



1.3.3.2 Percentage of Students undertaking project work / field work

A. Project work of BCA

Year	Admission	Project	Percentage
2015-16	45	45	100%
2016-17	57	57	100%
2017-18	31	31	100%
2018-19	46	44	95.65%
2019-20	43	35	81.39%

1.

Project Topics List 2019-20

B. Project work of M.Sc. (Chemistry)

Year	Admission	Project	Percentage
2015-16	09	09	100%
2016-17	11	11	100%
2017-18	15	14	93.33%
2018-19	19	18	94.73%
2019-20	17	17	100%

1.

Project Topics and Name List 2019-20

Shankarlal Khandelwal Arts, Science and Commerce College, Akola

Experiential Learning

Our college runs UG programme in BCA and in this programme for Sem VI project work is there which gives first-hand experience to students and experiential learning in compute application. In this project work student carry out research on the vital aspects in computer. This project work is part of the curriculum of BCA under Sant Gadge Baba University Amravati.

6SP3: LAB III-Project work with Report.

The distribution of marks in Practical examination is given as:

(1) Project Work with Report 30 marks.

(2) Viva-Voce 20 marks.

----- 50 marks. -----




Anjali laumarch

PROJECT TOPICS

BCA – III (Sem VI)

Year- 2019-2020

Sr. no.	Group	Candidate Name	Project Topic	Guide Name
1)	Group – A1	i) Amey Gangakhedkar	E-Crime	Rasika Bawane
		ii) Sagar Phadnis		
2)	Group – A2	i) Umesh Nalinde	Mineral Water Plant	Smita Dhanokar
		ii) (Pavan Sadar)		
3)	Group – A3	i) Pallavi Ghogare	Study Forum	Smita Dhanokar
4)	Group – A4	i) Pallavi Deshpande	Hostel Management System	Rasika Bawane
		ii) Megha Kadam		
		iii) Shubhangi Purandare		
5)	Group – B1	i) Ankita Khedkar	Farmer's Buddy	Rasika Bawane
		ii) Priya Khedkar		
6)	Group – B2	i) Rushikesh Bawankar	Online Aptitude Test	Smita Dhanokar
		ii) Saurabh Maske		
		iii) Shubham Rajput		
7)	Group – B3	i) Aishwarya Deshmukh	E-Library	Smita Dhanokar
		ii) Dipali Khumkar		
8)	Group – B4	i) Vishal Kharode	Dental Care System	Rasika Bawane 
		ii) Avinash Kalmegh		
		iii) Kunal Kalpande		

9)	Group – c1	i)Aishwarya Dayma	Banking System	Chetan Waghodkar
10)	Group – c2	i)Pooja Sharma	Inventory System	Rasika Bawane
		ii)Manasi Pasari		
		iii)Sachi Tayade		
11)	Group – c3	i)Bhushan Ghule	ATM	Chetan Waghodkar
		ii)Shivam Nandane		
		iii)Mahesh Pund		
12)	Group – c4	i)Atharva Deshmukh	News Website	Chetan Waghodkar
		ii)Shailesh Sharma		
		iii)Kuldeep Gawande		
13)	Group – D1	i)Nachiket Tekade	Clean City	Smita Dhanokar
		ii)Harish Nahate		
		iii)Mahesh Wankhade		
14)	Group – D2	i)Rushikesh Warankar	Property Broker	Chetan Waghodkar
		ii)Abhishek Warankar		
		iii)Rishabh Mishra		
15)	Group – D3	i)Kalyani Deshpande	Internal Marks Assesment	Smita Dhanokar

Total = 35

**Note: - Allotted Project Topics and Project Guide will not be change on any
Circumstances.**

Smita Dhanokar

Ghule



B. Projects work of M.Sc. (Chemistry)

Year	Admission	Project	Percentage
2015-16	09	09	100%
2016-17	11	11	100%
2017-18	15	14	93.33%
2018-19	19	18	94.73%
2019-20	17	17	100%

Experiential Learning

1. Project Topics and Name List 2019-20

Shankarlal Khandelwal Arts, Science and Commerce College, Akola

Experiential Learning

Our college runs PG programme in M. Sc Chemistry and in this programme project work is there for Sem IV. The project gives firsthand experience to students and experiential learning in chemistry. In this project work student carry out research on the vital aspects in chemistry such as phytochemical analysis, antioxidant activity, organic synthesis, heavy metal analysis and water analysis. The project is a part of the curriculum of M.Sc. Chemistry as per Sant Gadge Baba Amravati University Amravati syllabus for M.Sc. Chemistry.

