



SATPUDA EDUCATION SOCIETY, JALGAON JAMOD'S

Arts & Commerce College

Warwat Bakal Tq. Sangrampur Dist - Buldhana (M.S.)

NAAC Reaccredited with 'B' Grade

- Principal -
Dr. Shiram Yerankar
M.A., M.Phil, Ph.D.
9423722316

College Code : 327

- President -
Shri. Krushnarao Ingle
(Ex. M.L.A.)
07266-221449

Website : www.acscwb.co.in

E-mail : 327accwb@gmail.com

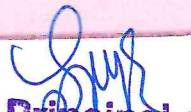
Criterion 6- Governance, Leadership and Management

6.1 Institutional Vision and Leadership

6.1.2 The effective leadership is visible in various institutional practices such as decentralization and participative management.

Metric No.	Sr. No.	Content / File Description
6.1.2	A	Practices Of Decentralization and Participative Management
	B	Supporting Documents, A
	C	A Case Study Showing Decentralization and Participative Management in The Institution
	D	Supporting Documents, C (Academic-Calendar-2022-23 Of Commerce, Chemistry & Political Science Department)




Principal
Arts & Commerce College
Warwat Bakal Dist. Buldana



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CERTIFICATE

This is to certify that the documents attached as supporting documents for **Criterion VI Governance, Leadership and Management** are verified from the college record and found to be correct to the best of my knowledge.



Principal

Arts & Commerce College

Warwat Bakal Dist. Buldana

6.1.2. Practices of decentralization and participative management.

A: PRACTICES OF DECENTRALIZATION AND PARTICIPATIVE MANAGEMENT

The Governing Body of the College aims to implement the concept of innovation in managing academic and administrative matters and has always believed in decentralization and participatory management practices. The management of society always believes in the practices of decentralization and participative management and that's why it encourages staff to give suggestions for improving the efficiency of the college and also entrusts its authority to the principal.

The principal is supported and assisted by HOD's, and administrative members. The practices of decentralization possess importance in the management and administration of the college. It replicates strategic decisions, planning and administration and office management. College management and administration are accountable for quality initiatives to disseminate education to all departments. These are implemented on a priority basis. The college promotes quality at various levels - Staff councils, CDCs, IQACs and various committees, which make decisions based on faculty suggestions to promote a culture of decentralization and participatory management.

At the strategic level the college incorporates a decentralized system of governance in which principal is empowered to make decisions, so that he is able to implement his decisions to maintain convenience and effectiveness in key areas like college administration, college strategies and policies, examination, discipline, grievance, support services, financial matters, research & development, and social interface.

College Development Committee (CDC) is the constitutional body that the college is required to set up under the state universities act. By constituting the various committees as per the guidelines make certain the participation of all stakeholders. The CDC comprises the members from teachers, non-teaching staff, students, the society, academicians and the management. All the important policy decisions regarding the academic administration of the college are discussed and approved by the CDC. It also governs the financial management. It also approves major submissions to the Authorities, especially Government bodies, NAAC and University for properness and effectiveness of required information. In a way CDC ensures the decentralization of responsibilities and power and acts as role model for participative management.

At functional level various dedicated committees are formed as per the constitutional guidelines of UGC and SGBAU and for that faculty members as well as administrative staff

members are given representation in various committees and cell. The faculty members through various committees in coordination with fellow faculty share knowledge among the committee members, and staff members and finally submit reports to the Principal, IQAC and Management from time to time. Every year, the composition of different committees is changed to ensure efficient and effective functioning of the curricular, co-curricular, extracurricular and other developmental activities, and to make certain uniform exposure of duties for academic and professional development of faculty members and administrative staff members.

At operational level principal not only interacts with government and external agencies but also complete government and university compliances, and other proceedings in the office, faculty members maintain interactions with the concerned departments of the affiliating university. Principal with the help of administrative staff and faculty members execute different academic, administrative, extension related, co- and extracurricular activities.

