Winston.
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- Maslow, A. (1970) **Motivation and Personality, (2nd ed.)**. New York : Freeman.
- Mayer, R. (1987) **Educational Psychology, A Cognitive Approach**. Boston : Little, Brown.
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- Piaget, J. (1965) **The Moral Judgement of the Child**. New York : Free Press.
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- Thakur, A. S. & Sandip, Berwal (2013) **Development of Learner and Teaching – Learning Process**. Agra : Agrawal Publications.
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- દેસાઈ કે. જી., સી. ટી., ભોપતકાર અને જી. અંબુશાહ (૧૯૮૧) મનોવિજ્ઞાનક પારિભાષા અને વિભાવના. અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
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- દોગા નનુભાઈ, (૨૦૦૭) અધ્યયનનું મનોવિજ્ઞાન. રાજકોટ: જિજ્ઞાસુ સાયકો સેન્ટર.
- શાહ ગણેશભાઈ (૧૯૭૮) અધ્યયનની મિમંસા. રાજકોટ: જિજ્ઞાસુ સાયકો સેન્ટર
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- દેસાઈ કે. જી., સી. ટી., ભોપતકાર અને જી. અંબુશાહ (૧૯૮૧) મનોવિજ્ઞાનક પારિભાષા અને વિભાવના. અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
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Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-II</p> <p style="text-align: center;">Paper No: 1210400</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit:2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Communication and compository writing</p>
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Objective of the course:

- To gain insight and reflect on the concept and process of communication.
- To develop an insight for academic listening and note taking.
- To acquaint with academic communication and its importance.
- To develop skills of writing and identification of different styles.

Unit	Sub Unit	Content	Credit									
1		Communication Skills Meaning, concept and components of effective communication Strategies of effective communication Role and usage of ICT in effective communication Development of pre-academic skills (pre-reading, pre-writing and pre-presentation)	0.5									
2		Academic Listening and Note taking- Informational listening, Critical Listening and Therapeutic listening Meaning, concept and importance of Informational listening, Critical Listening and Therapeutic listening Academic Listening- Listening to Lectures, observing tone and taking notes. Skills for a good listener – Listening to educational film <ul style="list-style-type: none"> • Developing and Presenting the notes 	0.5									
3		Academic Communication- classroom communication, seminar and workshops Meaning, concept and importance Seminar – skills for presenting research paper and article Academic Workshops - Developing and Participating in workshop Communicating with publishers for publication of articles and research paper	0.5									
4		Types of Writing – Expository, Narrative, Descriptive, Argumentative Meaning and concept of Expository, Narrative, Descriptive, Argumentative writings Development or writing of Expository, Narrative, Descriptive, Argumentative paragraphs Identification of different type of writing from the given sample Writing of Expository, Narrative, Descriptive, Argumentative paragraphs	0.5									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		0	2	5	5	5	15	30	Theory	Practical		Total

REFERENCE BOOKS:

Anderson, Kenneth and Joan Madean. Study Speaking. Cambridge University Press 2010
 Taylor, Shirley. Communication for Business. Pearson. Delhi. 2005
 Carter, Sam and Norman Whitby. Improve your IELTS reading skills. Macmilan, Delhi 2009
 Foundation Course in English -2, FEG – 2 , Volume 1-4, IGNOU Study Material
<https://www.skillsyouneed.com/ips/listening-types.html>



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-II</p> <p style="text-align: center;">Paper No: 2210702</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry</p> <p style="text-align: right;">Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Organic Chemistry -2</p>
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Objective of the course:

- To get General introduction of Stereochemistry
- To get understanding of Reagents and its use in organic synthesis
- To get knowledge about Reagents and their properties and applications
- To get idea about Reaction mechanism of selected name reactions

Unit	Sub Unit	Content	Credit									
1		Stereochemistry: Concept of Chirality, Chirality and Symmetry, Elements of Chirality including Chiral centre, Chiral axis, Chiral plane and Helicity, CIP Nomenclature, Molecules with more than one Chiral centre, Total number of Stereoisomer in such molecules, Enantiomeric and Diastereomeric Relationship, Chirogenicity and Stereogenicity, Pseudochirality, Topicity and Prostereoisomerism, Determination of Topic relationship between Homomorphous ligands in Intact Molecules, Sawhorse, Newman and Fischer Projections, Interconversion of Projections, Optical Purity	1									
2		Reagent in organic synthesis: Jones reagent, Collins reagent, Corey's reagent, Pyridiniumdichromate, MnO ₂ , DMSO, Cerium ammonium nitrate, NBS, HIO ₄ , Pb(OAc) ₄ , Ozone, SeO ₂ , NaBH ₄ , LiAlH ₄ , DIBALH, MPV, Wilkinson reagent, Lindlar catalyst	1									
3		Reaction mechanism of selected name reaction: Aldol condensation, Claisen condensation, Beckmann rearrangement, Cannizzaro, Wolff-Kishner reduction, Clemmensen reduction, Wittig, Peterson olefination, Sandmeyer reaction, Rosenmund reduction, Oppenauer oxidation, Name reaction based on C-C and C-N bond formation	1									
4		Practical <ul style="list-style-type: none"> • Organic Preparation of two stage derivatives using Name reactions, Rearrangements, Unit processes 	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		3	1	5	5	5	15	30	70	30		100

REFERENCE BOOKS:

- Stereochemistry of Organic Compounds by Ernest L. Eliel and Samuel H. Wilen
- Advanced organic Chemistry Reactions, Mechanisms and Structure, Fourth edition by Jerry March
- Advanced organic Chemistry, Part B: Reaction and Synthesis
- Organic Chemistry by Clayden, Greeves Warren & Wothers—Oxford Press
- Organic Reactions, Stereochemistry and Mechanism: P.S. Kalsi (New Age.)
- Principles of Organic Synthesis: R.O.C Norman & J.M. Coxon (ELBS)
- Modern Methods of Organic Synthesis: W. Carruthers (Cambridge)
- Organic Reaction Mechanism: V. K. Ahluwalia and R. K. Parashar (Narosa)
- Comprehensive Practical Organic Chemistry: Qualitative Analysis, V. K. Ahluwalia, S. Dhingra
- Vogel's Text book of Organic Synthesis
- Elementary Practical Organic Chemistry (part-1 to 3) By A. I. Vogel (CBS publication).



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<p style="text-align: center;">M.Sc.M.Ed. Semester-II Paper No: 2210802 Compulsory</p>	<p>Subject: Chemistry Credit: 4</p> <p>: Title of the paper: Inorganic Chemistry-2</p>
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Objective of the course:

- Can develop knowledge for Transition metal chemistry and their role in biological sciences.
- Can get familiarize with Coordination chemistry
- Can know Theoretical significance of thermodynamic stability
- Can get Introduction and applications of Organometallic Chemistry in inorganic synthetic methodology

Unit	Sub Unit	Content	Credit									
1		Transition metal chemistry: Introduction to transition elements, Physical and chemical properties of transition metals, Chemistry of first, second and third transition elements, Lanthanide and actinide elements, lanthanide and actinide contractions, role of transition metal ions in biological processes	1									
2		Coordination chemistry: Introduction to type of ligands, Thermodynamic stability of coordination compounds Werner theory, isomerism in coordination compounds, Bonding in coordination compounds including VBT, CFT, CFSE, Factor affecting CFSE, MOT, Electronic spectra of complexes, Tanabe-Suganodiagrams, Magnetic properties of complexes	1									
3		Organometallic Chemistry: Rules of valance electron (16 & 18), Counting electrons in simple metal carbonyl complexes, polynuclear carbonyl complexes, Nitrosyl complexes, metal alkyl, carbenes and carbide alkyl complexes, Metallocenes and organometallic compound of main group elements	1									
4		Practical <ul style="list-style-type: none"> • Ore analysis • Determination of Silica and Alumina from Kaolin clay • Determination of silica and magnesium from pyrolusite • Determination of iron from hematite. • Determination of Copper and iron from chalcopyrite • Nickel complexes; Preparation of $[\text{Ni}(\text{en})_3] \text{S}_2\text{O}_3$, $[\text{Ni}(\text{H}_2\text{O})_6] \text{Cl}_2$, $[\text{Ni}(\text{NH}_3)_6] \text{Cl}_2$ and studying their absorption spectra. • Ion – exchange chromatography; Separation & estimation of $(\text{Zn}^{+2}/ \text{Cd}^{+2})$ & $(\text{Zn}^{+2}/ \text{Mg}^{+2})$ in mixtures using Amberlite IRA 400 anion exchanger. 	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		3	1	5	5	5	15	30	70	30		100

REFERENCE BOOKS:

- Advance inorganic chemistry, Sixth Edition F. Albert Cotton, Geoffrey Wilkinson and Carlos A. Murillo
- Concise inorganic Chemistry, Fifth Edition J D Lee
- Inorganic Chemistry: Principles of Structure and reactivity, James E Huheey, Ellen A Keiter, Richard L Keiter and Okhil K Medhi
- Symmetry in Chemistry: H. Jaffe' and M. Orchin
- Text book of Quantitative Inorganic Analysis, A. I. Vogel 4th Edition (1992)
- Electronic Spectroscopy by A. B. P. Lever.



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-II</p> <p style="text-align: center;">Paper No: 2210902</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry</p> <p style="text-align: right;">Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Physical Chemistry-2</p>
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Objective of the course:

- To understand the concept of electrochemistry.
- To get Physicochemical aspects of Chemical Equilibrium and surface chemistry
- To get knowledge of Solid State Chemistry
- To get familiarize with the study of crystalline materials and ionic compounds

Unit	Sub Unit	Content	Credit
1		Electrochemistry: Conductance, conductivity and molecular conductivity, Application of conductivity, Electrolytes, oxidation-redox reaction, Oxidation number, Electrochemical cell, Electrode potential and electrode reaction, Kohlrausch's law and its applications, Ionic equilibria, Nernst equation, Faraday's laws of electrolysis and Fuels cell and batteries	1
2		Chemical Equilibrium and surface chemistry: Law of mass action, equilibrium constant of reactions, effect of pressure, volume and concentration of reactions on equilibrium, effect of temperature on equilibrium constant. Dissociation constants of acids and bases, Common ion effect, Ionization constant of water, pH, buffer solutions, Solubility product and its application in chemical analysis. Determination of K_a , K_b , K_w and K_{sp} by conductance measurements. Colligative properties, Fractional distillation, Phase rule and phase diagrams, Stability and properties of colloids; isotherms and surface area; heterogeneous catalysis	1
3		Solid State Chemistry: Introduction, Properties of solid, Type solid, Unit cells, Miller indices-spacing, structure of solid, Born-Haber cycle, Powder XRD, Conductivity in ionic compounds	1
4		Practicals <ul style="list-style-type: none"> • Practical based on conductometry <ol style="list-style-type: none"> i) Hydrolysis of NH_4Cl or CH_3COONa or aniline hydrochloride. ii) Determination of λ_0 or λ_α and dissociation constant of acetic acid. iii) Hydrolysis of ethyl acetate by NaOH. iv) Determination of ΔG, ΔH, and ΔS of Silver Benzoate by conductometry. • Practical based on potentiometry <ol style="list-style-type: none"> 1. Stability Constant of a complex ion. 2. Solubility of a sparingly soluble salt. 3. To determine the ionic product of H_2O 4. Estimation of halide in mixture. • Practical based on pH metry Determination of the acid and base dissociation constant of an amino acid and hence the isoelectric point of the acid. 	1

Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	3	1	5	5	5	15	30	70	30	100	70

REFERENCE BOOKS:

1. **Atkins Physical Chemistry, Peter Atkins, Julio De Paula**
2. **Physical Chemistry, Fourth edition by Robert J. Silbey, Robert A Alberty, Mounji G Bawendi**
3. **Practical physical chemistry, A. Findary, T. A. Kitchner (Longmans, Green and Co.)**
4. **Experiments in Physical Chemistry, J.M. Wilson, K.J. Newcombe, A. R. Denko, R. M. W. Richett (Pergamon Press)**
5. **Senior Practical Physical Chemistry, B.D. Khosla and V.S. Garg (S. Chand and Co., Delhi.)**



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M.Sc.M.Ed. Semester-II Paper No: 2211002 Compulsory	Subject: Chemistry : Title of the paper: Molecular Spectroscopy-2	Credit: 4
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Objective of the course:

- To get knowledge of basics of PMR technique
- To get familiarize with Theory, instrumentation and applications of PMR technique
- To get importance of ¹³C NMR technique
- To differentiate PMR and ¹³C NMR technique
- To get understanding of Mass spectrometry
- To develop understanding for different types of MS techniques
- To develop skill to use spectroscopic techniques in structure elucidation

Unit	Sub Unit	Content	Credit									
1		PMR Spectroscopy: Proton resonance condition, aspects of PMR spectra – number of signals, chemical shifts, shielding and deshielding, diamagnetic anisotropy, factors affecting chemical shifts, peak area and integration, splitting of the signals – spin-spin coupling, coupling constants – vicinal, geminal, long range and virtual couplings, Pople notation and spin assignments, chemical shift equivalence and magnetic equivalence, first order and second order spectra, complex PMR spectra, simplification of the PMR spectra – high resolution spectra, use of shift reagents										
2		Mass Spectroscopy: Theory and principles of mass spectroscopy, Instrumentation, low and high resolution mass spectra, ionization techniques – Electron Impact (EI) ionization, Chemical Ionization (CI), Field Desorption (FD), Fast Ion Bombardment (FAB), Electron spray ionization (ESI) and Matrix Assisted Laser Desorption/Ionization (MALDI). Determination of molecular weight and molecular formula, nitrogen rule, detection of molecular ion peak, metastable ion peak. Fragmentations – rules governing the fragmentations, McLafferty rearrangement. Interpretation of mass spectra of different class of compounds – saturated and unsaturated hydrocarbons, aromatic hydrocarbons, alcohols, ethers, ketones, aldehydes, carboxylic acids, amines, amides, compounds containing halogens.										
3		¹³C-NMR Spectroscopy: Difficulties and solution for recording ¹³ C NMR spectra, recording of ¹³ C-NMR spectra – scale, solvents, solvent signals and their positions, multiplicity, ¹³ C-1H coupling constant – proton coupled and decoupled ¹³ C spectra, broad band Decoupling, off resonance technique. Chemical shifts in ¹³ C spectra – chemical shift calculation for alkanes, alkenes and alkynes, chemical shift calculation in internal and terminal substituted compounds, aromatic compounds										
4		Tutorial Structure elucidation by spectroscopy: integration of all Spectroscopic techniques for structure determination of organic molecules (Problems based on spectroscopy)										
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		Theory	Practical				Total	Theory	Practical	Total		
		3	1	5	5	5	15	30	70	30	100	70

REFERENCE BOOKS:

- Spectroscopic Identification of Organic Compounds by R. M. Silverstein and F. X. Webster, 6th edition (John Wiley & Sons)
- Introduction to Spectroscopy, D. L. Pavia, G. M. Lampman and G. S. Kriz, 3rd edition (Thomson Brooks/Cole)
- Spectroscopic Methods in Organic Chemistry, D. H. Williams and I. Fleming, 4th edition (McGraw Hill Book Company)
- Organic Spectroscopy, William Kemp, 3rd edition (Palgrave)
- Organic Spectroscopy – Principles and Applications, Jag Mohan, 2nd edition (Narosa Publishing House)



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-II</p> <p style="text-align: center;">Paper No: 2211102</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Environmental Chemistry-2</p>
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Objective of the course:

- To get familiarize with Chemistry of atmosphere and global warming
- To get knowledge of basics of Chemistry of water pollution in environment
- To get understanding of Green Chemistry