M.Sc. (Chemistry)

Semester-IV

Practical-VIII - Project Work

Time : 9 Hrs. Per Week

Marks : 100

The Students will develop utilities such as analytical spectra, simulation programmes that will supplant laboratory exercises in their subject of specialization. For this, variety of small research project designed by the teacher based on the interest of the student and capabilities should be worked out.

**SHANKARLAL KHANDELWAL ARTS SCIENCE AND COMMERCE
COLLEGE AKOLA**

Department of Chemistry

Session: - 2019-2020

MSc II year Project supervision under Dr Vivek D Mane

Sr. No.	Name of the Students	Topic of the Project
1	Sagar Kokate	Heavy metals analysis and antioxidant property present in water hyacinth of Morna river in Akola city.
2	Shetal Ingale	Determination of heavy metals contamination in some vegetable sample from the market of akola, Maharashtra.
3	Pooja Alot	Preparation of natural hair oil form natural ingredients
4	Warsha Sabale	Analysis of heavy metals present in milk and milk product
5	Ashvini Tathod	Determination of heavy metals contimanation in some vegetables samples from the market of Akola , Maharashtra state


Dr V D Mane

Supervisor


Dr P S Pande

Head
Department of Chemistry
Shankarlal Khandelwal College
Akola.

Total - (5)

Shankarlal Khandelwal Arts, Science and Commerce College, Akola

Department of chemistry

RESEARCH GUIDANCE FOR P. G. DISSERTATION: 2019-20

Dr. P.S. Pande

Sr. No.	Name of the student	Title of the P. G. Dissertation	Year
1.	Rutuja Khedkar	Estimation of Antioxidant activity of medicinal plant Abrus precatorius	2019-20
2.	Srihari Dhok	Cymbopogon Martinii: good source of antioxidant activity	2019-20
3.	Bharti Lasurkar	Antioxidant activity of leaf extract of Glycyrrhiza Glabra	2019-20
4.	Ankita Atkurwar	Antioxidant activity of leaf extract of Hemidesmus indicus	2019-20
5.	Sharmin Pathan	Andrographis paniulata : A good source of antioxidant activity	2019-20
6.	Sonal Gavankar	Antioxidant activity of leaf extract of Iphigenia stalluta	2019-20



Dr. P. S. Pande

Supervisor

and Head Department of Chemistry

Head

Department of Chemistry
Shankarlal Khandelwal College
Akola.

Shankarlal Khandelwal Arts, Science and Commerce College, Akola

Department of chemistry

RESEARCH GUIDANCE FOR P. G. DISSERTATION: 2019-20

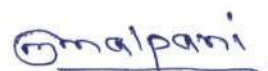
BY Dr. M. O. MALPANI

Sr. No.	Name of the student	Title of the P. G. Dissertation	Year
1.	Rohini Karode	Analysis of heavy metals in <i>Coriander</i> leaves locally collected from Akola region	2019-20
2.	Sadanand Pargharmor	Analysis of heavy metals from <i>Fenugreek</i> samples collected Locally from Akola region.	2019-20
3.	Ashvini Khumkar	Extraction and isolation of Flavonoids from the leaves of <i>Tagetes patula</i> plant.	2019-20
4.	Reshma Phate	Extraction, isolation and antioxidant activity of flavonoids from the leaves of <i>Carica papaya</i> plant	2019-20
5.	Kanchan Chandangole	Extraction, isolation and antioxidant activity of flavonoids from the leaves of <i>Hibiscus rosasinensis</i> plant	2019-20
6.	Pranita Patil	Analysis of heavy metals in <i>Spinach</i> locally collected from Akola region.	2019-20



Dr. P. S. Pande

Head Department of Chemistry
Head
Department of Chemistry
Shankarlal Khandelwal College
Akola.