This shows that college ensures the decentralization of responsibilities and power and acts as role model for participative management by enhancing the quality at various levels - Management, College Development Committee, Principal, IQAC Committee, NAAC Committee, Various Committees, Administrative and Non-teaching Staff, NCC, NSS, and other stakeholders are also involved in the decentralization and participative management.




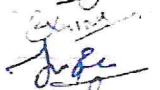

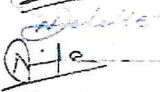


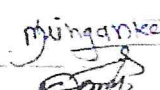
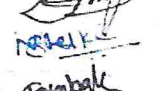

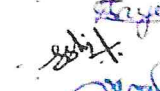

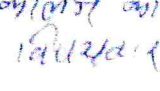





B: Supporting Documents A

Glimpses of College Council:

कोलेज कॉन्सिल सभे -

दि 23/06/2022

आज दि 23/06/2022 रोज महाकुटीरला दुपाई ठीक 2:30 वाज्जे मी संघाच्या महसुलेबाबती महाविद्यालयात कोलेज कॉन्सिल ची सभा संपन्न झाली. सभेत खालील सभे करणाऱे सदस्य उपस्थित होते.

- | | |
|---------------------------------|--|
| १) सभाध्यक्ष डॉ. आर. एम. कोरडे. |  |
| २) डॉ. एम. आर. गुर्जर |  |
| ३) श्री. जे. एम. पेंडसे - |  |
| ४) श्री. एम. एम. हाडकोडे |  |
| ५) श्री. जे. सु. कुडके. |  |
| ६) डॉ. एम. पी. भास्कर |  |
| ७) डॉ. एम. डब्ल्यू. शर्मा |  |
| ८) श्री. एम. एम. मर्याद |  |
| ९) डॉ. एम. आर. सीकडे |  |
| १०) श्री. एम. डी. चडके |  |
| ११) श्री. एम. डब्ल्यू. कुडके. |  |
| १२) डॉ. एम. जे. शर्मा |  |
| १३) डॉ. एम. डी. कुडके. |  |
| १४) श्री. एम. आर. शिर्कर |  |
| १५) डॉ. के. जी. शेण |  |
| १६) डॉ. एम. एम. शिर्कर |  |
| १७) डॉ. डी. के. शिर्कर |  |
| १८) श्री. एम. एम. सीकडे |  |
| १९) श्री. के. पी. भास्कर |  |
| २०) डॉ. एम. के. शर्मा | |
| २१) श्री. एम. ए. लाडके | |
| २२) श्री. एम. डी. देवामुख | |
| २३) श्री. डॉ. एम. एम. पवार. | |

दिनांक १६/०६/२०२२ रोज कोलेज कॉन्सिल सभेला संपन्न प्रमाणुसभ सभेत विषयवार संपन्न - सभा करवात झाली

१) मागील सभेत अतिशयदाय्या कायम करत.

20. विद्यार्थी संघ 2022-23 वर्षीय नियुक्त
कार्यवाही आलेल्या महाविद्यालयीय समितीमध्ये
मिळवणी करली जाईल.

सांख्यिकीय समितीचे समन्वयक म्हणून सा.
जे. सुभाष पवार यांची नियुक्ती करण्यात
आली. परिषद समितीने महाविद्यालयीय समन्वय
व विद्यार्थी संघ दोन्ही परिषदांच्या मध्ये समन्वय
काचे समित अंतर्गत करणे. त्यासुमारे दोन्ही दोन्ही
समितीने जी.ए. जी.ए.एम व जी.ए.एम.चा
अंतर्गत आधी विद्यार्थी संघाच्या एकाच ठिकाणी
उत्तम वातावरण आहे. या अर्थाने सुधारणा
दिल्यात. असेच विद्यार्थी समितीचे विद्यार्थी नेमाचे
21. नुकताच विद्यार्थी संघा लागलेल्या विषयांचे
संयोजन करणे.