Unit	Sub Unit	Content	Credit									
1		Chemistry of atmosphere: Properties of atmosphere, air quality standard, Carbon monoxide, oxide of nitrogen, sulphur dioxide, volatile organic chemistry, Acid rain, depletion of ozone layer, global warming	1									
2		Chemistry of water pollution and solid wastes disposal: Pollutants and sources, Sedimentation and silytation, pathogens, heavy metals and toxic organic compounds, Introduction to solid waste, Municipal solid waste, Municipal solid waste disposal method landfills and incineration, Recycling of solid wastes, industrial wastes	1									
3		Green Chemistry: Introduction to hazardous compounds, Concept of atom economy, Utilizing of green raw material, Catalyst and solvent in green chemistry	1									
4		Practical Soil analysis Determination of total nitrogen in soil Determination of phosphorus in soil Determination of potassium in soil by flame photometry. Analysis of Secondary Nutrients Determination of total sulphur in soil Determination of calcium in soil determination of magnesium in soil Determination of lime and liming material in soil. Mechanical analysis of soil. Green synthesis Analysis of Micro Nutrients Determination of total manganese in soil, determination of Fe (II) and Fe (III) in soil, determination of silica in soil, determination of soluble salts in soil, determination of sodium in soil by flame photometry	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		3	1	5	5	5	15	30	Theory	Practica -		Total

REFERENCE BOOKS:

- Textbook of Environmental Chemistry by Balram Pani, I K International Pvt. Ltd
- Environmental Chemistry, Seventh Edition, Stanley E. Manahan, CRC Press
- Environmental Chemistry: H. Kaur, Pragati Prakashan, 2nd Edition.
- Soils in our Environment: Raymond W. Miller, Duane T. Gardiner, Prentice Hall, 8th Edition



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-II</p> <p style="text-align: center;">Paper No: 2211202</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Foundation Course on Research in Chemical Sciences-2</p>
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Objective of the course:

- To get idea about use of Mathematical significance in chemical sciences,
- To get familiarize with the Real Analysis, Linear Algebra and Probability to understand the statistical analysis
- To develop skill to use research and experimental results

Unit	Sub Unit	Content	Credit									
1		Sampling Fundamentals: Census and sample Survey, Steps in sample design; Different types sample design, Selection of a random sample, Estimation, Estimating the population mean and population proportion.	1									
2		Interpretation and Report Writing: Meaning of interpretation; Techniques of interpretation; Precautions in Interpretation; Significance of Report writing; Different steps in Report writing; Layout of Research Project; Types of Reports; Patent writing and filing and Oral presentation	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
									Theory	Practical		Total
2	0	5	5	5	15	30	70	0	100	70		

REFERENCE BOOKS:

1. Kothari, C.R; II ed. (2006), Research Methodology, Methods and techniques; New Age International (p) Ltd., Publishers, New Delhi. :
2. Kumar K. L., (1997), Educational Technology, New Age International (P) Ltd., New Delhi.
3. Donald R. Cooper, Pamela S. etc., Business Research Methods, 8th Edition, Tata McGraw Hill Co.Ltd. 2006
4. Tony Bates A.W. Technology, (2005), e-Learning and Distance Education, New York



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-III</p> <p style="text-align: center;">Paper No: 1310500</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">ICT in Education</p>
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Objective of the course:

- Understand what information and communication technology is
- Communicate effectively
- Understand various forms of multimedia
- Software analyze data utilizing statistical packages
- Create TLM utilizing computer technology

Unit	Sub Unit	Content	Credit									
1		Introduction to Information Technology Definition, Scope, Levels and Types of Information Properties and need of information Value of information, Resistance to information flow, Caution against over usage of information technology Concept of information and communication technology	1									
2		Understanding of communication process Concept of communication, needs of communication, communication process : Shannon model Types of communication: Target related, Process related, message related, Direction related Barriers to communication Factors affecting communication Effective classroom communication	1									
3		Communication Medias and Network Technology Meaning, Characteristics and psychological basis for classification of media Concept, Importance and creation of: Educational animation, Multimedia, Talking book, e-book, CAI, CAL etc. Internet: Meaning, Working method, usefulness available services. Educational use of email, video, audio conferencing, chat, Face book, tweeter Concept and usefulness of institutional website online-offline learning	1									
4		Use of Computer in Research and Education Search engine: Searching and location gaps and related literature Coding, Classification and analysis of data through SPSS, Excel Report writing through word processor Creating, Teaching Learning Material - Power Point presentation - Computer Assisted Learning - Program Learning Material - Animation : Flash	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
									Theory	Practical		Total
2	2	5	5	5	15	30	35	35	70	70		

REFERENCE BOOKS:

- Microsoft Outlook 2016 Step by Step 1 Feb 2016 by Joan Lambert, Steve Lambert
- Microsoft Word 2016 Step by Step, authered by Joan Lambert, Pearson Education, 2015
- Microsoft Excel 2016 Step by Step, authered by Curtis Frye, Pearson Education, 2015
- Microsoft PowerPoint 2016 Step by Step, authered by Kevin Wilson, Pearson Education, 2015



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M.Sc.,M.Ed.

Semester-III

Paper No: 1310600

Compulsory

Subject: Education

Credit: 4

: Title of the paper:

Methods of Research in Education-2

REFERENCE BOOKS:

- Agrawal Y.P. (1988) Better Sampling: Concepts, Techniques and Evaluation. New Delhi: Sterling Publishers Private Ltd.
- Anastasi, A. (1988) Psychological Testing New York: the Macmillan company
- Backstrom, C.H. & Gerald, Hursh-cesar. (1981) Survey Research New York ,John Wiley& Sons
- Best j.w. (1993) research in education, New Delhi: Prentice-Hall of India Pvt. Ltd.
- Bogdan, R and Taylor, S.J. (1975) Introduction to Qualitative Research Methods. New York ,John Wiley& Sons
- Bogdan R.C. & Biklen, S.K. (1998) Introduction to Qualitative Research of Education: An Introduction to Theory and Methods Boston: Allyn and Bacon
- BUCH, M.B.,(Ed) (1974) A survey of research in, education, MSU, Baroda, CASE
- BUCH, M. B., (Ed) (1979) Second survey of research in education, Baroda, SERD,
- BUCH, M.B.(Ed)(1986) Third survey of research in education, New Delhi, NCERT,
- Buch, M.B. (Ed),(1991). Fourth survey of research in education, New Delhi, NCERT
- Campbell W.G. (1969) Form and Style in Thesis Writing. Boston: Houghton Mifflin Company
- Champion, C.M. (1981) The Design of Educational Experiments. New York: McMillan Publishing Co. Inc.
- Champion, D.J. (1981) Basic Statistics for Social Research, New York: McMillan Publishing Co. Inc.
- Cohen, L. & Manion Lawrence (1994) research Methods in Education London Rouletege
- Cronback, L.J. (1970) Essentials of Psychological Testing New York: Harper & Row Publishers
- Dayton, C.M. (1974) The Design of Educational Experiments. New York: McGraw Hill Book. Co.
- Denzin, N. K. and Lincoln, Y.s. (EDS) (2000) Handbook of Qualitative Research, London : Sage
- Desai, H.G. (1979) Style Manual for dissertations/Theses Rajkot : Saurashtra University
- Edwards, A.L. (1957) Techniques of Attitude Scale Construction New York: Appleton Century Crofts . Inc
- Gall, M.D., Gall, J.P. and Borg, W.R. (2007) Educational Research: An Introduction, Coston: Allyn and Bacon
- ઉચાટ, ડી.એ. અને અન્યો (સ) (૨૦૦૬) શૈક્ષણિક સંશોધનનો સારાંશ (૧૯૭૮-૨૦૦૬) રાજકોટ: શિક્ષણશાસ્ત્ર ભવન, સૌરાષ્ટ્ર યુનિવર્સિટી
- ત્રિવેદી, એમ.ડી. અને પારંખ, બી.યુ. (૧૯૮૯) શિક્ષણમાં આંકડાશાસ્ત્ર, અમદાવાદ: યુનિવર્સિટી ગ્રંથનિર્માણ બોર્ડ
- દંસાઈ, એચ.જી. અને દંસાઈ,કે. જી. (૧૯૯૭) સંશોધન પદ્ધતિઓ અને પ્રવિધિઓ, અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
- દંસાઈ, એચ.જી. અને દંસાઈ,કે. જી. (૧૯૯૪) મનોવૈજ્ઞાનિક માપન, અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
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- શાહ, દિપીકા બી. (૨૦૦૪) શૈક્ષણિક સંશોધન, અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-III</p> <p style="text-align: center;">Paper No: 1310700</p> <p style="text-align: center;">Compulsory</p>	<p>Subject: Education Credit: 4</p> <p style="font-size: 1.2em;">: Title of the paper:</p> <p style="font-weight: bold; font-size: 1.1em;">PRINCIPLES AND TECHNIQUES OF LEARNING</p>
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Objective of the course:

- 1 To enable the students to understand process of learning and its various components.
- 2 To enable the students, acquire knowledge about approach, Methods and techniques to learning.
- 3 To acquaint the students about planning of instruction for learning.
- 4 To enable the students to understand various methods, media and use of technology to strengthen the process of learning
- 5 To enable the students to understand the evolution and feedback for the process of learning.

Unit	Sub Unit	Content	Credit								
1		Learning: Meaning and concept Meaning of learning Learning: a complex, automated and continuous process Prerequisites for learning <ul style="list-style-type: none"> ▪ Pre-learnt behaviors (experiences) ▪ Process of acquisition ▪ Learning languages (Primary and secondary) Effective learning	1								
2		Approaches, Methods and Techniques Learning: A process <ul style="list-style-type: none"> ▪ Learning through association ▪ Acquisition ▪ Process of socialization ▪ Activity based learning Instructor lead learning Self-learning Techniques Learning by doing	1								
3		Make learning effective through Programmed Learning Workshop/symposia Role-play/Drama Models of teaching	1								
4		eLearning Meaning, Logic and importance Use of computer aided package of learning Technology mediated learning Techniques of enhancing learning through technology.	1								
Assessment & Evaluation	Credit		Internal					External			
								Sem. End Exam			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Theory	Practical	Total	
	4	0	5	5	5	15	30	70	0	70	

REFERENCE BOOKS:

- Arends, R. I. (1994). Learning to teach, Mc Graw-Hill, Inc. New York.
- Aggarwal, J.C. (1985). The ory and Principles of Education, Philosophical bases of education. Vikas Publisher
- Bloom, Benjamin: Taxonomy of educational objectives: the classification of educational goals. New York, Longmans, Green, 1956
- C.E.R.I., (1971). Educational Technology: The design & implementation of learning systems, OECD Publications.
- Jacobson, D.; Eggen, P. & Kanchak, D. (1989). Methods for teaching columbus, Merrill Publishing company.
- Dave Jayendra et.al. : Adhyayan Adhyapan Pravrutti Ane Shikshan.
- Joseph, K.S. (2003). Learning to Educate, Va dodara, Gold Rock Publications,
- Worwick, D. (1971). Team Teaching, U.K., University of London Press Ltd.,



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-III</p> <p style="text-align: center;">Paper No: 1310800</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Dissertation</p>
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Objective of the course:

- To enable students to understand educational research through personal experience.
- To develop the habit of conducting research at smaller scale and to relate it to knowledge and wisdom.

Unit	Sub Unit	Content	Credit								
1		• Identification of research Problem	2								
Assessment & Evaluation	Credit		Internal				External			Total O/o 70	
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical		Total
	0	2	10	10	10	20	50	0	0		0

REFERENCE BOOKS:

- <http://shodhganga.inflibnet.ac.in/>
- Buch, M. B. (Ed.1974). A Survey of Research in Education. Baroda: CASE The Maharaja Sayajirao University of Baroda.
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- Buch, M. B. (Ed. 1986). Third Survey of Research in Education. New Delhi: NCERT.
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- Grewal, A. (1988). Developing, Validating and Testing the Efficacy of Self Learning Process Based Material for the Development of Some Integrated Processes in Science. An Independent Study. Bhopal, Regional College of Education. (ERIC funded), in Sharma, J. P. (Ed. 1997). Fifth Survey of Educational Research. New Delhi: NCERT
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Indian Institute of Teacher Education, Gujarat.

M.Sc.M.Ed. Semester-III Paper No: 2311302 Compulsory	Subject: Chemistry : Title of the paper: Heterocyclic Chemistry	Credit: 4
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Objective of the course:

- To get idea about Heterocyclic chemistry
- To understand the importance of heterocyclic moieties in compounds obtained in nature
- To develop skill to carry out nomenclature of various heterocyclic compounds
- To get knowledge about structure and chemical properties of heterocyclic compounds
- To get understanding of synthetic processes to prepare heterocyclic compounds

Unit	Sub Unit	Content	Credit									
1		Nomenclature: Nomenclature of fused heterocyclic system: Hantzsch-Widman Nomenclature system, Typical reactivity of aromatic heterocycles, reactions and synthesis of pyridines	1									
2		Bicyclic heterocycles: Introduction to Bicyclic heterocycles: quinolines and isoquinolines and reaction and synthesis	1									
3		Diazines: Reactions and synthesis of the diazines: pyridazines, pyrimidines, pyrazines, Their reactions and synthesis Introduction to Bicyclic heterocyclic systems containing two or more nitrogen atoms: Cinnolines, quinazolines, quinoxalines, phthalazines and Their synthesis	1									
4		Practical: Synthesis of various heterocyclic compounds	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
									Theory	Practical		Total
		3	1	5	5	5	15	30	70	30		100

REFERENCE BOOKS:

- Heterocyclic Chemistry, 4th Edition by J. A. Joule & K. Mills, Chapman & Hall (1995)
- Principles of modern heterocyclic chemistry by Leo A. Paquette, Pearson Benjamin Cummings (1968)
- Heterocyclic Chemistry, 3rd Edition by Thomas L. Gilchrist, Prentice Hall (1997)
- The Structure & Reactions of Heterocyclic Compounds by Michael Henry Palmer, Edward Arnold (1967)
- Heterocyclic Chemistry, Volume I & II, Edited by R. R. Gupta, M. Kumar, V. Gupta (1998)
- Vogel's Text book of Practical Organic Synthesis
- Elementary Practical Organic Chemistry (part-1 to 3) By A. I. Vogel (CBS publication)



Indian Institute of Teacher Education, Gujarat.

M.Sc.M.Ed. Semester-III Paper No: 2311402 Compulsory	Subject: Chemistry Credit: 4 : Title of the paper: Advanced Inorganic Chemistry
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Objective of the course:

- To get familiarize with Advanced Inorganic Chemistry
- To understand the importance of Organometallic Chemistry and Bioinorganic Chemistry
- To develop skill for Characterization of inorganic compounds using FTIR, Raman, NMR, EPR, Mossbauer, UV-vis, NQR, MS, electron spectroscopy and microscopic techniques.