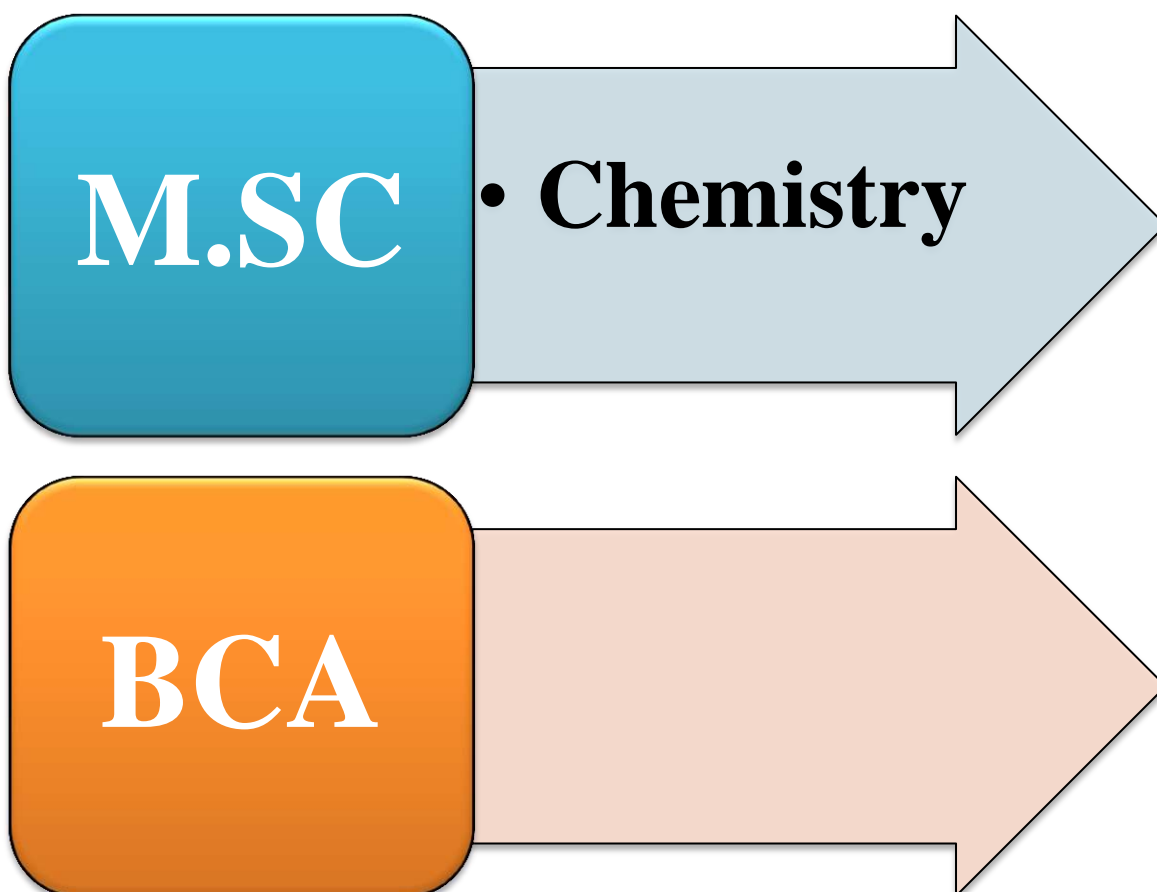


Dr. M. O. Malpani

Guide for P. G. Dissertation



Syllabus of Courses with Experiential Learning



M.Sc.
Sem-I to IV (Chemistry)

Prospectus No. 2015125

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शास्त्र विद्यापीठ
(FACULTY OF SCIENCE)

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शास्त्र विद्यापीठ (शास्त्र विद्यापीठ)
पत्रिका-1 ते पत्रिका-4

PROSPECTUS
OF
MASTER OF SCIENCE EXAMINATION
IN
CHEMISTRY
Semester -I & III, Winter 2014,
Semester -II & IV, Summer 2015,



2014

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- 3) McCabe and Smith, Unit operations of Chemical Engineering, McGrawHill.
- 4) Budger and Banchero, Introduction to Chemical Engineering McGraw Hill. McGraw Hill.
- 5) Text Book of Industrial Chemistry Pragti Agencies Pune 2
- 6) Engineering Chemistry By Dr. S. S. Dara.
- 7) Catalysis in theory and practices, Ridder E. K. and Taylor H. S.
- 8) Phase transfer catalysis, Principles and techniques, Starles C.
- 9) Surface Chemistry by J. J. Biker mann, Academic Press.
- 10) Physical Chemistry of Surfaces, A. W. Aclamson.
- 11) Material science, O. P. Khanna, Khanna Publishers, Delhi

Semester III

Paper XII

Sp.Paper-II

Industrial Chemistry (Processes Economics And Industrial Management)

60hrs (4hrs/week). 12hrs/unit

50 Marks

Unit-I : Manufacture of Heavy Chemicals 12L

Chemical processes for the manufacture of Heavy chemicals like- soda ash, bicarbonates, chlorine, caustic soda, bleaching power, calcium carbides and acids like H_2SO_4 , HCl, HNO_3 , H_3PO_4 .