जी.ए. जी.ए.एम. जी.ए.एम. या संघे 6-चे
नियुक्त लागलेत. असेच जी.ए.एम. 2, जी.ए.एम.
संघ 2, व जी.ए.एम. संघ 4-चे नियुक्त जाहीर
आले. ह्या जाहीर संघेद्वारे नियुक्त जाहीर
संघे आले. लेखा न्या विषयांचे नियुक्त
लागलेत त्यांनी आपापल्या विषयांचे
अंमलीपत्रे करावे. आधी संघे विषयांचे
नियुक्त लागल्यानंतर पुढील समित उघडता.
उ.स. म. अर्थाने सुधारणा करावे.

22. सन 2022-23 वर्षीय विद्यार्थी संघ
महाविद्यालयीय मान्यता मिळालेल्या नवीन समिती
क्रमाने स्वीकारात करणे.

पी.जी. वाढत्या अंमलीपत्रे सुधारणा पुढील
जाहीर असून महाविद्यालयीय मान्य पी.जी.
विषयांच्या अंमलीपत्रे पुढील सुधारणा सुद्धा
करावी. असेच सुधारणा विद्यार्थी संघे महाविद्यालयीय
मान्यता पी.जी.ची सुधारणा करावे आहे.
याची माहिती जाहीर दि. 24/05/2022 पर्यंत
जाहीर करावी.

असेच पी.जी.च्या विषयांचे अंमलीपत्रे
करावे व त्यामुळे त्यांचे लागू करावे.

श्रीधरराव विद्युत वित्त कंपनी लि. मा. महाराष्ट्र
ची समित संयुक्त बैठका येथे.

५) सन २०२१-२२ चे पर्यावरण जायजमातीत
सुधारणा

संस्कृती समितीने ५ सप्टेंबर २०२१ पर्यावरण
समावेशक अहवाल व त्यासाठी आवश्यक असलेले
दुहे, अहवाल व इतरांची सुधारणा करणे व यात
१५ सप्टेंबर २०२१ रोजी मा. महाराष्ट्र विद्युत वित्त
संस्था वित्त. मा. महाराष्ट्राची समित
संगठित


६) नॅक च्या संदर्भात ICRAC ने जायजमातीत केलेली
जायजमातीचा अहवाल


नॅक च्या सीकर सायकल करीत २०२१ नॅक
चे जायजमातीत अहवाल व ICRAC जायजमातीत त्याची
सुधारणा आहे. त्याच वरील ९.९.२ रिपोर्ट त्याच
सुधारणा अहवाल. नॅक वित्त. मा. महाराष्ट्राची ICRAC च्या
सुधारणा वरील जायजमातीत जायजमातीत अहवाल
नॅक सुधारणा जायजमातीत अहवाल व त्याची जायज
माती समित संयुक्त बैठका येथे.

७) मा. महाराष्ट्राची अनुमतीने वित्त. मा. महाराष्ट्राची
सुधारणा.

वित्त. मा. महाराष्ट्राची सुधारणा जायजमातीत
संपन्न ३१ मार्च २०२२ पासून मा. महाराष्ट्राची
सुधारणा जायजमातीत अहवाल व जायजमातीत अहवाल
मा. महाराष्ट्राची जायजमातीत अहवाल व जायजमातीत
अहवाल.

नॅक च्या सुधारणा जायजमातीत अहवाल जायजमातीत
सुधारणा. सर्वांची रिपोर्ट ICRAC ला पुरविले गेले.
मा. महाराष्ट्राची समित संयुक्त बैठका येथे
जायजमातीत अहवाल जायजमातीत अहवाल व
सुधारणा जायजमातीत अहवाल व जायजमातीत
अहवाल समित संयुक्त बैठका येथे.


अहवाल, जायजमातीत अहवाल


समित, जायजमातीत अहवाल

**ARTS, COMMERCE & SCIENCE
COLLEGE, WARVAT BAKAL**

The following Committees have been formed for the session 2022 - 2023 vide resolution no. 02 in the College Council Meeting held on 23/08/2022.