Unit	Sub Unit	Content	Credit									
1		Organometallic chemistry: Reaction of Organometallic chemistry such as Substitution, insertion and elimination reactions, Nucleophilic and Electrophilic reactions, Applications of Organometallic compounds as catalyst.	1									
2		Bioinorganic chemistry: photosystems, porphyrins, metallo enzymes, oxygen transport, electron- transfer reactions; nitrogen fixation, Enzyme-Carbonic anhydrase, Xanthine oxidase, Aldehyde oxidase, Biochemistry of iron.	1									
3		Characterization of inorganic compounds: Employ IR, Raman, NMR, EPR, Mössbauer, UV-vis, NQR, MS, electron spectroscopy and microscopic techniques.	1									
4		Practical: <ul style="list-style-type: none"> • Determination of Chromium and Magnesium by colorimetry • Determination of equilibrium constant of complex by colorimetry • Determination of iron by solvent extraction method • Conductometry experiment to verify Debye-Huckel theory of inorganic salt and complex • Analysis of electronic spectra of transition metal complexes 	1									
Assessment & Evaluation	Credit		Internal					External			Total O/o 70	
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam				
	3	1	5	5	5	15	30	Theory	Practical	Total		70

REFERENCE BOOKS:

- Advance Inorganic chemistry, Sixth Edition F. Albert Cotton, Geoffrey Wilkinson and Carlos A. Murillo
- Concise Inorganic Chemistry, Fifth Edition, J D Lee
- Inorganic Chemistry: Principles of Structure and reactivity, James E Huheey, Ellen Keiter, Richard L Keiter and Okhil K Medhi
- Text book of Quantitative Analysis, A.I. Vogel, 4th Edition (1992)
- Electronic Spectroscopy by A. B. P. Lever.



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-III</p> <p style="text-align: center;">Paper No: 2311512</p> <p style="text-align: center;">Elective</p>	<p style="text-align: center;">Subject: Chemistry</p> <p style="text-align: right;">Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Analytical Chemistry</p>
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Objective of the course:

- To get idea for Basic concepts of Analytical Chemistry
- To get knowledge about Separation techniques
- To get understanding of Chromatographic techniques
- To develop skill for Centrifuge technique and Data analysis of the results

Unit	Sub Unit	Content	Credit									
1		Separation technique: Solvent extraction, Principle of liquid –liquid extraction, Parameter affecting the extraction process, aqueous two-phase extraction, Principle involving two phase aqueous, Superfluid extraction, Reversed micelle extraction method, ion-exchange separation, membrane separation method, Lyophilization										
2		Chromatographic technique: Introduction to chromatographic technique, classification of chromatographic methods, application of chromatography, Definition of retention time, retention volume, relative retention, retention factor and resolution, column chromatography, principle of column chromatography, thin-layer chromatography, adsorption chromatography, liquid chromatography, gas chromatography, high performance liquid chromatography, ion–exchange chromatography, size–exclusion chromatography										
3		Centrifuge technique and Data analysis : Introduction, centrifuge force, principle of centrifuge, introduction of various centrifuge techniques such as differential centrifuge, density gradient, ultracentrifuge, Mean and standard deviation; absolute and relative errors; linear regression, covariance and correlation coefficient										
4		Practical: Separation of compounds using: <ul style="list-style-type: none"> • column chromatography • thin layer chromatography • paper chromatography • liquid liquid extraction 										
Assessment & Evaluation		Credit	Internal	External			Total O/o 50					
		Theory	Practical	Assignment	Project	Seminar		Test	Total	Sem. End Exam		
		3	1	5	5	5		15	30	70	30	100

REFERENCE BOOKS:

1. Principles of instrumental analysis-by D. A. Skoog & F. J. Holler & T. A. Nieman Saunders college Publishers, 5th edition, 1998
2. Practical Aspects of Gas chromatography/ Mass spectrometry. G. M. Message, John Wiley & Sons, New York, (1984).
3. HPLC: Analytical Chemistry by Open Learning John Wiley & Sons, New York, (1991).
4. Analytical Chemistry: Principles-by J. H. Kennedy, Saunders college publishers, 2nd edition, 1990
5. Introduction to Chemical Analysis-by R. D. Braun, McGraw Hill Book Co. 2nd edition 1995
6. Analytical Chemistry-by G. D. Christian, John Wiley & Sons, 3rd edition,



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<p style="text-align: center;">M.Sc.M.Ed. Semester-III Paper No: 3211522 Elective</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper: Statistical Thermodynamics</p>
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Objective of the course:

- To understand fundamentals of Statistical thermodynamics
- To get knowledge about Thermodynamic functions
- To understand Statistical Calculation and apply in thermodynamic calculations

Unit	Sub Unit	Content	Credit								
1		Statistical thermodynamics: Thermodynamic probability of a system, the Most probable distribution, the partition function, systems of independent particles, the energy of a system, the separation of partition function, The partition function for translation.	1								
2		Thermodynamic functions: The thermodynamic functions for translation, monochromic gases, Thermodynamic function for rotation, vibration, & Electronic excitation, Rotation, the electronic portion function.	1								
3		Statistical Calculation: Results of statistical Calculation, statistical calculation of equilibrium constant, entropy & probability, Bose-Einstein & Fermi Dirac Statistics.	1								
4		Practical: Determination of kinetics of photolysis of uranyl oxalate. To determine the ionisation constant (pKa) of an indicator spectrophotometrically. Determination of equilibrium constant for the reaction, $KI + I_2 \rightarrow KI_3$. To determine critical composition and critical temperature for given naphthalene biphenyl binary phase system. Determination of composition and stability constant of a complex formed between iron (III) and sulphosalicylic acid by Job's continuous variation method and verification by slope ratio and mole ratio method. Investigation of the solubility of a three component system and hence draw a tieline on a binodal curve. Construct the ternary phase diagram for micro emulsion of Tx-100/water/cyclohexane. To determine the critical micellar concentration (CMC) of sodium dodecylsulphate(SDS) using conductivity method. Determination of surface tension of water in presence of surfactant and hence surface excess by capillary rise method/Du-Nouy Ring tensiometer. Determination of diffusion co-efficient and hydrodynamic radius of $K_3Fe(CN)_6$ by cyclic voltammetry (CV).	1								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	3	1	5	5	5	15	30	70	30	100	

REFERENCE BOOKS:

- Physical chemistry – P.W. Atkins, ELBS Fourth edition.
- Principles of Physical chemistry – S. H. Maron & C. F. Pruton fourth edition
- Basic Chemical Thermodynamics, E. Brian Smith (ELBS) 1990
- Statistical Thermodynamics, L. K. Nash.



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<p style="text-align: center;">M.SC.M.Ed.</p> <p style="text-align: center;">Semester-III</p> <p style="text-align: center;">Paper No: 2311602</p> <p style="text-align: center;">Compulsory</p>	<p>Subject: Chemistry Credit: 2</p> <p>: Title of the paper:</p> <p>Foundation Course on Research in Chemical Sciences-3</p>
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Objective of the course:

- To know the importance of research
- To know area of current developments in the field of chemistry
- To know systematic approach of literature survey on the assigned topic

Unit	Sub Unit	Content	Credit									
1		<p style="text-align: center;">Project work/Dissertation: Part-1</p> <ul style="list-style-type: none"> ➤ Students will be assigned a topic in the area of chemistry particularly current developments in chemistry ➤ Students will have to carry out literature survey on the assigned topic using library ➤ Students may carry out literature survey on the assigned topic using software/scientific search engine such as scifinder etc. 	1									
2			1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
									Theory	Practical		Total
		2	0	5	5	5	15	30	0	70		70

REFERENCE BOOKS:

Online sources
 Inlibnet
 Library



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-IV</p> <p style="text-align: center;">Paper No: 1410900</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Philosophical Foundations of Education</p>
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Objective of the course:

- 1 To student, intellectually with the basics of philosophy and philosophy education
- 2 To enhance understanding of the student in terms of core aspects of philosophy of education
- 3 To enhance students analytic faculty on philosophical is has and educational implications
- 4 To make student familiar with the educational contribution of Indian educational thinkers
- 5 To enhance understanding of students on basic branches of philosophy war Indian school of philosophy
- 6 To develop critical awareness of philosophy of students in understanding education as systems, process and product with respect to philosophy

Unit	Sub Unit	Content	Credit									
1		<u>Philosophy and Philosophy of Education</u> nature and scope of philosophy process of philosophizes and philosophical attitude Basic branches of philosophy (1) Metaphysics (2) epistemology (3) Axiology and core beliefs - educational implications. Philosophy and its relation to education and directive role of Philosophy to education Understanding curriculum, teaching -learning process teacher-learning relationship and discipline in Philosophical perspective	1									
2		<u>Philosophical isms and education</u> Concept of 'ism' and basic tenets of idealism, pragmatism and Existentialism naturals Idealism naturalist pragmatist and Existentialist curriculum and consideration for teaching-learning relation and discipline process and teacher thought Educational, implication of idealism, pragmatism and Existentialism. Eclectic view of ism in education	1									
3		<u>Indian school of philosophy and education</u> Introduction to Indian view of education: Vedanta and educational aspects brief out line on concepts and educational implication. Sankhya and education brief out line on concepts and educational implication. Yoga and Education brief out line on concepts and educational implication. Buddhism Jainism and education brief out line on concepts and educational implication. Islamic System of education brief out line on concepts and educational implication.	1									
4		<u>Indian Educational and Thinker Education</u> (1) Mahatma Gandhi (2) Maharshi Arvind (3) Ravindranath Tagor (4) Pandit Dindayal Upadhyay	1									
Assessment & Evaluation	Credit		Internal					External			Total O/o 70	
								Sem. End Exam				
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Theory	Practical	Total		
	4	0	5	5	5	15	30	70	0	70		70

REFERENCE BOOKS:

- Gore, M.S. (1984) Education and Modernization in India, Rawat Publishers, Jaipur.
- Hanighurst, Robert et al. (1995) Society and Education, Boston: Allyn and Bacon.
- Kamat, A.R. (1985) Education and Social Change in India, Bombay Sa maiya Publishing Co.,
- Maubnhein K. (1962) An Introduction to sociology of Educaiton, Routledge and Kegan Paul, London.
- M.H.R.D. (1990) Towards an Enlightened and Human Society. Department of Education, New Delhi
- Mossish, Loor (1972), Sociology of Education: An intorudction. George Lalen and Unwin, London
- Pandey, K.P. (1983) Perspective in Social Foundations of Education, AmitaPrakashan, Gaziabad
- Saxena, S.(2001) Philosophical and Sociological Foundations of Education. Meerut: Surya Publications.
- Singh, B.N. (2005) Education: Social Change and Economic Development, Jaipur: RBSA Publishers.
- Sodhi, T.S & Suri, Aruna (1998) Philosophical and Sociological Foundations of Education, Patiala: Bawa Publication



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<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-IV</p> <p style="text-align: center;">Paper No: 1411000</p> <p style="text-align: center;">Compulsory</p>	<p>Subject: Education Credit: 4</p> <p>: Title of the paper:</p> <p>PRINCIPLES AND TECHNIQUES OF TEACHING</p>
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Objective of the course:

- To enable the students to understand process of instruction and its various components.
- To enable the students acquire knowledge about approach, Methods and techniques to instruction.
- To acquaint the students about planning of instruction.
- To enable the students to understand various methods, media and use of technology to strengthen the process of instruction
- To provide students with the knowledge of planning of instruction.
- To enable the students to understand the evolution and feedback for the process of instruction.

Unit	Sub Unit	Content	Credit
1		<p>• Instruction: Meaning and concept Meaning of instruction Instruction as a complex and continuous process Prerequisites for instruction Knowledge of the content or specific subject, Knowledge of pedagogy, Knowledge of learners and their characteristics, Knowledge of curriculum, Knowledge of educational goals and objectives Slogans of instruction From known to unknown, From concrete to abstract, From simple to complex, From indefinite to definite, From analysis to synthesis, From particular to general Maxims of instruction Learning by doing Principle of creating interest Principle of inspiration, Correlation with life, Correlation with other subjects, Principle of planning, Principle of proper selection of depth of knowledge, Principle of individual differences, Principle of creation and joy, Principle of democratic attitude, Principle of recapitulation Effectiveness of teaching</p>	1
2		<p>• Approaches, Methods and Techniques Teachings skills and Techniques Different skills of teaching and their components Integrated use of skills and its importance Different approaches of instruction Different approaches to instruction and their merits and demerits. Systems approach Input-process-output model Cognitive approaches: Inquiry training, concept Attainment, advance organizer models. Inductive approach Deductive approach Activity based approach Constructivist approach Methods of instruction Teacher - centered (Lecture cum discussion, Demonstration, Mastery learning strategy) Pupil - centered (Self study, Self discovery, Problem-solving, Experimentation, Programmed instruction/Programmed Learning) Group - centered (Group discussion, project method) Other special methods/Techniques of instruction (Heuristic method, Seminar, Panel discussion, Buzz session, Brain-storming, Symposium, Role-play, work-shop) Modes and media (Print, Audio-visual media, human interaction, Tele- conferencing, video- conferencing etc.)</p>	1
3		<p>• Planning of Instruction Meaning, Logic and importance Kinds of planning, Different models of planning, Lesson plan, unit plan and annual plan. Content analysis and logical sequencing Formulating instructional objectives Different domains and their level. (Cognitive domain, Affective domain, Psychomotor domain)</p>	1

		General objectives & specific objectives Reducing objective to behavioural terms.									
4		<ul style="list-style-type: none"> Educational Technology in Instruction and Evaluation Knowledge of various software and hardware & their implementation Media resource centre Mass-media as source of education Evaluation: Meaning and importance Formative and summative evaluation Continue and comprehensive evaluation Evaluation through E T Ways and means of Feedback							1		
Assessment & Evaluation	Credit		Internal				External				
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			Total O/o 70
								Theory	Practical	Total	
2	2	5	5	5	15	30	70	0	70	70	

REFERENCE BOOKS:

- Arends, R. I. (1994). Learning to teach, Mc Graw-Hill, Inc. New York.
- Aggarwal, J.C. (1985). Theory and Principles of Education, Philosophical bases of education. Vikas Publisher
- Bloom, Benjamin: Taxonomy of educational objectives: the classification of educational goals. New York, Longmans, Green, 1956
- C.E.R.I., (1971). Educational Technology: The design & implementation of learning systems, OECD Publications.
- Jacobson, D.; Eggen, P. & Kanchak, D. (1989). Methods for teaching Columbus, Merrill Publishing company.
- Dave Jayendra & others : Adhyayan Adhyapan Pravrti Ane Shikshan.
- Joseph, K.S. (2003). Learning to Educate, Vadodara, Gold Rock Publications,
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- Singh, U. and Sevak, V. (1989). Shaikshnik Technology Paribhasha Kosh. , Bareilly, Dipika Prakashan.
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- Patel, L.K. and Patel, M.B. (1994). Microteaching Adhyapan Kaushlyao. Ahmedabad, Dhaval Prakashan.
- Shelat, N.D. and others. (1986). Nutan Adhyapan Padhhatio. B.D. Shah College of Education, Modasa.



Indian Institute of Teacher Education, Gujarat.

M.Sc.,M.Ed.

Semester-IV

Paper No: 1411100

Compulsory

Subject: Education

Credit: 4

: Title of the paper:

Psychological Foundation of Education – 2

Objective of the course:

- 1 To make the students aware of human mental abilities like intelligence, creativity, thinking, reasoning etc.
- 2 To acquaint the students to know the nature of personality and personality development.
- 3 To enable the learner to understand implications of theories of personality.
- 4 To enable the students to understand factors affecting adjustment and mal adjustment.
- 5 To enable the students to understand concept and various kinds of defense mechanism.
- 6 To make the students to understand the concept of communication process.
- 7 To make the students to apply knowledge of psychology in their personality development.