Unit-II : 12L

- A) Industrial Gases: Heavy chemicals and production of gases. Chemistry, manufacture, storage, hazards & uses.- Hydrogen, Oxygen, nitrogen, carbon dioxide, chlorine, fluorine, SO_2 , phosgene, acetylene, argon, neon & helium.
- B) Fertilizers: Fertilizer industries in India, Manufacture of Ammonium salts, Urea, nitrates, Ammonia, Nitrogenous fertilizers, phosphatic fertilizers, superphosphates, complex fertilizers, nitrogen fixation.

Unit-III: 12L

- A) Cement: Types of cement, manufacture- processes, and setting of cements.
- B) Glass: Types, their composition & properties, manufacture of glass fitness, optical glass, coloured glasses, lead glass and neutron absorbing glass.
- C) Ceramics: Introduction, types, manufacturing process, applications & refractories.

Unit-IV : Chemical Process Economics 12L

Factors involved in project cost, estimation methods employed for the estimation of capital investment.

Methods of determining depreciation.

Competitive & monopoly markets, some aspects of marketing profitability criterion.

Economics of selecting alternatives.

Break even point, production scheduling

Unit-V: A) Industrial Management 12L

Concept of scientific management in industry.

Functions of management : Decision making, planning, organizing, Material management, Inventory control, Information system & decision making.

B) Safety :

General occupational safety, flammable materials, Handling, fuel fighting equipments, control measures for Toxic chemicals. Safety with chemical engineering operations, hazardous chemicals process. Safety in Laboratories and pilot plant. Safety in transportation & storage of chemicals, management of safety & loss prevention.

List of Books-

1. Charles E. Dryden, Outline of Chemical Technology Edited by M. Gopal Rao and Marshall Siting, East West Press 2nd Edition 1973.
2. Manual of Chemical Technology VOL I & II by Venketesharull Educational Development Center. IIT Madras, 1977.
3. Chemical Process Industries by R. N. Shreves and M. J. A. Brink. McGraw Hill Ltd. 4th Edition 1977.
4. Economics of chemical industry, Hempel E. M.
5. Industrial organization and management, Bethal L. L.

Semester III

Paper XI

Analytical Chemistry

(Advance Separation Techniques)

Total Lectures: 60Hrs, 4Hrsper week, 12Hrs/unit Total Marks-80

Unit-I : 12L

Separation Methods: – Filtration, precipitation, distillation, molecular seive, dialysis, Reverse osmosis, Ring oven methods, relative merit & demerit. Purification Techniques (Solid organic compounds, liquids etc.) Criteria of purity. Theory of chromatography, Classification, principles of chromatography, Van Deemeters Equation, Plate theory, significance of E, D_v, D_w . Techniques of

chromatographic separation gradient, isocratic, selective specific separation, types of chromatographic methods

Unit-II : **12L**

Gas Chromatography:-

Introduction to different types of gas chromatography, How does it differ from liquid chromatography. Principles of gas chromatography, plate theory of gas chromatography, Instrumentation for gas chromatography, working gas chromatography, application of gas chromatography, programmed temperature chromatography, flow programming chromatography, gas-solid chromatography, Columns for Gas Chromatography, choice of columns, polarity indices, Gas chromatography and Chirality.

Ion chromatography –Principal, structure and characteristics of resins, eluent, suppressor columns and detectors used in ion chromatography, analytical applications, environmental speciation by ion chromatography and applications. Hyphenated techniques in Chromatography.

Unit-III : **12L**

Gel Filtration:-

Introduction, types of gels, techniques used in equilibrium studies, estimating size parameters, molecular wt. determinations separating plant aspects.

Electrophoresis-Theory and classification, factors affecting mobility, macromolecular size and charge interactions with supporting electrolyte, pH and concentration discontinuities, Factors affecting electrophoresis phenomena-electrolysis, electrosomosis, temperature and supporting media. Instrumentation, methodology, Preparation of gel staining and destaining, preparative zone electrophoresis, continuous electrophoresis and Applications.

Capillary Electrophoresis-Principle, theory, instrumentation, sample preparation and applications, Capillary electrochromatography and Miscellar electrokinetic capillary chromatography

Unit-IV : **12L**

Membrane-Based Methods:-Dialysis-working of techniques, membranes, general consideration of diffusion, Donnan Membrane equilibrium and Applications.

Electrodialysis- working of techniques, membranes, Electrodialysis cells and Applications.

Ultrafiltration- working of techniques, membranes, non-gelatinous membranes and Applications. Dialysis compared with other membrane-separation methods.