1. ADMISSION COMMITTEE

- i) Dr. Satish Rane (Convener)
- ii) Dr. Nandkishor More
- iii) Dr. Kishor Theng
- iv) Mr. Nagesh Ingle

2. TIME TABLE COMMITTEE

- i) Dr. Subhash Pawar (Convener)
- ii) Dr. Satish Rane
- iii) Dr. Sanjay Tale
- iv) Mr. Nityanand Dahake
- v) Dr. Megha Solanke
- vi) Mr. Anand Dhundale

3. CULTURAL PROGRAMMES COMMITTEE

- i) Dr. Subhash Pawar (Convener)
- ii) Mr. Gajanan Paikat
- iii) Mr. Kiran Sable
- iv) Dr. Kishor Theng
- v) Mr. Nagesh Ingle
- vi) Miss. Sonali Tayde
- vii) Rupali Rajankar
- viii) Mohini Lahorkar

4. EXAMINATION COMMITTEE

- i) Dr. Vijayanand Ingle (Convener)
- ii) Mr. Anand Dhundale
- iii) Dr. Dnyaneshwar Sherkar
- iv) Dr. Sanjay Tale
- v) Dr. Madhuri Hingankar

5. STUDENTS' Development Cell

- i) Dr. Sanjay Tale (Convener)
- ii) Dr. Subhash Gurjar
- iii) Mr. Kiran Sable
- iv) Mr. Nilesh Shelke
- v) Devanand G. Dhage

A) EXCURSION COMMITTEE

- i) Dr. Rajendra Korde
- ii) Dr. Satish Rane
- iii) Dr. Nandkishor More
- iv) Miss. Sonali Tayade
- v) Dr. Megha Solanke

B) COMPETITIVE FORUM & PLACEMENT COMMITTEE

- i) Dr. Nandkishor More
- ii) Dr. Subhash Gurjar
- iii) Dr. Megha Solanke
- iv) Mr. Santosh Mhasal
- v) Mr. Suresh Bhaltadak
- vi) Dr. Sanjay Tale
- vii) Dr. Vijayanand Ingle

C) CERTIFICATE COURSES COMMITTEE

- i) Dr. Subhash Pawar
- ii) Mr. Nityanand Dahake
- iii) Dr. Satish Rane
- iv) Mr. Nilesh Shelke

6. GRIEVANCE REDRESSAL COMMITTEE

- i) Mr. Sushil Deshmukh (Convener)
- ii) Mr. Gajanan Paikat
- iii) Mr. Sunil Makode
- iv) Dr. Madhuri Hingankar
- v) Ku. Manisha Bhagat
- vi) Akshay Jawanjai
- vii) Saurav Kuchekar

7. MAGAZINE COMMITTEE

- i) Mr. Santosh Mhasal (Convener)
- ii) Mr. Nagesh Ingle
- iii) Dr. Nandkishor More
- iv) Mr. Anand Dhundale
- v) Mr. Suresh Bhaltadak

8. MENTOR MENTEE COMMITTEE

- i) Miss. Sonali Tayade (Convener)
- ii) Mr. Sunil Makode
- iii) Mr. Gajanan Paikat
- iv) Dr. Megha Solanke
- v) Mr. Santosh Mhasal

9. ANTI - RAGGING COMMITTEE

- i) Mr. Gajanan Paikat (Convener)
- ii) Dr. Subhash Gurjar
- iii) Dr. Subhash Pawar
- iv) Dr. Megha Solanke
- v) Mr. Kiran Sabale

10. FEEDBACK COMMITTEE

- i) Dr. Sanjay Tale (Convener)
- ii) Mr. Sunil Makode
- iii) Dr. Dnyaneshwar Sherkar
- iv) Dr. Rajendra Korde
- v) Mr. Nilesh Shelke