Unit	Sub Unit	Content	Credit
1		Intelligence, Creativity, interest & Aptitude	1
		Intelligence : <ul style="list-style-type: none"> • Meaning & definitions • Types of Intelligence • Intelligence Theories : Two-Factor, Group Factor, Multi-Factor, Guilford, Cattell, Vernon 	
		Measurement of Intelligence : <ul style="list-style-type: none"> • IQ: Meaning • Types of IQ Test • Uses and Limitations of IQ test • Introduction to various IQ tests available in Gujarat 	
		Creativity: <ul style="list-style-type: none"> • Nature and Characteristics • Stages of Development of Creativity • Suggestions to Develop Creativity of the Students 	
		Interest & Aptitude: <ul style="list-style-type: none"> • Meaning & Types of interest • Meaning & definitions of aptitude • Introduction to various interest inventory & aptitude tests 	
2		Theory of Personality	1
		Factors of Personality: <ul style="list-style-type: none"> • The Id, Ego, Super Ego • Factors affecting Personality : Mind (Conscious, Pre Conscious, Unconscious) • Oedipus Complex, Electra Complex, Sibling Rivalry • Stages of Personality Development 	
		Jung's Theory of Personality: <ul style="list-style-type: none"> • Basic Concepts of Jung's Theory of Personality : Racial or Collective Unconscious Mind, The Concept of Polarity, Concept of Equivalence, Concept of Entropy • Personality Characteristics • Functions & Types of Personality 	
		Rogers' Theory of Personality: <ul style="list-style-type: none"> • Assumptions of Rogers' Theory of Personality • Development of Personality • Fully Functioning Person 	
		Erikson's Theory of Personality : <ul style="list-style-type: none"> • Factors Affecting Personality : Ego, Social Factors Culture, Sexual Instincts, Childhood Experiences • Stages of Personality Development • Educational Implications 	
3		Measurement of personality and Mental Health	1
		Measurement of personality : <ul style="list-style-type: none"> • Subjective Methods of Personality Measurement • Objective Methods of Personality Measurement • Projective Methods of Personality Measurement 	

		Adjustment & Mental Health :									
		<ul style="list-style-type: none"> • Meaning and Definition • Characteristics of well adjusted persons • Factors affecting adjustment • Maladjustment: Reasons & suggestions to overcome mal-adjustment 									
		Defense Mechanism :									
		<ul style="list-style-type: none"> • Meaning and Definition • Various defense mechanisms 									
		Mental Health :									
		<ul style="list-style-type: none"> • Mental health & hygiene : Meaning & Definition • Factors affecting mental health • Characteristics of mentally healthy person 									
4		Group Dynamics Communication						1			
		Group & Group Dynamics :									
		<ul style="list-style-type: none"> • Meaning & Definition • Characteristics & Types of human group • Factors affecting group dynamics • Educational Implications of group dynamics 									
		Thinking :									
		<ul style="list-style-type: none"> • Meaning, Definition & Characteristics of Thinking • Types, Methods & Tools of Thinking • Essentials of Effective Thinking 									
		Reasoning:									
		<ul style="list-style-type: none"> • Meaning, Definition & Characteristics of Reasoning • Kinds & Steps of Reasoning • Role of teacher in developing reasoning of students 									
		Communication:									
		<ul style="list-style-type: none"> • Meaning, definition, Characteristics & main elements of Communication • Communication Process • Types of Communication • Factors Affecting Classroom Communication 									
Assessment & Evaluation	Credit		Internal				External			Total O/o 70	
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical		Total
	4	0	5	5	5	15	30	70	0		70

REFERENCE BOOKS:

English

- 1 Allport, G. W. (1960) **Personality – A Psychological Interpretation**. New York : Henry Holt and Co.
- 2 Asthana, Bipin. (2009) **Measurement and Evaluation in Psychology & Education**. Agra : Agrawal Publications.
- 3 Atkinson, J. (1983) **Personality Motivation and Action**. New York : Praeger.
- 4 Bhatia, C. M. (1954) **Performance Test of Intelligence**. London : Oxford University Press.
- 5 Cattell, R. B. Quoted by Hall, C. S. and Lindezy Gardner. (1970) **Theories of Personality**. New York : John Wiley and Sons.
- 6 Chauhan, S. S. (1978) **Advanced Educational Psychology**. New Delhi : Vikas Publishing House Pvt. Ltd.
- 7 Dandpani, S. (2007) **A Textbook of Educational Psychology**. New Delhi : Anmol Publications Pvt. Ltd.
- 8 Eysenck, M. and Keane, M. (1990) **Cognitive Psychology : A Students' Handbook**. New Jersey : Erlbaum.
- 9 Gardner, H. C. (1983) **Frames of Mind : The Theory of Multiple Intelligence**. New York : Basic Books.
- 10 Guilford, J. (1967) **The Nature of Human Intelligence**. New York : McGraw Hill.
- 11 Rogers, C. (1967) **Learning to be Free, In C. Rogers and B. Stevens (Eds.), The Problem of Being Human, Lafayette**. CA : Real People Press.
- 12 Sharma, V. P. (1972) **Anatomy of Creativity**. Raipur (India) : Psycho Lingua Publications.
- 13 Sternberg, R. (1988) **The Triarchic Mind**. New York : Viking.

Gujarati

- 1 ભટ્ટ કુસુમબેન કે. (૧૯૯૬) વ્યાક્રત્યના સિધાંતો-અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
- 2 દેસાઈ કે. જી., સી. ટી., ભોપત્કાર અને જી. એચ. શાહ (૧૯૮૧) મનોવેજ્ઞાનેક પરિભાષા અને વિભાવના-અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
- 3 દોગા નનુભાઈ (૧૯૯૫) અધ્યાપન મનોવેજ્ઞાન-રાજકોટ: નેજીજન સાયકો સેન્ટર
- 4 દોગા નનુભાઈ, (૨૦૦૭) અધ્યયનનું મનોવેજ્ઞાન-રાજકોટ: નેજીજન સાયકો સેન્ટર.
- 5 શાહ ગુણવંત (૧૯૭૮) અધ્યયન મિમાસા-રાજકોટ: નેજીજન સાયકો સેન્ટર
- 6 શુક્લ સતીશ પ્રકાશ, (૨૦૧૨) અધ્યતા સ્વરૂપ અને વિકાસ. આગરા અગ્રવાલ પ્રકાશન.
- 7 ભટ્ટ કુસુમબેન કે. (૧૯૯૬) વ્યાક્રત્યના સિધાંતો-અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ
- 8 દેસાઈ કે. જી., સી. ટી., ભોપત્કાર અને જી. એચ. શાહ (૧૯૮૧) મનોવેજ્ઞાનેક પરિભાષા અને વિભાવના-અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ

Hindi

- 1 Pathak, P. D. (2009) **शिक्षा मनावज्ञान**. Agra : Agrawal Publications.
- 2 Pathak, P. D. (2008) **निर्देशन एवं परामर्श**. Agra : Vinod Pustak Mandir.
- 3 Sharma, Rakesh & Manisha, Joshi (2011) **आधुनिकता का विकास एवं शिक्षण आधुनिकता का विकास**. Agra : Agrawal Publications.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-IV</p> <p style="text-align: center;">Paper No: 1400200</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Dissertation</p>
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Objective of the course:
To enable students to develop research culture.
To enable students to appreciate ethics in research

Unit	Sub Unit	Content	Credit								
1		Approval and registration of the title by respective guide	2								
		Presentation of research proposal									
Assessment & Evaluation	Credit		Internal				External			Total O/o 70	
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical		Total
	0	2	10	10	10	20	50	0	0		0

REFERENCE BOOKS:

Surveys of research in education Vol. 1 to 8 ed

<http://shodhganga.inflibnet.ac.in/>

Buch, M. B. (Ed.1974). A Survey of Research in Education. Baroda: CASE The Maharaaja Sayajirao University of Baroda.

Buch, M. B. (Ed. 1979). Second Survey of Research in Education. Baroda: Society for Educational Research and Development, Baroda.

Buch, M. B. (Ed. 1986). Third Survey of Research in Education. New Delhi: NCERT.

Buch, M.B. (Ed. 1991). Fourth Survey of Research in Education. New Delhi: NCERT.

Grewal, A. (1988). Developing, Validating and Testing the Efficacy of Self Learning

Process Based Material for the Development of Some Integrated Processes in Science. An Independent Study. Bhopal, Regional College of Education. (ERIC funded), in Sharma, J. P. (Ed. 1997). Fifth Survey of Educational Research. New Delhi: NCERT

Research Methodology: A Guide for Researchers in Management and Social Sciences Paperback – 2006, by Taylor, Sinha, Ghoshal, (Author), Prentice Hall India Learning Private Limited; 1st Edition edition (2006)

SPSS in Simple Steps Paperback – 2011, by Kiran Pandya (Author), Smruti Bulsari (Author), Sanjay Sinha (Author), Dreamtech Press (2011)

Using SPSS In Research Paperback – 2016, by Dr. Radha Mohan (Author), Neelkamal Publications



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-IV</p> <p style="text-align: center;">Paper No: 2411702</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Natural Products</p>
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Objective of the course:

- To get general introduction of vital material obtained from nature
- To get idea about important classes of vital material obtained from nature such as Alkaloids, Vitamins and terpenoids etc.
- To get knowledge about structural properties of important natural products
- To get familiarize with classification, examples and synthesis of Alkaloids, Vitamins and terpenoids etc.

Unit	Sub Unit	Content	Credit								
1		Terpenoids: Classification, structure, chemistry and biogenesis of some important mono; sesqui, di and tri terpenes.	1								
2		Steroids & Hormones: Sterols and bile acids, estrogens, androgens, gestogens and adrenocortical hormones. Hormone production. Cardiac glycosides. Steroidal triterpenes; biogenesis of steroids and correlation with terpenoids.	1								
3		Alkaloids and Natural pigments: Characteristic reactions, general methods of degradation, structure and chemistry of some well-known alkaloids Flavones, flavanones, isoflavones, xanthones, quinones, pterins, chlorophyll and haemin.	1								
4		Tutorial: Interpretation of IR, NMR and mass spectrums of important Terpenoids, Hormones and Alkaloids.	1								
Assessment & Evaluation											
		Credit	Internal		External						
		Theory	Practical	Assignment	Project	Seminar	Test	Sem. End Exam		Total O/o 70	
		3	1	5	5	5	15	30	Theory 70		Practical 30

REFERENCE BOOKS:

1. Organic chemistry, I. L. Finar, 5th Edition (1994), Vol. II, ELBS Publication
2. Chemistry of Natural Products Sujata V Bhat, Bhimsen A Nagasampagi, Meenakshi Sivakumar
3. Natural Products by O. P. Agrawal, vol. I & II, Krishna Prakashan, Merrut.
4. Natural Products Chemistry, Vol. I & II, K. Nakanishi et al., Academic Press Publication (1974)
5. The Molecules of Nature, J. B. Hendrickson, W. A. Benjamin Inc. (1965)
6. Selected Organic Synthesis, Ian Fleming John Wiley (1977)
7. Chemistry of Natural Products, N. R. Krishnaswamy, University Press (India) Ltd. (1999)



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-IV</p> <p style="text-align: center;">Paper No: 2411802</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Synthetic Dyes</p>
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Objective of the course:

- To understand fundamentals of Dyes
- To get knowledge of classification of dyes and examples of dye
- To get familiarize with Chemical properties and optical properties (Chromophore effects) of dyes and applications,
- To get idea about applications of dye in textile, Leather, Food and Ink industries

Unit	Sub Unit	Content	Credit									
1		Fundamental of dyes: Fundamental of dyes, General introduction, Important chemical chromophores of dyes, Dyes Class for principle applications, Description of individual class and synthesis of some commercial dyes.	1									
2		Dying processes of textiles : Pre-treatment of textile fibres, dyeing methods for various textiles, Textile finishes and Textile auxiliaries	1									
3		Non textile dyes : Leather, Fur, Hair, Food, Ink, holographic indicator dyes	1									
4		Practical: Synthesis of Dyes and their optical activities	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
									Theory	Practical		Total
3	1	5	5	5	15	30	70	30	100	70		

REFERENCE BOOKS:

- 1 Synthetic Dyes by Gurdeep Chatwal, Himalaya Publishing House
- 2 Advances in color chemistry series - Vol.3, Modern Colorants: synthesis and structure Edited by A. T. Peters and H.S. Freeman, Blackie Academic & Professional (1995)
- 3 Color Chemistry: Synthesis, Properties and applications of Organic dyes and pigments, Heinrich Zollinger, VCH, Germany (1987)
- 4 Critical Reports on Applied Chemistry Vol.7, Developments in Chemistry and technology of Organic dyes, Edited by: J. Griffiths, Blackwell Scientific Publications (1984)
- 5 Organic Chemistry in color, P. F. Gordon, P. Gregory, Springer-Verlag (1983)
- 6 The Chemistry of Synthetic dyes and pigments by H. A. Lubs, Reinhold Publication (1955)
- 7 The Chemistry of Synthetic Dyes Vol. I-IX, Edited by K. Venkataraman, Academic Press (1971)
- 8 Textile Auxiliaries by J. W. Batty



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-IV</p> <p style="text-align: center;">Paper No: 2411912</p> <p style="text-align: center;">Elective</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Polymer Chemistry</p>
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Objective of the course:

- To get basic knowledge of polymers,
- To understand Characterization Technique used for the determination of structure of polymers.
- To get familiarize with various techniques such as GPC, SEC, solution viscosity, VPO etc.

Unit	Sub Unit	Content	Credit								
1		Introduction of Polymers: Introduction to monomer ,Classification of polymer on the basis of structure, source, stereochemistry and polymerization, Chain growth and step growth mechanisms and kinetics, ionic polymerization, living polymerization, stereochemistry of polymers, free radical copolymerization (random, block, alternate and graft copolymers), RAFT and ATRP, Kinetics of polymerization	1								
2		Techniques used for characterization of polymer: molecular weight distributions, various techniques such as GPC, SEC, solution viscosity, VPO, light scattering for to determine relative and absolute molecular weight of polymer.	1								
3		Properties of polymer: Polymer reactions, thermal, mechanical and solution properties of polymers, thermoplastics, thermosets and elastomers, conducting polymers, branched polymers (starch, dendritic and hyper branched polymers)	1								
4		Practical: Synthesis of polymers by Bulk, solution, Emulsion, Suspension and condensation techniques	1								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	3	1	5	5	5	15	30	70	30	100	

REFERENCE BOOKS:

- Polymer Science and Technology by Joel R. Fried, Third edition, 2002.
- Polymer Science, V. R.Gowarikar, N. V.Vishwanathan and Jaydev Sreedhar Reprint edition, 2002.
- Text book of Polymer Science, Fred W. Billmeyer Jr. Third edition, 2000.
- Principles of Polymerization, George Odian, Third edition 2002.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-IV</p> <p style="text-align: center;">Paper No: 2412002</p> <p style="text-align: center;">Compulsory</p>	<p>Subject: Chemistry Credit: 2</p> <p>: Title of the paper:</p> <p>Foundation Course on Research in Chemical Sciences - 4</p>
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Objective of the course:

- To develop skill for collaborative work of research
- To know the importance of Interdisciplinary studies
- To develop skill of planning and execution of designed research/project work
- To get familiarize with method for preparation of Project report/Dissertation

Unit	Sub Unit	Content	Credit									
1		Project work/Dissertation: Part-2 ➤ Students will have to carry out laboratory work of assigned topic or on the basis of literature survey which may include following tasks <ul style="list-style-type: none"> • Synthesis • Characterization • Data Analysis • Applications 	2									
Assessment & Evaluation		Credit	Internal	External			Total O/o 70					
		Theory	Practical	Assignment	Project	Seminar		Test	Total	Sem. End Exam		
		Theory	Practical					Total				
		0	2	5	5	5		15	30	0	70	70

REFERENCE BOOKS:

- Online sources
- Inlibnet
- Library



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511300</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Psychological Testing</p>
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Objective of the course:

- 1 To enable students to develop an understanding of the nature of psychological measurement and its underlying principles.
- 2 To acquaint students with the tools and techniques of psychological measurement, its' nature, uses and limitations.
- 3 To enable students to develop skills in the use of selected psychological test for the purpose of guidance and counseling.