Other Separation Methods:-Ultracentrifugation-Principle, sedimentation constant, sedimentation equilibrium, sedimentation velocity, methodology and applications.

Zone refining- Principle, zone leveling and applications

Unit-V : **12L**

Kinetic Methods of analysis-

Theoretical basis of kinetic methods of analysis, Rates of chemical reactions, rate laws, first order, second order kinetics, pseudo first order and second order reactions, factors affecting rate of reaction, methods of determining amount of the substance (tangent method) fix time and concentration method, addition method, oxidation reactions of H₂O₂ (thiosulphate, iodide, unimol), enzyme catalyzed reaction, inhibition and activation. Types of kinetic methods, differential and integral, applications.

Books Suggested :

1. Basic Concept in Analytical chemistry, by S.M. Khopkar.
2. Day & Underwood: Quantitative Analysis.
3. A. I. Vogel A Text book of Quantitative inorganic Chemistry, ELBS, London.
4. Analytical Chemistry, D.C. Das, PHI Learning Pvt. Ltd, New Delhi
5. Chromatography. By E Heftman, 5th edition, part-A and part-B, Elsewhere Science Publisher, 1992
6. S. Wilson & P. Jones: Chemical Analysis Vol I
7. Chromatography Today. By C F Poole and S K Poole, Elsewhere Science Publisher, 1991.
8. H.H. Willard, L.L. Merritt and J.A. Dean: Instrumental Methods of Analysis (Van Nostrand).
9. B. L. Krayner, H. H. Willard. L. Merritt, J. A. Dean & F. A. Settle: Instrumental Methods of Analysis (CBS Publishers, Delhi, 1986)
10. Analytical Chemistry. By G D Christian 4th edition, John Wiley and Sons, 1986. L. R. Snyder & C. H. Harvath: An Introduction to Separation Science (Wiley Interscience)
12. F. J. Wicher Robert: Standard Methods Chemical Analysis.
13. G. L. Davis Krupadanam, D. Vijaya Prasad, K. Varaprasad Rao, KLN Reddy, C. Sudhakar, Analytical chemistry.
14. R. D. Budhiraja Separation Chemistry, New Age.
15. R.L. Peesok and L.D. Shield: Modern Methods of Chemical Analysis.

B.C.A..Part-I,II & III
(Sem-I to VI)

Prospectus No. 20131221

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विज्ञान विद्याशाखा
(FACULTY OF SCIENCE)

PROSPECTUS
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Choices in tuning queries and views, DBMS Benchmarking, Security.

Unit-II : Concurrency control transactions and schedule, Serializability, Lock based concurrency control lock management, specialized locking techniques, control without locking.

Crash Recovery, Introduction to crash recovery, Log, Check pointing, Recovery from a system crash.

Unit-III : Parallel and distributed databases. Architectures for parallel databases, Parallel query Evaluation and optimization, Parallelizing individual operations, Introduction to distributed databases, Architecture, Fragmentation and Replication, Catalog management, Distributed Query processing, updating distributed data, Distributed transaction management, Distributed Concurrency control, Distributed recovery.

Unit-IV : **Object database Systems** : Objects, Identity, inheritance, Database Design for an ORDBMS, Storage and access methods, Query processing and optimization, Comparing RDBMS with OODBMS and ORDBMS.

Unit-V : **Data Warehousing**
Introduction, DSS and OLTP, Metadata Management in Data Warehouse, Related data structures, OLAP and Data Warehousing environment.
Data mining.
Introduction and application areas.

Books :

- 1) Database Management System -Raghu Ramkrishna McGraw Hill. International Editions.
- 2) Introduction to Database System by C.G.Date.

6SP1: LAB I-6ST1+6ST2: Minimum 8 practical on each.

The distribution of marks in Practical examination is given as:

(1) Program writing/ execution based on 6ST1	15 marks.
(2) Program writing/ execution based on 6ST2	15 marks.
(3) Practical Record	10 marks.
(4) Viva-Voce	10 marks.

50 marks.

6SP2: LAB II-6ST3+6ST4: Minimum 8 practical on each.

The distribution of marks in Practical examination is given as:

(1) Program writing/ execution based on 6ST3	15 marks.
(2) Program writing/ execution based on 6ST4	15 marks.
(3) Practical Record	10 marks.
(4) Viva-Voce	10 marks.

50 marks.

6SP3: LAB III-Project work with Report.

The distribution of marks in Practical examination is given as:

(1) Project Work with Report	30 marks.
(2) Viva-Voce	20 marks.

50 marks.