11. SEXUAL HARASSMENT & VIOLENCE AGAINST WOMEN COMMITTEE

- i) Dr. Megha Solanke (Convener)
- ii) Mr. Nitin Satav
- iii) Dr. Madhuri Hingankar
- iv) Dr. Subhash Gurjar
- v) Mr. Ajay Chopade

- v) Adv. Suvarna Gawande
- vi) Miss Sonali Tayade
- vii) Miss Payal Khandarkar
- viii) Navin Tayade

12. PROSPECTUS COMMITTEE

- i) Mr. Nagesh Ingle (Convener)
- ii) Dr. Satish Rane
- iii) Mr. Sushil Deshmukh
- iv) Mr. Kiran Sable

13. API COMMITTEE

- i) Mr. Nishigandh Satav (Convener)
- ii) Dr. Subhash Pawar
- iii) Dr. Subhash Gurjar
- iv) Dr. Satish Rane
- v) Mr. Nityanand Dahake

14. PURCHASE COMMITTEE

- i) Dr. Rajendra Korde (Convener)
- ii) Mr. Nishigandh Satav
- iii) Mr. Santosh Mhasal
- iv) Mr. Ajay Chopade


Principal
Arts & Commerce College,
Warvat Bakal Dist. Buldana



Satpuda Education Society, Jalgaon (Jamod)'s

Arts & Commerce College, Warwat (Bakal)

Tq- Sangrampur Dist - Buldhana (444202)

Off. Principal
Dr. Rajendra S. Korde

President
Shri. Krushnarao Ingle
(Ex M.L.A)

9420446032
(07266) 221449

College Code: 327

E mail- accwb327@gmail.com / accwb327@sgbau.ac.in

Outward No. 183 /2022

Date 07 / 10 /2022

GRIEVANCE REDRESSAL CELL FOR SEXUAL HARASSMENT AGAINST WOMEN

Grievance Redressal cell for Sexual Harassment against Women' in Arts and Commerce College, Warwat Bakal, dist-Buldana is constituted as per the University norms (University Letter No. 77/2012 dated 21/06/2012)

For the Session 2021-22 to 2022-23

1. DR. MEGHA SOLANKE	(Assistant Professor)	CHAIRPERSON
2. NITIN SATAV	(Management Representative)	MEMBER
3. DR.MADHURI HINGANKAR	(Female Teacher Representative)	MEMBER
4. DR.SUBHASH GURJAR	(Male Teacher Representative)	MEMBER
5. AJAY CHOPADE	(Non Teaching Representative)	MEMBER
6. ADV. SUVARNA GOTMARE	(Lady Lawyer)	MEMBER
7. MISS SONALI TAYADE	(Assistant Professor)	MEMBER
8. PAYAL SUNIL KANDARKAR	(Female Student)	MEMBER
9. NAVIN HARIBHAU TAYADE	(Male Student)	MEMBER


Principal
Arts & Commerce College
Warwat (Bakal) - Buldhana

Satpuda Education Society, Jalgaon (Jamod)'s

Arts & Commerce College, Warwat (Bakal)

Tq- Sangrampur Dist - Buldhana (444202)

Off. Principal
Dr. Rajendra S. Korde

President
Shri. Krushnarao Ingle
(Ex. M.L.A)

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College Code: 327

E mail: accwb327@gmail.com / accwb327@srbau.ac.in

Outward No. 183/2022

Date 07/10/2022

To,
Adv. Suvama Gotmare
Civil Court, Sangrampur
Dist- Buldana

Subject: Nomination to be a member as a Lady Lawyer on ' GRIEVANCE REDRESSAL CELL FOR SEXUAL HARASSMENT AGAINST WOMEN' at Arts and Commerce College, Warwat Bakal.

Ref: University Letter No. 77/2012 dated 21/06/2012

Respected Madam,

This gives me an immense pleasure to nominate you on the aforesaid committee constituted at our college for the session 2021-22 to 2022-23.