Unit	Sub Unit	Content	Credit								
1		Psychological Measurement <ul style="list-style-type: none"> Meaning, Nature and Scope Difference between Psychological measurement and physical measurement Need of psychological measurement in Guidance and Counseling 	1								
		Psychological testing: <ul style="list-style-type: none"> Meaning, nature and scope of Psychological measurement Characteristics of Psychological tests Use of tests in guidance and counseling. 									
2		Techniques of psychological Measurement with reference to guidance and counseling <ul style="list-style-type: none"> Testing Techniques: Standardized tests, Teacher-made tests. 	1								
		<ul style="list-style-type: none"> Non Testing Techniques : Observation, Personal Records, Rating Scale, Sociometric techniques, Projective techniques, Questionnaires, Interview, Inventories 									
3		Tools of Psychological Measurement <ul style="list-style-type: none"> Intelligence : IQ, MI and EQ, Aptitude, Interest, Achievement, Personality 	1								
		Criteria for Test selection /Preparation <ul style="list-style-type: none"> Technical criteria: Reliability, Validity and norms Practical criteria: Ease of Administration, cost, time. Sources of Psychological Tests 									
4		Administration and Interpretation of result: <ul style="list-style-type: none"> Scoring and analysis of test result Interpreting the test result in the light of Guidance and Counseling 	1								
		Reporting of test: <ul style="list-style-type: none"> Reporting the test results to students, teachers and parents. 									
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	2	2	5	5	5	15	30	70	0	70	

REFERENCE BOOKS:

- Super, D., (1990) In Gothard, B., Mignot, P., Offer, M., & Ruff, M. (2001) Careers Guidance in Context, London: Sage
- Watts, A.G., (1994) Lifelong Career Development, Towards a National Strategy for Careers Education and Guidance, CRAC Occasional Paper, Cambridge: CRAC
- Agrawal, R., (2006) Educational, Vocational Guidance and Counselling, New Delhi, Sipra Publication
- Bhattacharya, A AND Gupta, N., (1999). Guidance and Counselling: A theoretical Approach (Ed), New Delhi, Vikas Publishing House
- Chauhan, S.S., (1978) Principles and techniques of guidance New Delhi, Vikas publishing House.
- Meyers, G.E., (1941) Principles and techniques of vocational guidance, New York: McGraw Hill.
- Sharma, Ram Nath & Sharma Rachana, (2004). Guidance and counseling in India. New Delhi: Atlantic Publishers and Distributors
- Sharma, Shashi Prabha (2004). Career Guidance and counselling. New Delhi: Kanishka Publishers, Distributors.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511400</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;"><i>Sociological Foundation of Education</i></p>
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Objective of the course:

- Develop to think student, intellectually with the basics of sociology and sociology in education
- To enhance understanding of the student in terms of core aspects of sociology in education
- To enhance students analytic faculty on sociology and its educational implications
- To make student familiar with how sociological impacts have influenced education and education as system
- To enhance understanding of students on basic branches of sociology in education

Unit	Sub Unit	Content	Credit									
1		Foundations of sociology and education. Concept, nature and scope of Sociology of education Nature of Indian Society: Social and cultural changes in India and education Relevance and need of studying Sociology of education in contemporary India. Sociological concerns of education	1									
2		Contribution and Implications of selected Social thinkers. Max Weber - Main points of thinking and Sociological concerns. Habermas - Main points of thinking and Sociological Concerns. Dr. B.R.Ambedker - Main prints of thinking and Sociological concerns. VinobaBhave - Main points of thinking and Sociological concerns.	1									
3		Social stratification, education and role of education Concept of Social stratification. Social stratification and school life related aspects. School practices for social attitudes, emotional integration and national unity. Characteristics of 21 st century Society: Scientific thinking, globalization and social impact, community development.	1									
4		Socialization as process and education Concept of Socialization and process of Socialization. Institutions of Socialization, Home, School and Society. Role of educational institutions for social development of growing children. Sociological aspects of education in terms of equal opportunity in education and policy concerns.	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		Theory	Practical				Total					
		4	0	5	5	5	15	30	70	0		70

REFERENCE BOOKS:

- Gore, M.S. (1984) Education and Modernization in India, Rawat Publishers, Jaipur.
- Hanighurst, Robert et al. (1995) Society and Education, Baston: Allyn and Bacon.
- Kamat, A.R. (1985) Education and Social Change in India, Bombay Samaiya Publishing Co.,
- Maubnhein K. (1962) An Introduction to sociology of Educaiton, Routledge and Kegan Paul, London.
- M.H.R.D. (1990) Towards an Enlightened and Human Society. Department of Education, New Delhi
- Mossish, Loor (1972), Sociology of Education: An intorudction. George Lalen and Unwin, London
- Pandey, K.P. (1983) Perspective in Social Foundations of Education, Amita Prakashan, Gaziabad
- Saxena, S.(2001) Philosophical and Sociological Foundations of Education. Meerut: Surya Publications.
- Singh, B.N. (2005) Education: Social Change and Economic Development, Jaipur: RBSA Publishers.
- Sodhi, T.S & Suri, Aruna (1998) Philosophical and Sociological Foundations of Education, Patiala: Bawa Publication.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511510</p> <p style="text-align: center;">Optional</p>	<p>Subject: Education Credit: 4</p> <p>: Title of the paper:</p> <p>Educational Management</p>
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Objective of the course:

- 1 Students understanding the basic concept of administration. Management organization and resource management.
- 2 To develop an insight into the educational management as a discipline.
- 3 Students understand the approaches to educational management
- 4 Student understands to the resource management its relationship with management administrator, Head teacher.
- 5 Students understand the basic concept of IQM TQM practices. Innovations and activities.
- 6 Students understand to micro planning for school management and its concept.
- 7 Students understand the rule of management of in managerial perspectives.

Unit	Sub Unit	Content	Credit
1		Basic Concepts.	1
	1	Concept of educational administration & management Development of management.	
	2	Scope and function of educational administration management and organization.	
	3	Leadership, role of leader in educational institution leadership quality and professional confidences of an educational administration.	
	4	Management conceptual understanding school and classroom management.	
2		Micro planning for school management	1
	1	Scientific and system approach, human relations approach, Development of human resources	
	2	Concept of micro and macro planning institutional planning principals and process	
	3	School mopping, need, Factors and scope –Community participation in institutional planning	
	4	Training (in service and preserves)	
3		Resource management and education institutional	1
	1	Meaning and concept of resource management	
	2	Resource and their types: human, material (physical), Financial resources	
	3	Management of human resources: Inter-personal, Inter-Group relation HOD, Teacher relationship, relationship with management and administered	
	4	Development and human resources	
4		TQM in Educational management and Quality	1
	1	TQM concept, meaning, need and importance in educational institutions	
	2	TQM practices: innovations and activities	
	3	TQM for staff development and for quality enhancement	

	4	NAAC's role in quality assessment									
	5	Practical <ol style="list-style-type: none"> 1. Visit any educational institution and note down the various types of resources 2. Visit of good educational institution and note down a reason for a good education institute 3. Visit a good administrator and take his interview and give an observation on it. 4. Case study of any good educational institute 5. Case study of any bad educational institute 6. Observation about relationship with teacher and head of management 7. Write an essay on 'good educational institute' 8. Classify any one schools material resources 9. Classify any one schools human resources 10. Take one activities research of any school 									
Assessment & Evaluation	Credit		Internal					External			
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			Total O/o 70
								Theory	Practical	Total	
	4	0	5	5	5	15	30	70	0	70	70

REFERENCE BOOKS:

English

1. Anand W.P. Gurung, 'General Principles of Management for Educational Planner and Administrator', UNESCO, 1984.
2. Goeil S.D. Modern management Techniques new Delhi Deep and Deep 1987
3. M. Narula, Quality In School Education Secondary Education Board –A NUEPA 2010, New Delhi
4. T.K.D. Nair School Planning and Management 2009 , New Delhi
5. S.K. Bhatia, Training and Development 'concept and practices' Deep and Deep publication, New Delhi
6. Yazali Josephine, School resource planning and management - A NUEPA 2010, New Delhi
7. Mc-grath basic management skill for 8th addition (ISBN-978-81-203-3542-4) PHI learning pvt.Ltd. New Delhi
8. Hensley, Blanchard & Johnsons, management of organizational behavior leading human resources (9th additional) PHI learning pvt. Ltd. New Delhi
9. Mc-Grath J H planning system for school executives in text educational publishers Francisco, 1972
10. Peter G. north house leadership the ory and practice (south Asian Reprint) 5007 sage India and anstar
11. Total quality management Dr. Mukhopadhyay

Gujarati

1. શાળા સંચાલન બી.એસ. પ્રકાશન - અમદાવાદ
2. શૈક્ષણિક વ્યવસ્થાપન - વાઘેલા ઈશ્વરભાઈ તથા દિપિકા મહિડા
3. શૈક્ષણિક વ્યવસ્થાપન પ્રકાશક- માધ્યમિક શિક્ષણ બોર્ડ સહલેખકો -ડૉ. એ.બી. કગથરા, ડૉ.પલ્લવી પટેલ અને ડૉ. હરિભાઈ પટેલ વગેરે.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511520</p> <p style="text-align: center;">Optional</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Measurement and Evaluation</p>
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Objective of the course:

- 1 Understand the concepts and procedure of measurement and evaluation.
- 2 Differentiate the Classical Test Theory and Item Response Theory.
- 3 Understand the techniques of developing instructional objectives.
- 4 Understand the nature and uses of different type tests.

Unit	Sub Unit	Content	Credit
1		The measurement and evaluation Process & Theories of measurement	1
	1.1	Meaning of Educational Objectives, Learning Experiences and Learning outcomes Concept and need of evaluation, Inter relationship between measurement and evaluation	
	1.2	Functions of evaluation & Basic principles of evaluation	
	1.3	Classical Test Theory (CTT) : Concept, Characteristics and Importance Item Response Theory (IRT) : Concept, Characteristics and Importance	
	1.4	True scores and Errors of Measurement, Marks and Grades	
2		Objectives & Norm-Referenced and Criterion-Referenced Test	1
	2.1	Defining Objectives & Relating evaluation to objectives	
	2.2	Taxonomy of educational objectives: Cognitive Domain Affective domain, Psychomotor domain	
	2.3	Concepts of Norms Referenced and Criterion referenced Test Difference between NRT and CRT	
	2.4	Steps for constructions of Criterion-Referenced Test : Instructional intent specifying the domain, item development, item review and test development.	
	2.5	Types of tests: Achievement Test, Diagnostic Test, Domain-Referenced Test	
3		Tools of measurement and evaluation and standardized tests	1
	3.1	Subjective and objective tools; Scales, Questionnaires, Schedules	
	3.2	Supply type questions: Simple question, completion question, short answer question, long answer question/essay questions (Characteristics, merits, limitations and improvement of each type).	
	3.3	Selection type question: constant alternative, multiple choice, matching, Re-arrangement. (Characteristics, merits, limitations and improvement of selection type item).	
	3.4	Nature and use of standardized test. <ul style="list-style-type: none"> Criteria for selecting a good standardized test : planning, reliability, validity, objectivity, Discriminating power, Adequacy, Usability and Comparability. Criteria for selecting a good standardized test : planning, reliability, validity, objectivity, Discriminating power, Adequacy, Usability and Comparability. 	
4		Process of Standardizing a test.	1
	4.1	Steps involved in standardization of a test. <ul style="list-style-type: none"> Reliability: Concepts and types of reliability. Validity: Concept and types of validity. 	
	4.2	Standard Scores and Norms : Z-score, t-score, stanine, Letter Grade, Percentile Rank.	

	4.3	Emerging trends Semester System and Grading : Concept and process of grading										
	4.4	Open text-book Examination, Question Bank : Meaning, Importance steps for construction, Use of computer in evaluation, Adaptive (Tailored) Testing										
Assessment & Evaluation	Credit		Internal					External				
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			Total O/o 70	
								Theory	Practical	Total		
4	0	5	5	5	15	30	70	0	70	70		

REFERENCE BOOKS:English

- 1 Aggarwal, Y.P. (1990). *Statistical Methods - Concept, Application and Computation*. New Delhi : Sterling Publishers Pvt. Ltd.
- 2 Agarwal, R.N. (1991). *Measurement and Evaluation in Psychology and Education*. Agra : Vinod PustakMandir.
- 3 Anne Anastasi. (1976). *Psychological Testing* (Forth Edition). New York : Mac-Millan Publishing Co.
- 4 Bloom, B.S. (1956). *Taxonomy of Educational Objectives : Cognitive Domain*. New York : David Mc Kay Co.
- 5 Bloom, B. Hastings and Madaus. (1971). *Handbook on Formative & Summative Evaluation of Student Learning*. New York : Mcgraw Hill Book Co.
- 6 Dave, R.H. (1969). *Developments in Educational Testing Volume-I*. London : University of London Press. P. 203-214
- 7 Garrent, H.E. (1981). *Statistics in Psychology and Education*. Allied Pacific Pvt Ltd.
- 8 Gronlund N.E. (1995). *Measurement and Evaluation in Testing*. (3rdEdn.). New York : Mac-Millan Publishing Co. Inc.
- 9 Guilford J.P. (1993). *Fundamental Statistics in Psychology and education*. Tokyo : Mc-graw Hill.
- 10 Hambleton, R.K.: Swaminathan, H. and Rogers, H.J. (1991). *Fundamentals of Item Response Theory*. C.A.: New bury park-Sage.
- 11 Krathwohl, (1964). *Educational Objectives. Affective Domain-Book II*. New York: David Mckay Co.
- 12 Popham, W.J. (1991). *Modern Educational Measurement : A Practitioners Perspective*. USA :Pentice Hall.
- 13 Singh, Pritam. *Criterion Referenced Testing : A Monograph*. New Delhi : NCERT Publication.
- 14 Sternberg, Robert J. and Grigorenko, Elena L. (2002). *Dynanic Testing : The Nature and Measurement of Learning Porential*. New York : Cambridge University Press, 40 West 20th Street, NY-10011-4211-USA
- 15 Tabachnick, Barbara G. and Fidell, Linda S. (1989). *Using Multivariate Statistics* (2ndEdn.) New York : Harper & Row Publishers.

Gujarati

- 1 દરજી, ડાહ્યાભાઈ. શૈક્ષણિક માપન અને મૂલ્યાંકનની પ્રવિધિઓ. અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ.
- 2 દેસાઈ, ધનવંત. શાળામાં મૂલ્યાંકન અને પરીક્ષણની શાસ્ત્રીય પદ્ધતિઓ. મુંબઈ-2: એ. આર. શેઠની કું.
- 3 દેસાઈ, ધનવંત. અભિનવ શૈક્ષણિક મૂલ્યાંકન. અમદાવાદ: એ. આર. શેઠની કું.
- 4 દેસાઈ, ધનવંત. શિક્ષકો માટે અભિનવ શૈક્ષણિક મૂલ્યાંકન. મુંબઈ-2: એ. આર. શેઠની કું.
- 5 પટેલ, સી.એ. શૈક્ષણિક માપન અને મૂલ્યાંકન. અમદાવાદ: ગુર્જર પ્રકાશન.
- 6 ડાલી, પ્રવીણ. જી. ક્ષમતાકેન્દ્રી સતત મૂલ્યાંકન. અમદાવાદ: ગુર્જર પ્રકાશન.
- 7 શાહ, રિખવભાઈ. પી. પરીક્ષા સુધારણાના સંસ્થાકીય કાર્યક્રમો. અમદાવાદ: ગૂજરાત વિદ્યાપીઠ.
- 8 શાહ, રિખવભાઈ. પી. પ્રશ્નબંડોળ દ્વારા પરીક્ષા સુધારણા. અમદાવાદ: ગૂજરાત વિદ્યાપીઠ.
- 9 પંડ્યા, જયપ્રકાશ. જી. (2001). કલમ પ્રતિયાર સિદ્ધાંત દ્વારા મૂલક-સંદર્ભ માપન. અમદાવાદ: ગૂજરાત વિદ્યાપીઠ.
- 10 દેસાઈ, કે.જી. મનોવૈજ્ઞાનિક માપન. અમદાવાદ: યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ.

Hindi

- 1 અગ્રવાલ, આર, એન. મનોવિજ્ઞાન ઓર શિક્ષા મેં માપન એવં મૂલ્યાંકન. આગરા: વિનોદ પુસ્તક મંદિર
- 2 ગુપ્તા, એસ. પી. (1999). આધુનિક માપન તથા મૂલ્યાંકન. ફાહાબાદ: શારદા પુસ્તક ભવન.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511530</p> <p style="text-align: center;">optional</p>	<p style="text-align: center;">Subject: Education</p>	<p style="text-align: right;">Credit: 4</p>
<p>: Title of the paper:</p> <p>Yoga Education</p>		

Objective of the course:

- To enable the students to understand concept and process of educational psychology as an applied science.
- To acquaint the learner with the process of development and assessment.
- To enable the learner to understand implications of psychological theories of learning.
- To make the students understand the concept of learning acceleration, learning curve and plateaus of learning curve and their educational implications.
- To enable the students to understand theories of motivation and their educational implications.
- To make the students to understand the concept of information processing.
- To make the students to apply knowledge of psychology in their personal & cognitive development.

Unit	Sub Unit	Content	Credit									
1		Yoga (Meaning and relevance) Yoga and Modern life (Introduction, Definition and Understanding yoga) The yoga of concentration and meditation The role of yoga in healthy living and science of life force	1									
2		Health and Lifestyle Food and Health Method of Pranayama Pranayama and Mudras	1									
3		Standing Postures:- 1) Ardhakati chakrasana 2) Ardha chakrasana 3) Pada Hastasana 4) Trikonasana	1									
4		Sitting Postures:- 1) Vajrasana 2) Sansankasana 3) Panchimotanasana 4) Ustrasana 5) Vakrasnan 6) Ardh matsyendrasana 7) Mayurasana Supine Postures :- 1) Sarvangasana 2) Matyasana 3) Halasana 4) Charkrasana	1									
Assessment & Evaluation		Credit	Internal					External			Total O/o 70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
									Theory	Practical		Total
		2	2	5	5	5	15	30	35	35		70

REFERENCE BOOKS:

- Yoga its philosophy and practice: Swami Ramdev
- Pranayama Rahasya : Swami Ramdev
- Aushadh darsan : Swami Ramdev
- Rajrshi muni : Yoga Darshika
- Maharshi Arvind : soul development through yoga, www.pathofdivinelife.org
- Yoga – Its philosophy & Practice - Swami Ramdev



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511600</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Preparation and Administration of Psychological Tests</p>
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Objective of the course:

1. To review psychological test.
2. To understand psychological testing.
3. To administer psychological test.

Unit	Sub Unit	Content	Credit								
1		Understanding psychological tests.	0.5								
2		Selecting appropriate psychological tests.	0.5								
3		Administering psychological tests.	0.5								
4		Interpretations of data received from testing.	0.5								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	0	2	10	10	10	20	50	0	0	0	

REFERENCE BOOKS:

- Anastasi, A. Psychological Testing, (7th Ed.), New York: Macmillan Publishing Co.
- Buros, D.K.(Ed.), (1972). The Seventh Mental Measurement Year Book, Highland Park, N.J.Gryphon Press
- Cronbach, L. J. (1982). Essentials of Psychological Testing, New York: Harper (3rd Ed.)
- Freeman, F.S. (1980). Theory and Practice of Psychological Testing, New Delhi: Oxford and IBH Co.
- Garrett, H.E. (1985). Statistics in Psychology and Education, Bombay: Vakils, Feffer and Simons Pvt. Ltd.,
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- Long, L. and Menta, P.H. (1966). The First Measurement Handbook for India, New Delhi; NCERT
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- Nunnally, J.C. (1972). Educational Measurement and Evaluation, New York: McGraw Hill
- Pareek, U. and Sound, S., (1971). Directory of Indian Behavioural Science Research, Delhi; Acharan Sahakar
- Patel, R.S., (2010). Psychological Testing, Ahmedabad: Jay Publication
- Super. D.E. and Crites. J.C.. Appraising Vocational Fitness by Means of Psychological Tests.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511700</p> <p style="text-align: center;">Compulsory</p>	<p>Subject: Education Credit: 2</p> <p>: Title of the paper:</p> <p>Preparing Theme Papers and its Presentation</p>
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Objective of the course:

1. To think about topics on which they can prepare theme papers.
2. To prepare presentations on theme papers.
3. To present theme papers to seminar or workshop.

Unit	Sub Unit	Content	Credit								
1		To work in group for identifying topics on education.	0.5								
2		To refer the material from various sources.	0.5								
3		To write papers in different styles.	0.5								
4		To present the paper in seminar or workshop arranged for the purpose.	0.5								
Assessment & Evaluation	Credit		Internal				External			Total O/o 70	
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical		Total
	0	2	10	10	10	20	50	0	0		0

REFERENCE BOOKS:

Mla Handbook for Writers of Research Papers Paperback – 1 Dec 2008, by Mla (Author) , Affiliated East-West Press

The Curious Researcher: A Guide to Writing Research Papers Paperback – Import, 22 Jun 2000, by Bruce Ballenger (Author) , Pearson Publication

Research Methodology: A Theoretical Approach Paperback – 2014 by D. Napoleon (Author), B. Balaji Sathya Narayanan , Laxmi Publications

Practical Approach to Research Methodology Paperback – 2005 by S. P. Verma (Author) , Akansha Publishing

Research Methodology: A Guide for Researchers in Management and Social Sciences Paperback – 2006, by Taylor, Sinha, Ghoshal, (Author), Prentice Hall India Learning Private Limited; 1st Edition edition (2006)



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511800</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Academic writing</p>
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Objective of the course:

- To enable the students to understand the concept of different types of writing and writing style
- To enable the students to critically comment on the reports- project report, institutional report, minutes of staff meeting
- To enable the students to comprehend the academics in the form of books and films and talks by academicians
- To enable the students to be aware about the current trends in education
- To enable the students to present a seminar on various reports and policy documentation
- To enable the students to self-criticize, defend on their point, counter question the opponent on the academic presentations/cross question

Unit	Sub Unit	Content	Credit									
1		Types of Writing and Writing Styles Concept of Narrative, Descriptive and Persuasive Writing and Difference between narrative, descriptive and persuasive writing Concept of Theme paper and research paper and the difference between the two Writing of Project Reports, Field Visit Reports, Minutes of Staff Meeting Writing of Abstract, Executive Summary, Paraphrasing and Summarizing	0.5									
2		Writing a Review by Reviewing Surveys, Film and Speeches of Famous Academicians Review of TED Talks Review of Speech of A P J Abdul Kalam, Narendra Modi, Jawaharlal Nehru, Swami Vivekanand and M K Gandhi Review of Films-Ek Doctor Ki Maut, Aadhar Sheela, Dead Poets Society, Short Films related to Education • Reviewing the related literature from Surveys, Shodhganga, INFLIBNET, ERIC, Dissertation Abstract International	0.5									
3		Critical Analysis of Various Policies and Act (Group Activities on the basis of Divergent and Convergent thinking) New Education Policy, TeachR NCTE Regulation 2014 Two Year integrated B.Ed., M.Ed. B.Sc Ed and MSc Ed RTE 2009,UGC Regulation PhD 2009	0.5									
4		<ul style="list-style-type: none"> Writing of Research Proposal and Reporting Doctoral Thesis Steps of writing Research Proposal Reporting of Chart/Graphs and Tables-Explain, Compare and Narrate APA style of Writing and APA style of Referencing Plagiarism and Antiplagiarism Software 	0.5									
Assessment & Evaluation	Credit	Internal	External			Total O/o 70						
	Theory	Practical	Assignment	Project	Seminar		Test	Total	Sem. End Exam			
	0	2	5	5	5		15	30	Theory	Practical	Total	70
	0	2	5	5	5		15	30	0	70	70	70

REFERENCE BOOKS:

Bailey, S. (2003), Academic Writing: A Handbook for international Students
 Films-Ek Doctor Ki Maut, Aadhar Sheela, Dead Poets Society, Short Films
https://www.inflibnet.ac.in/ncte-india.org/ncte_new/pdf/NCFTE_2010.pdf
 Policy Documents Available on UGC, NCTE, NCFTE, MHRD websites
shodhganga.inflibnet.ac.in
www.apastyle.org/
[www.ka.u.edu.sa/.../academic-writing-handbook-international-students-3rd-ed%20\(2\)](http://www.ka.u.edu.sa/.../academic-writing-handbook-international-students-3rd-ed%20(2))
www.mhrd.gov.in
www.ncert.nic.in
www.ncte-india.org
www.ted.com/
www.ugc.ac.in



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 1511900</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 2</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Internship</p>
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Objective of the course:

- To enable student,
- to understand educational system through personal experience.
- to develop the habit of observation and to relate it to knowledge.

Unit	Sub Unit	Content	Credit								
1		Internship in Teacher education institutions	2								
		•									
		•									
		•									
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
		2	10	10	10	20	50	0	0	0	

REFERENCE BOKS:

- Becoming Better Teacher Microteaching Approach, Developed at the Centre of Advanced Study in Education, the M.S. University of Baroda, Baroda
- Practice Teaching: A Reflective Approach, Jack C. Richards, Thomas S. C. Farrell, Cambridge University Press, 14-Mar-2011 - Foreign Language Study
- Approaches and Methods in Language Teaching, Jack C. Richards, Theodore S. Rodgers, Cambridge University Press, 16-Apr-2014 - Foreign Language Study - 410 pages
- The Practice of Teaching, Philip Wesley Jackson, Teachers College Press, 1986 - Education - 159 pages
- A Guide to Teaching Practice: 5th Edition, By Louis Cohen, Lawrence Manion, Keith Morrison, Dominic Wyse
- Ernest stringer(1999)action research in education
- Jean,Mc niff, action research: principals and practice



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed. Semester-V Paper No: 2512102 Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper: Medicinal Chemistry</p>
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Objective of the course:

- To get idea for Pharmacodynamics and Pharmacokinetics Study Drug molecules and their biological effects
- To understand Host-Guest Chemistry of drug molecules
- To get familiarize with Drug design and allied subjects
- To develop skill for SAR and Combinatorial chemistry

Unit	Sub Unit	Content	Credit										
1		Pharmacokinetics: Drug absorption, drug distribution, drug metabolism (general pathway of drug metabolism: Oxidative, reductive and hydrolytic reactions), Drug excretion, Drug administration	1										
2		Pharmacodynamics: Receptors, Chemical messengers, Binding sites, Receptor types and subtypes (Protein receptors, DNA receptors with examples of Agonists and Antagonists)	1										
3		Drug design: Concepts of drug design, Approaches to lead discovery, SAR, Combinatorial chemistry, Prodrugs	1										
4		Practical: Estimation of different drugs using spectrophotometric and volumetric techniques	1										
Assessment & Evaluation		Credit	Internal					External			Total O/o 70		
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam				
		3	1	5	5	5	15	30	Theory	Practical		Total	70

REFERENCE BOOKS:

- Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 11th Edition by John H. Block & John M. Beale, Published by Lippincott Williams & Wilkins (2004)
- Principles of Medicinal Chemistry, 4th Edition by William O-Foye, Thomas L. Lemke and David A. Williams, Published in India by B. I. Waverly Pvt. Ltd. New Delhi (1995)
- Essential of Medicinal Chemistry, 2nd Edition by Andrejus korolkovas Published by Wiley-India Edition (1988)
- Instant Notes: Medicinal Chemistry, edited by Graham L. Patric Published by Viva Books Private Ltd. (2002)
- Textbook of Medicinal Chemistry, Vol. I & II by V. Alagarsamy, Published by Elsevier (2010)
- Medicinal Chemistry, 3rd Edition by Ashutosh Kar, Published by New age international (P) Limited, Publishers (2005)
- Medicinal Chemistry, Edited by Alfred Burger, Published by Interscience Publishers, John Wiley & Sons, New York (1951)
- Burger's Medicinal Chemistry and Drug Discovery, Vol. 3: Therapeutic agents, Edited by Manfred E. Wolff Published by Interscience Publishers, John Wiley & Sons, New York (1996)
- Burger's Medicinal Chemistry, 4th Edition: Part III, Edited By Manfred E. Wolff, Published by Interscience Publishers, John Wiley & Sons, New York (1981)
- The organic chemistry of drug design and drug action, 2nd Edition (2003), Edited By Richard B. Silverman



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 2512212</p> <p style="text-align: center;">Elective</p>	<p style="text-align: center;">Subject: Chemistry</p> <p style="text-align: right;">Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Instrumental Techniques</p>
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Objective of the course:

- To understand basic principles and theory of Instrumental techniques
- To develop knowledge for operating parameters and applications of sophisticated instruments
- To get aware of sophisticated instruments e.g. AAS, SEM, STM, AFM, spark emission spectroscopy, ICP etc.
- To get familiarize with qualitative and quantitative analysis.