You are hereby requested to accept the nomination and co-ordinate us in order to safeguard the right of women at workplace.

Thanking You!

Enclosure:

1. List of Committee members.


Principal
Arts & Commerce College
Warwat (Bakal) Dist- Buldana

शैक्षणिक सत्र 2022-2022

महिला लैंगिक हानि प्रतिबंधक समितीच्या

25/06/2022 रोजी महाविद्यालयातील
समाह दुपारी 2.00 वाजता होव्यात आली
समिती खालील सद्य उपासिते वगैरे.

- 1) प्राचार्य डॉ. रा. श्री. कोरेडे (अध्यक्ष)
- 2) श्री. निलिन सातव (संस्था प्रतिनिधी)
- 3) प्रा. डॉ. मेधा रं. सोळंके (समन्वयक)
- 4) डॉ. सुवर्णा गोनमारे (महिला वकील)
- 5) प्रा. डॉ. माधुरी व्हु. दिगणकर (महिला शिक्षक प्रतिनिधी)
- 6) प्रा. डॉ. अनुभाष गुर्जर (पुरुष शिक्षक प्रतिनिधी)
- 7) श्री. अनजय चौपडे (शिक्षकेतर कर्मचारी प्रतिनिधी)
- 8) प्रा. व्हु. सोनाळी अ. लायेडे (विशेष प्रतिनिधी)
- 9) व्हु. पायल सु. कंधारकर (विद्यार्थिनी प्रतिनिधी)
- 10) नाविन ट. लायेडे (विद्यार्थी प्रतिनिधी)

दि 28/06/2022 च्या समितीच्या
सुचनेनुसार दि 25/06/2022 रोजी महाविद्यालयात
समाह होव्यात आली. समितीचे खालील विषयावर
चर्चा करण्यात आली.

समितीचे चर्चा योग्य विषय
विषय क्रमांक 9
मागील समिती इतिहास वाचून कायम करावे
समितीचे चर्चा योग्य मागील समिती इतिहास वाचून
कायम कराव्यात आले.

विषय क्रमांक 2
वधमराने पालन न करणे विवरण करणे बाबत.
2021-2022 च्या शैक्षणिक वर्षात #कुल
अध्यापकांक घटना घडली मसत्याकडे मासिकेचे कोणत्याही
प्रकारची तक्रार उपलब्ध झाली नाही, असे समितीच्या
वतीने जागृव्यात आले व पुढील परिस्थिती
महाविद्यालयात घ्यावी.

उसे समेटे करवियात एके .

सुन

समन्वयक

महिला लैंगिक एवं
परिवारक समिती .

शैक्षणिक रात्र 2022-2023

महिला तैंगिक छळ प्रतिबंधक समिती रात्र

दि 10/9/2022

दि 10/9/2022 रोजी रोजी महाविद्यालयीय महिला तैंगिक छळ प्रतिबंधक समिती रात्र पुणे डीके 9.00 ताजता महाविद्यालयत शुभमोर्णित करव्यान आनी अभिभा खात्रिक खादरग खुवाशित होले.

- 1) प्राचार्य डॉ रा. श्री. कुर्वे (आध्यक्ष) S. H. P.
- 2) श्री. ललित रातक (संस्था प्रतिनिधी)
- 3) डॉ. डॉ. मेणू र. शोबडे (समन्वयक) S. P. S.
- 4) डॉ. डॉ. सुजनी जोतगोर (महिला वकिल) S. S. S.
- 5) प्रा. डॉ. माधुरी सु. विंगणकर (महिला शिक्षक प्रतिनिधी) S. S. S.
- 6) प्रा. डॉ. युवाष पुजर (पुरुष शिक्षक प्रतिनिधी) S. S. S.
- 7) श्री. अजय चौपडे (शिक्केलर कर्मचारी प्रतिनिधी) S. S. S.
- 8) प्रा. डॉ. सोनीली डा. तायडे (विशेष प्रतिनिधी) S. S. S.
- 9) डॉ. पथक डॉ. कुंडारकर (विद्यार्थीनी प्रतिनिधी) S. S. S.
- 10) ललित ड. तायडे (विद्यार्थी प्रतिनिधी) N. H. P. S.

दि 11/9/2022 मंगळवार रोजीच्या महिला तैंगिक छळ प्रतिबंधक समितीच्या शुभनाप्रारंभ कर दि. 12/9/2022 रोजी महाविद्यालयत सुभा होळ्यात आनी अभिभा खात्रिक विषयावर खाविस्तर खा करव्यान आनी.

अभेपुढे खरीला खोारे विषय

विषय क्र. 1

मागील अभेये इतिवळ ताचून करय करे
अभेपुढे मागील अभेये इतिवळ ताचून
ले शर्काच्या संगलीने करय करव्यान जावे.

विषय क्र. 2

2. महिला/कर्मचारी व विद्यार्थिनी यांच्यालाबत
 औरवतीत होणार नाही याबद्दलत दक्षता घेणे.

महाविद्यालयात काम करणाऱ्या महिला व
 शिकण होत असलेल्या विद्यार्थिनी यांच्यावर
 अन्याय होणार नाही व त्यांना अस्मानपूर्वतु वागवत
 देण्यासंबंधी प्राचार्यांनी सत्रारंभी आपल्या प्रथम
 आमीभाषणात विद्यार्थी व कर्मचाऱ्यांना आवात
 करून दिले पाहिजे, त्याचबरोबर असे औरप्रकार
 उद्भवणार नाही याकरिता प्रत्येक कर्मचाऱ्यांनी
 आपआपल्या स्तरावर वेळोवेळी विद्यार्थिनी
 यांसंबंधी सुचना देव्यात याव्या, असे अर्वाजुमते
 ठरविव्यात आते.

विषय क्र. 3.

वर्षभरात प्राप्त होणाऱ्या तक्रारीचे निवारण
 करणे बाबत.

महाविद्यालयातील महिला कर्मचारी व विद्यार्थिनी
 यांच्यावर अन्याय होणार नाही यासंबंधी सर्व
 प्रयत्न केल्यानंतरही अखेर प्रकरणा उद्भवल्यास
 यासंबंधीची माहिती तात्काळ आमीतीकडे देव्यात
 यावी व अशा वेळी आमीतीने विशेष सभा
 बोलावून तक्रारीचे निवारण करावे. प्रथम आपल्या
 स्तरावर आंबाहीत व्यक्तीला समज द्यावी,
 यानंतरही पुन्हा असा प्रकार होऊन आल्यास
 आंबाहीत प्रकरणा पोलीस स्टेशनकडे सुपूर्द करव्यात
 यावे, असे अर्वाजुमते ठरविव्यात यावे.

विषय क्र. 4.

महाविद्यालयात महिला जनजावलीविषय
 कार्यक्रम आयोजित करणे

महाविद्यालयातील महिला कर्मचारी
 व विद्यार्थिनी अस्म होणाऱ्या हूपटीने त्यांच्या
 मध्ये जनजावली निर्माण व्हावी याकरिता
 महाविद्यालयात महिला जनजावली कार्यशाळा,
 महिला सब लीकरा जनजावली कार्यशाळा,
 कायदेविषयक शिबिर, इत्यादी कार्यक्रमांचे

आयोजन करवात आहे, जाकरिता द्यावा का
पोबिसा स्टेशन, जमापसुधारक आणि मार्गदर्शन
उपलब्ध करून द्यावे.