Unit	Sub Unit	Content	Credit										
1		Atomic Absorption Spectroscopy: Absorption of radiation by atoms; equipment: radiation sources (Hollow cathode lamps and electrode less discharge lamps); atomizers (Flame and carbon); wavelength selector and detectors; interferences in atomic absorption spectroscopy; applications and problems: qualitative and quantitative analysis.	1										
2		Atomic and Flame Emission Spectroscopy: Introduction to plasma, arc and spark emission spectroscopy; equipment: inductively coupled plasma spectrometer and flame photometer; applications and problems.	1										
3		Microscopic Techniques: Introduction to scanning electron microscopy (SEM), Scanning tunnelling microscopy (STM) and atomic force microscopy (AFM); basic principles and theory; instrumentation and operating parameters and applications.	1										
4		Tutorial: Interpretation of SEM & TEM images of various molecules	1										
Assessment & Evaluation													
		Credit	Internal	External									
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam				
		Theory	Practical							Theory	Practical	Total	Total O/o 70
		3	1	5	5	5	15	30	70	30	100	70	

REFERENCE BOOKS:

- Principles of Instrumental Analysis, by Skoog, Holler and Neiman, Sanders College Publishers (USA).
- Undergraduate Instrumental Analysis, by James W. Robinson, Marcel Dekker, Inc. (Ny.)
- Introduction to Instrumental Analysis, by Robert D. Braun, Pharmed Press Hyderabad India.
- Instrumental Method of Analysis, Willard, Merritt, Jr., Dean and Settle Jr., CBS Publishers And distributors, New Delhi, India.
- Microscopic and Spectroscopic Imaging of the Chemical State, Michael D. Morris, Marcel Dekker, Inc.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-V</p> <p style="text-align: center;">Paper No: 2512222</p> <p style="text-align: center;">Elective</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Industrial Chemistry</p>
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Objective of the course:

- To understand Unit operation and unit processes
- To differentiate between Unit operation and unit processes
- To get understanding of Principle and theory of chemical industrial process
- To get idea about Applications of unit Processes in Chemical industries

Unit	Sub Unit	Content	Credit									
1		Unit operation and unit processes: Basic concepts, characteristics, equipment and instrumentation.	1									
2		Principal of chemical industrial process: Halogenations, Alkylation, Oxidation, Hydrogenation, Sulphonation and Nitration.	1									
3		Manufacturing process (Glass, Cement & steel Industries): Introduction, Classification and types, basic raw materials, principal of manufacturing process including chemical reactions.	1									
4		Practical: Synthesis based on various unit processes such as Bromination, sulphonation, Nitration etc.	1									
Assessment & Evaluation		Credit		Internal					External			Total O/o 70
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
									Theory	Practical	Total	
		3	1	5	5	5	15	30	70	30	100	

REFERENCE BOOKS:

- Unit operations of chemical engineering, W. McCabe Smith, McGraw Hill Co., 7th edition
- Chemical process principal Vol. I & II, Horghen Watson, Asian Pub. House, 2nd edition.
- Chemical kinetics, S. K. Jain, Vishal Publication, Jalandhar.
- Unit process in organic systems, Groggins, Tate, McGraw Hill Co., 5th edition.
- Encyclopaedia of industrial chemical analysis, Foster Dee Snell, Leslie S., Inter science pub., Wiley & Sons N.Y., 1973, Vol-1 to 20
- Ullmann's Encyclopaedia of industrial chemistry, Vol.: 1 to 39, Wiley-VCH, Weinheim, 2003
- Vogel's Text book of Practical Organic Synthesis
- Elementary Practical Organic Chemistry (part-1 to 3) By A. I. Vogel (CBS publication).



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-VI</p> <p style="text-align: center;">Paper No: 1612000</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">TEACHER EDUCATION</p>
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Objective of the course:

1. To acquaint the students with the concept, objectives and types of Teacher Education.
2. To acquaint the students with the historical background of Teacher Education in India.
3. To enable the students to realize the place of teaching as a profession in the community.
4. To enable the students to understand the role and responsibility of various organizations in Teacher Education.

Unit	Sub Unit	Content	Credit																		
1		Concept of Teacher Education & Teacher Education in India : Historical Perspective	1																		
	1	Meaning of Teacher Education; Purpose and Objectives of Teacher Education at various stages (Pre-School, Primary Stage, Secondary and Higher Secondary)																			
	2	Types of Teacher Education: Pre-Service , In Service <ul style="list-style-type: none"> ○ Teacher Education in Ancient India ○ Teacher Education in Pre-Independence Period ○ Teacher Education in Post Independence Period 																			
	3	Teacher Education as perceived in NPE – 1986 and NCFTE – 2009																			
2		Teaching As a Profession & Role and Responsibility of various organizations in Teacher Education	1																		
	1	Characteristics which make teaching a Profession; Responsibilities of the teachers in the teaching profession & Preparation of professional personnel																			
	2	Research and development in teaching profession Teaching Profession in the future decade																			
	3	Role of Organisations like: <table style="width: 100%; margin-left: 20px;"> <tr> <td style="width: 25%; text-align: center;">1</td> <td style="width: 25%;">UGC</td> <td style="width: 25%; text-align: center;">4</td> <td style="width: 25%;">IITE</td> <td style="width: 25%; text-align: center;">7</td> <td style="width: 25%;">CASE</td> </tr> <tr> <td style="text-align: center;">2</td> <td>NCERT</td> <td style="text-align: center;">5</td> <td>SCERT</td> <td style="text-align: center;">8</td> <td>IASEs</td> </tr> <tr> <td style="text-align: center;">3</td> <td>NCTE</td> <td style="text-align: center;">6</td> <td>CTEs</td> <td style="text-align: center;">9</td> <td>DIETs</td> </tr> </table>	1	UGC	4	IITE	7	CASE	2	NCERT	5	SCERT	8	IASEs	3	NCTE	6	CTEs	9	DIETs	
1	UGC	4	IITE	7	CASE																
2	NCERT	5	SCERT	8	IASEs																
3	NCTE	6	CTEs	9	DIETs																
3		Teacher Education in India	1																		
	1	Organizational Patterns D.Ed. /P.T.C.; B.El.Edu.; B.Ed. (1Yr. , 2 Yrs., 4 Yrs. Integrated course); B.Ed. (Basic Education); D.P.Ed.' B.P.Ed.; B.Ed. (Special Education); B.Ed. through Distance Mode; M.Ed. (Full time, Part time, Distance mode)																			
	2	Broad Organizations of Teacher Education Admission Process, Planning and Scheduling of Course Curriculum components- <ul style="list-style-type: none"> i. Foundation Courses ii. Content cum mythologist iii. Special Areas iv. Practice Teaching v. Practical Work Limitations of Teacher Education with respect to organization																			
4		Research, Problems, Innovations and Issues in Teacher Education	1																		
	1	• Research Trends in Teacher Education																			

		<ul style="list-style-type: none"> • Micro Teaching, Models of Teaching, Simulation, Demonstration, Criticism lesson 									
	2	<ul style="list-style-type: none"> • Competency Based Teacher Education • Innovations in Curriculum development • Innovations in evaluation process 									
	3	<ul style="list-style-type: none"> • Quality v/s Quantity • Content cum Methodology • Integration of theory and practice • Curricular concerns in teacher education: [ICT, life skills, joyful learning, value education etc.] 									
	4	<ul style="list-style-type: none"> • Integration of various components as envisaged in NPE - 1986 , NCF - 2000 and 2006, NCFTE – 2009 • Preparing teachers for single teacher schools/ multi-grade classrooms • Teacher Performance Appraisal 									
Assessment & Evaluation	Credit		Internal					External			
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			Total O/o 70
								Theory	Practical	Total	
	4	0	5	5	5	15	30	70	0	70	70

REFERENCE BOOKS:

- 1 Smith, E.R. (1962). **Teacher Education. A Reappraisal.** New York : Harper Row Publishers.
- 2 Stinnet, T.M. (1965). **The Profession of Teaching,** New Delhi : Prentice Hall of India (Pvt.) Ltd.
- 3 Chaurasia, G. (1967). **New Era in Teacher Education.** New Delhi : Sterling Publishers.
- 4 Mukerji, S.N. (1968). **Education of Teachers in India (vol. I and II)** New Delhi: Sultan Chand and Co.
- 5 Stone, J.C. (1970). **Breakthrough in Teacher Education.** San Francisco : Jossey Bass Inc.
- 6 John, M.N. (1971). **Towards Accountable Teachers, their appraisal and Improvement.** New York : Holt, Hart Rine and Winston.
- 7 Bose, K. and Srivastava, R.C. (1973). **Theory and Practice. Teacher Education in India.** Allahabad : Chug Publication.
- 8 Saxena, P.C.(1984). **An Analytical Study of Teacher Education in India.** Allahabad : Amitabh Prakashan.
- 9 Rao, D. (2002). **Teacher Education in India,** New Delhi : Discovery Publishing House.
- 10 Mangla, S. (2002). **Teacher Education- Trends and Strategies,** New Delhi: Sage Publishers.
- 11 Rao, D. (2003). **Teachers in a changing world.** New Delhi : Discovery Publishing House.
- 12 Sharma, R.A. (1999). **Teacher Education.** Meerut. Loyal Book Depot.
- 13 Sharma, S.P. (2003). **Teacher Education.** New Delhi : Kanishka Publishers (Pvt.) Ltd.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-VI</p> <p style="text-align: center;">Paper No: 1612110</p> <p style="text-align: center;">Optional</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Guidance and Counselling</p>
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Objective of the course:

- 1 To help student to understand concept, need and view point of guidance.
- 2 To help student to understand principles, and problems of different types of guidance.
- 3 To acquaint the student with the aim and principles of guidance program.
- 4 To develop in student an understanding of various procedures of organizing various guidance services.
- 5 To get acquainted with the organizational framework and procedures of Guidance services in educational institutions.
- 6 To enhance knowledge base of the students on the guidance services globe over.
- 7 To help student to understand the establishment of a guidance centre.
- 8 To understand the role of Guidance Personnel and Counselor in different context of Guidance Services.
- 9 To help student to know the concept and needs and guidance for the children with special needs.
- 10 To know and use the agencies for providing guidance and counseling services to students.

Unit	Sub Unit	Content	Credit
1	1.1	Nature and Scope of Guidance <ul style="list-style-type: none"> Misconception of Guidance Nature and Scope Meaning and Definition of Guidance Characteristics of Guidance 	1
	1.2	The need for Guidance <ul style="list-style-type: none"> Changing conditions of home, society, population, labour and industry, leisure time Changing religion and moral values Individual needs 	
	1.3	Principles and Basic Assumptions in Guidance Types of Guidance <ul style="list-style-type: none"> Educational Guidance: Concept, needs and Characteristics Vocational guidance :Concept, needs and Characteristics 	
	1.4	<ul style="list-style-type: none"> Personal Guidance: Concept, needs, and Characteristics Individual and Group Guidance: <ul style="list-style-type: none"> Purpose and Program Techniques of Group Guidance: Panel Discussion, Seminar, Exhibition, Career talk, Career Conference etc. 	
2	2.1	Organizational Patterns for Guidance Services <ul style="list-style-type: none"> Organization of Guidance program: Need, Nature and Objectives Principles of Organization Responsibilities of guidance Personnel 	1
	2.2	Organizing Basic Guidance Services <ul style="list-style-type: none"> Orientation/ Induction Service Individual Inventory service Information Service Counseling Service Placement Service Follow-up Service Evaluation of Guidance Services: Need, Criteria and techniques of evaluation	
	2.3	Administration of Guidance Services <ul style="list-style-type: none"> Administrative relationship Planning and Executing Guidance Service Establishment of Guidance Centre <ul style="list-style-type: none"> Need Objectives 	

		<ul style="list-style-type: none"> Infrastructure Guidance services Modes of functioning 									
	2.4	Status of Guidance Services Globe Over <ul style="list-style-type: none"> Scenario Building Face to Face and On line guidance service Institutions providing various Guidance Services <ul style="list-style-type: none"> Government NGO Private Web services 									
3	3.1	Counseling: <ul style="list-style-type: none"> Concept and Nature, Principles of counseling. Counseling Process 	1								
	3.2	Counseling approaches: <ul style="list-style-type: none"> Directive, Nondirective and Eclectic 									
	3.3	Types of Counseling: <ul style="list-style-type: none"> Group counseling vs. individual counseling. Counseling for adjustment 									
	3.4	Characteristics: <ul style="list-style-type: none"> Characteristics of good counseling. 									
4	4.1	Counseling Process: <ul style="list-style-type: none"> Preparation for Counseling Counseling skills Factors affecting Counseling process. Case study and Case conference: Purpose, Plan, Procedures, and Precautions 	1								
	4.2	Group Counseling: <ul style="list-style-type: none"> Introduction and assumptions in group Counseling The process of group Counseling Values of group Counseling Limitations of group Counseling 									
	4.3	Preparation and Training for Counseling <ul style="list-style-type: none"> Academic preparation Qualities of a good Counselor Professional Ethics for Counselor 									
	4.4	Problems and Issues <ul style="list-style-type: none"> Organization and Administration of Guidance and Services Guidance services for Special Groups Changing roles of functionaries 									
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
4	0	5	5	5	15	30	70	0	70	70	

REFERENCE BOOKS:

- 1 Super, D., (1990) In Gothard, B., Mignot, P., Offer, M., & Ruff, M. (2001) Careers Guidance in Context, London: Sage
- 2 Watts, A.G., (1994) Lifelong Career Development, Towards a National Strategy for Careers Education and Guidance, CRAC Occasional Paper, Cambridge: CRAC
- 3 Agrawal, R., (2006) Educational, Vocational Guidance and Counselling, New Delhi, Sipra Publication
- 4 Bhatnagar, A AND Gupta, N., (1999). Guidance and Counselling: A theoretical Approach (Ed), New Delhi, Vikas Publishing house
- 5 Jones, A.J., (1951). Principles of Guidance and Pupil Personnel work, New York, McGrawHill
- 6 Kochhar, S.K., (1985): Educational and Vocational Guidance in Secondary Schools, New Delhi, Strling Publisher NCERT (2008). Introduction to Guidance, Module -1, DEPF, New Delhi
- 7 Chauhan, S.S., (1978) Principles and techniques of guidance New Delhi, Vikas publishing House.
- 8 Meyers, G.E., (1941) Principles and techniques of vocational guidance, New York: McGrawHill.
- 9 Sharma, Ram Nath & Sharma Rachana, (2004). Guidance and counseling in India. New Delhi: Atlantic Publishers and tributors.
- 10 Sharma, Shashi Prabha (2004). Career Guidance and counselling. New Delhi: Kanishka Publishers, Distributors.
- 11 દ સાઇક જી. (૧૯૮૧) શિક્ષણિક અને વ્યાવસાયિક માર્ગદર્શન પ્રવાહમાં, યુનિવર્સિટી ઓફ ગુજરાત, અમદાવાદ
- 12 પટેલ ચંસ. અમ. (૧૯૮૧) સલાહ મનાવવાનું, યુનિવર્સિટી ઓફ ગુજરાત, અમદાવાદ
- 13 પરાખજ.સા. (૧૯૮૨) માર્ગદર્શન વ્યવહાર મમાસા, અનડા પ્રકાશન, અમદાવાદ



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-VI</p> <p style="text-align: center;">Paper No: 1612120</p> <p style="text-align: center;">Optional</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Curriculum Development</p>
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Objective of the course:

- 1 Explain meaning of curriculum
- 2 Explain Meaning of Curriculum development
- 3 Describe determinants of curriculum.
Discuss principles of curriculum Development.
- 4 Differentiate steps of curriculum as envisaged by various authors.
- 5 Critically comment on various issues of curriculum development
- 6 Discriminate between formative & summative evaluation

Unit	Sub Unit	Content	Credit
1		<u>Concept of curriculum Development</u>	1
	1.1	Meaning of curriculum (Course , syllabus, curriculum)	
	1.2	Determinants of Curriculum <ol style="list-style-type: none"> 1. Objectives & Philosophy Of Education 2. Society & Culture 3. Psychology Of Learning 4. Function Of Schools 5. Learner And Knowledge. 6. Impact Of Science & Technology 	
	1.3	Meaning of Curriculum Development –relationship of various aspect of curriculum like objectives, content, methods, learning, experiences and evaluation.	
	1.4	Principles of curriculum development <ol style="list-style-type: none"> 1. Activity Principle 2. Forward looking principle 3. Society centered curriculum 4. Principles of integration 5. Creative principle 	
2		<u>Steps of curriculum development</u>	1
	2.1	Situation Analysis	
	2.2	Diagnosis of needs	
	2.3	Formulation of objectives	
	2.4	Selection & organization of content	
	2.5	Selection & organization of learning experiences	
	2.6	Evaluation	
	2.7	Various models suggested by Hilda Taba, Nicholls & Nicholls, Tyler wiles and Bondi.	
3		<u>Curriculum Evaluation</u>	1
	3.1	Concept and need of Curriculum Evaluation	
	3.2	Formative Evaluation	

	3.3	Summative Evaluation									
	3.4	Collection of data on which evaluation is based – collective evidences from various stake holders									
	3.5	Feedback mechanism for curriculum evaluation									
	3.6	Ways to improve curriculum based on evaluation.									
4		<u>Issues in curriculum Development</u>	1								
	4.1	Centralised vs. decentralised curriculum, Local vs. Global									
	4.2	(1) Diversity in culture (2) Teacher and their competence?									
	4.3	Who should design curriculum schools, university, government or other bodies like NCERT, SCERT, UGC									
	4.4	Issues of Transaction curriculum (1) explosion of knowledge, (2) Advance of science & technology. (3) Impact of various documentation on curriculum like NPE1986, NCF (2000) NCF 2005, NCFTE (2009)									
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	4	0	5	5	5	15	30	70	0	70	

REFERENCE BOOKS:

- 1 Aggrawal, J.C. & Gupta S. (2000). Curriculum Development: New Delhi :Shipra Pub.
- 2 Arora, G.L. (1984). Reflection in curriculum, New Delhi, NCERT.
- 3 Caswell, H.L. and Campbell, D.S. (1935). Curriculum Development, N.Y. : Americal Book Co.
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- 12 Taba Hilda (1962). Curriculum Development: Theory and practice. N.Y. Harcourt, Brace & world Inc.
- 13 Tyler, R.M. (1950). Basic principles of Curriculum Development. Chicago: University of Chicago press.
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- 16 દેસાઈડી.બી. અનેદેખતાવાલા,પી.બી. (૧૯૮૫)
અભ્યાસક્રમનાસિદ્ધાંતોઅનેઅભ્યાસક્રમસંરચનાઅમદાવાદ:યુનિવર્સિટીગ્રંથનિર્માણબોર્ડ.



Indian Institute of Teacher Education, Gujarat.

<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-VI</p> <p style="text-align: center;">Paper No: 1612130</p> <p style="text-align: center;">Optional</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Education Statistics</p>
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Objective of the course:

- 1 Explain meaning of Education Statistics
- 2 Explain Meaning of Inferential and descriptive aspects Education Statistics
- 3 Describe determinants of data and data analysis
Discuss principles computing
- 4 Differentiate steps of analyzing data and interpretations
- 5 Computing measures and its relation to deciding about inferential statistics
- 6 Understanding role of educational statistics in educational research

Unit	Sub Unit	Content	Credit
1		Statistics in Education	1
	1.1	Meaning, Scope, Need and Significance of Educational Statistics; Application of Educational Statistics in Edu. Research; Measures; Scales (Nominal, Ordinal, Interval, Ratio)	
	1.2	Classification, Tabulation and Graphical presentation of Data; Measures of Central Tendency and Variability (Merits, demerits, uses and computations) <ul style="list-style-type: none"> • Measures of central tendency • Measures of variability: 	
	1.3	Norms and Probability	
	1.4	Normal probability curve, skewness, kurtosis	
2		Correlation, Regression & Statistical inference	1
	2.1	Correlation: Meaning, Calculating and Interpreting Coefficient of Correlation	
	2.2	Regression: Meaning, Regression line and equation, Prediction, Standards error, etc.	
	2.3	Significance of mean, Standard error, etc.	
	2.4	α error and β error, Significance of mean difference, etc.	
3		Inferential Statistics	1
	3.1	ANOVA and ANCOVA; Analysis of variance (One-way, Two-way, Three-way), and Analysis of Co-variance and Factorial Design (No Computation) Its Uses (ANOVA and ANCOVA)	
	3.2	Special Methods of Correlation; Bi-serial correlation, Point Bi serial Correlation, etc.	
	3.3	Point bi-serial correlation, Tetra choric, Phi-Correlation	
	3.4	Contingency coefficient C. & Partial and Multiple Correlation	
4		Testing of null hypothesis and non-parametric methods	1
	4.1	Testing of null hypothesis by chi-square test •	
	4.2	Non parametric methods <ul style="list-style-type: none"> • Meaning & scope • Candal's T-test • Candal's W-test • Mann-whitney U-test • Wilcoxon Testing • Use of parametric and non-parametric methods 	
	4.3	Reliability: Meaning, Methods, Calculations of split half, length of test and reliability methods of rational equivalent.	

		Validity: Meaning, Methods, Calculations, length of test of validity. • Scaling of test : T scaling & Stanine scores									
	4.4	Scaling of Judgments and their types <ul style="list-style-type: none"> • Item analysis: Difficulty index, Discrimination index • Item objective congruence (IOC) in CRT Factor Analysis <ul style="list-style-type: none"> • Meaning, scope, basic equations • Use of factor analysis • Types and Identification of factors • Different methods of F.A. • Use of statistical software in data analysis 									
Assessment & Evaluation	Credit		Internal				External				
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			Total O/o 70
								Theory	Practical	Total	
4	0	5	5	5	15	30	70	0	70	70	

REFERENCE BOOKS:

Sr.	Title
1	Blommers, Paul and Lindquist (1965). Elements Statistical Methods, University of London press ltd.
2	Dowine N. M., R.W. Heath (1965). Basic Statistical Methods, New York: Harper & Row.
3	Edwards, A. L. (1963). Statistical Methods of Behavioural Science, New York: Hall, Rinherth and Winston.
4	Garrett, H. E. (1961). Statistics in Psychology and Education, Bombay: Allied Pacific Pvt. Ltd.
5	Guilford J.P. (1965). Fundamental Statistics in Psychology and Education, New York: McGraw Hill Co. Inch.
6	Lindquest, E. F. (1968). Statistical Analysis in Educational Research, Oxford and IBH Publication Co.
7	Patel R. S. (2011). Statistical Methods for Eudcational Research, (1st Ed.) Ahmedabad; Jay Publication
8	N.J. Castdlan (1988). Non Parametric Statistic, New York: McGraw Hill Book Company.



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M.Sc.,M.Ed. Semester-VI Paper No: 1612200 Compulsory	Subject: Education Credit: 2 : Title of the paper: Presentation of Teaching Learning Material
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Objective of the course:

- 1 **To review teaching learning material.**
- 2 **To understand teaching learning material.**
- 3 **To presentation of teaching learning material.**

Unit	Sub Unit	Content	Credit								
1		<ul style="list-style-type: none"> Presentation of Teaching Learning Material Understanding Teaching Learning Material. Selecting appropriate Teaching Learning Material. Presentation of Teaching Learning Material. 	2								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	0	2	10	10	10	20	50	0	0	0	

REFERENCE BOOKS:

- Becoming Better Teacher Microteaching Approach, Developed at the Centre of Advanced Study in Education, the M.S. University of Baroda, Baroda
- Practice Teaching: A Reflective Approach, Jack C. Richards, Thomas S. C. Farrell, Cambridge University Press, 14-Mar-2011 - Foreign Language Study
- Approaches and Methods in Language Teaching, Jack C. Richards, Theodore S. Rodgers, Cambridge University Press, 16-Apr-2014 - Foreign Language Study - 410 pages
- The Practice of Teaching, Philip Wesley Jackson, Teachers College Press, 1986 - Education - 159 pages
- A Guide to Teaching Practice: 5th Edition, By Louis Cohen, Lawrence Manion, Keith Morrison, Dominic Wyse
- Ernest stringer(1999)action research in education
- Jean,Mc niff, action research: principals and practice



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<p style="text-align: center;">M.Sc.,M.Ed.</p> <p style="text-align: center;">Semester-VI</p> <p style="text-align: center;">Paper No: 1612300</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 6</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Internship</p>
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Objective of the course:

- 1 To understand educational system through personal experience.**
- 2 To develop the habit of observation and to relate it to knowledge.**

Unit	Sub Unit	Content	Credit								
1		Internship in Teacher education institutions	2								
Assessment & Evaluation	Credit		Internal					External			Total O/o 70
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	0	6	10	10	10	20	50	0	0	0	

REFERENCE BOOKS:

- Becoming Better Teacher Microteaching Approach, Developed at the Centre of Advanced Study in Education, the M.S. University of Baroda, Baroda
- Practice Teaching: A Reflective Approach, Jack C. Richards, Thomas S. C. Farrell, Cambridge University Press, 14-Mar-2011 - Foreign Language Study
- Approaches and Methods in Language Teaching, Jack C. Richards, Theodore S. Rodgers, Cambridge University Press, 16-Apr-2014 - Foreign Language Study - 410 pages
- The Practice of Teaching, Philip Wesley Jackson, Teachers College Press, 1986 - Education - 159 pages
- A Guide to Teaching Practice: 5th Edition, By Louis Cohen, Lawrence Manion, Keith Morrison, Dominic Wyse
- Ernest stringer(1999)action research in education
- Jean,Mc niff, action research: principals and practice



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<p>M.Sc.,M.Ed.</p> <p>Semester-VI</p> <p>Paper No: 1612400</p> <p>Compulsory</p>	<p style="text-align: center;">Subject: Education Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Dissertation in education</p>
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Objective of the course:

- 1 To understand educational research through personal experience.
- 2 To develop the habit of conducting research at smaller scale and to relate it to knowledge and wisdom.

Unit	Sub Unit	Content	Credit								
		<ul style="list-style-type: none"> Data collection and carrying out Designed research 	4								
		<ul style="list-style-type: none"> Summarizing and analyzing data 									
		<ul style="list-style-type: none"> Writing research report 									
Assessment & Evaluation	Credit		Internal					External			Total O/o 150
	Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
								Theory	Practical	Total	
	0	2	10	10	10	20	50	0	0	0	
									0		

REFERENCE BOOKS:

- Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 3rd Edition, Jul 15, 2008, by John W. Creswell, SAGE Publications, Inc.
- Research Methodology: Methods and Techniques Paperback – Abridged, by C R Kothari & Gaurav Garg , New Age Publication
- Research Methodology Paperback – Abridged, Audiobook, by Panneerselvam R (Author) , PHI Publication
- Research Methods Paperback – Import, 1 Jan 2001, by Ram Ahuja (Author) , Rawat Publication
- Research Methodology Paperback – 2004, by Manoj Sharma (Author) , Anmol Publisher
- Practical Approach to Research Methodology Paperback – 2005 by S. P. Verma (Author) , Akansha Publishing
- Research Methodology: A Guide for Researchers in Management and Social Sciences Paperback – 2006, by Taylor, Sinha, Ghoshal, (Author), Prentice Hall India Learning Private Limited; 1st Edition edition (2006)
- SPSS in Simple Steps Paperback – 2011, by Kiran Pandya (Author), Smruti Bulsari (Author), Sanjay Sinha (Author), Dreamtech Press (2011)
- Using SPSS In Research Paperback – 2016, by Dr. Radha Mohan (Author), Neelkamal Publications



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-VI</p> <p style="text-align: center;">Paper No:2612302</p> <p style="text-align: center;">Compulsory</p>	<p style="text-align: center;">Subject: Chemistry Credit: 4</p> <p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Disconnection Approach</p>
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Objective of the course:

- To get familiarize with the concept of Disconnection Approach in synthetic chemistry
- To understand Mechanism of disconnections
- To carry out Disconnections based on Name Reactions

Unit	Sub Unit	Content	Credit									
1		Introduction and definition of disconnection: various terminology used in disconnection. One and two group disconnection, disconnection and synthesis of alcohols, olefins, simple ketones, acids and its derivatives, disconnections in 1,3-dioxygenated skeletons, preparation of α -hydroxy carbonyl compounds, unsaturated carbonyl compounds, 1,3-diacarbonyls, 1,5-diacarbonyls and use of Mannich reaction.	1									
2		Illogical Two group disconnection: Disconnection and synthesis of hydroxy carbonyl compounds, 1,2-diols, 1,4 and 1,6-diacarbonyl compounds. Protecting groups. Protection of organic functional groups, protecting reagents and removal of protecting groups.	1									
3		Disconnections based on Diels-Alder reaction and its use in organic synthesis: Pericyclic reactions, Synthesis of small ring compounds, Special method for small rings preparations, synthesis of 3 and 4 membered ring compounds. Use of ketenes in organic synthesis, Radical reactions in organic synthesis	1									
4		Tutorial: To carry out disconnections of various drug molecules	1									
Assessment & Evaluation		Credit	Internal					External			70	
		Theory	Practical	Assignment	Project	Seminar	Test	Total	Sem. End Exam			
		3	1	5	5	5	15	30	70	30		100

REFERENCE BOOKS:

- **Designing Organic Synthesis – A Programmed Introduction to the Synthons Approach, Stuart Warren, John Wiley & Sons (1994)**
- **Organic Synthesis: The disconnection approach, Stuart Warren, John Wiley & Sons (1994)**
- **Selected Organic Synthesis, Ian Fleming, John Wiley & Sons (1977)**



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<p style="text-align: center;">M.Sc.M.Ed.</p> <p style="text-align: center;">Semester-VI</p> <p style="text-align: center;">Paper No: 2612412</p> <p style="text-align: center;">Elective</p>	<p style="text-align: center;">Subject: Chemistry</p>	<p style="text-align: right;">Credit: 4</p>
<p style="text-align: center;">: Title of the paper:</p> <p style="text-align: center;">Synthetic Drugs</p>		

Objective of the course:

- To get knowledge of history of drug
- To be able to understand Classification of drugs
- To be able to describe mode of action of drugs
- To know synthesis of important drugs e.g. Antibiotics drugs, Cardiovascular Drugs Antineoplastic drugs etc.

Unit	Sub Unit	Content	Credit									
1		Antibiotics: General Introduction, Chemical Classification, Beta-lactam antibiotics, Penicillins, Cephalosporins, Beta-lactamase inhibitors, Amino glycosides, Tetracyclines, Chloramphenicol, Quinolone antibacterials	1									
2		Cardiovascular Drugs: Anti-anginal and Vasodilators, Antihypertensive drugs, Anti-arrhythmic drugs, Anti-cholesterolemic agents, Anti-thyroid drugs.	1									
3		Antineoplastic Agents: Classification, synthesis and drug profile Psychoactive Drugs: Anti-anxiety agents, Anti-psychotics, Anti-depressants, Psychotomimetic drugs.	1									
4		Practical: Synthesis of some drugs and drug intermediates	1									
Assessment & Evaluation		Credit	Internal	External			Total O/o 70					
		Theory	Practical	Assignment	Project	Seminar		Test	Total	Sem. End Exam		
		3	1	5	5	5		15	30	70	30	100

REFERENCE BOOKS:

- Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 11th Edition by John H. Block & John M. Beale, Published by Lippincott Williams & Wilkins (2004)
- Principles of Medicinal Chemistry, 4th Edition by William O-Foye, Thomas L. Lemke and David A. Williams, Published in India by B. I. Waverly Pvt. Ltd. New Delhi (1995)
- Essential of Medicinal Chemistry, 2nd Edition by Andrejus Korolkovas Published by Wiley-India Edition (1988)
- Instant Notes: Medicinal Chemistry, Edited by Graham L. Patric Published by Viva Books Private Ltd. (2002)
- Textbook of Medicinal Chemistry, Vol. I & II by V. Alagarsamy, Published by Elsevier (2010)
- Medicinal Chemistry, 3rd Edition by Ashutosh Kar, Published by New age international (P) Limited, Publishers (2005)
- Medicinal Chemistry, Edited by Alfred Burger, Published by Interscience Publishers, John Wiley & Sons, New York (1951)
- Burger's Medicinal Chemistry and Drug Discovery, Vol. 3: Therapeutic agents, Edited by Manfred E. Wolff Published by Inter science Publishers, John Wiley & Sons, New York (1996)
- Burger's Medicinal Chemistry, 4th Edition: Part III, Edited By Manfred E. Wolff, Published by Inter science Publishers, John Wiley & Sons, New York (1981)
- The organic chemistry of drug design and drug action, 2nd Edition (2003), Edited By Richard B. Silverman