6.1.2. Practices of decentralization and participative management

C: A CASE STUDY SHOWING DECENTRALIZATION AND PARTICIPATIVE MANAGEMENT IN THE INSTITUTION

The College is having decentralized and participative management system with sufficient independence for all staff members of the college, which helps in maintaining and developing better, inters relationships among all departments particularly HOD's are empowered with administrative and academic autonomy to discharge their duties smoothly and efficiently. The delegation of authority and responsibilities by principal to HOD's can be stated as follows'

- Every HOD's prepare their own teaching plan and also asked their departmental teachers to prepare teaching plan course wise at the beginning of the session so that teachers may know what students need to learn, how it will be taught, and how learning will be measured.
- HOD's prepare their departmental academic calendar so that he can observed whether the assigned tasks, activities are completed within specific time or set deadlines and inculcate among the teachers about the significance of professional standard.
- HOD's leads in making planning of departmental activities for the professional development of teachers such as guest lecture, seminar, workshops.
- HOD's sees that whether the submission of assignment and internal marks is carried out within the time specified by SGBAU guidelines.
- HOD's in consultation with certified courses coordinators from this academic session sees that whether the certified courses examination, declaration of results and distribution of certificates has been done properly or not.
- HOD's discuss with departmental teachers about the time table for remedial classes and what strategy should be developed for SMA.
- H.O.D.s are empowered by principal to make adjustments in the operational and functional duties of their departmental teachers.

COMMERCE DEPARTMENT ACADEMIC CALENDAR
ARTS & COMMERCE COLLEGE, WARVAT BAKAL

SATPUDA EDUCATION SOCIETY, JALGAON (JAMOD)'S
ARTS & COMMERCE COLLEGE
WARVAT BAKAL DIST- BULDANA

DEPARTMENT OF COMMERCE

DEPARTMENTAL ACADEMIC
CALENDAR 2022-23

Departmental Academic Calendar (2022-23)

Sr. No.	Activity	Commencement	Cessation	TotalDays
01	First Session	01/07/2022	30/11/2022	110
02	Admission Process	01/07/2022	16/07/2022	14
03	Teaching Days (Odd Semesters)	25/07/2022	22/10/2022	71
		09/11/2022	30/11/2022	19
				90
04	Induction Program for First Year Students	18/07/2022	23/07/2022	06
05	First Term Vacation	24/10/2022	08/11/2022	16
06	Odd Semesters University Exam	01/12/2022	21/01/2023	45
07	Academic Session (Second Session)	23/01/2023	13/05/2023	
08	Teaching Days (Even Semesters)	01/02/2023	04/05/2023	93
09	Second Term Vacation	15/05/2023	01/07/2023	
10	Even Semesters University Exam	06/05/2023	01/07/2023	
11	Commencement of next Academic session	03/07/2023		

Sr. No.	Public Holiday	Day & Date
01	Moharam	Tuesday, 9 th August, 2022
02	Rakshabandhan	Thursday 11 th August, 2022
03	Independence Day	Monday, 15 th August, 2022
04	Parsi New Year	Tuesday, 16 th August, 2022
05	Shri Ganesha Chaturthi	Wednesday, 31 st August, 2022
06	Anant Chaturthi	Friday, 9 th September, 2022
07	Dasara	Wednesday, 5 th October, 2022
08	Republic Day	Thursday, 26 th January, 2023
09	Mahashivratri	Saturday, 18 th February, 2023
10	Holi (Second Day)	Tuesday, 7 th March, 2023
11	GudhiPadwa	Wednesday, 22 nd March, 2023
12	Shriram Navmi	Thursday, 30 th March, 2023
13	Mahavir Jayanti	Tuesday, 4 th , March, 2023
14	Good Friday	Friday, 7 th April, 2023
15	Dr. Babasaheb Ambedkar Jayanti	Friday, 14 th April, 2023
16	Ramzan ID (Id-UI-Fitar)	Saturday, 22 nd April, 2023
17	Maharashtra Day	Monday, 1 st April, 2023
18	Buddha Pournima	Friday, 5 th May, 2023

Time Table

Faculty : Commerce
MEC

Subject : BEC, ITA, STA,CMA,I&WWW,

Dr.S.W.Rane.

Period	1	2	3	4	5	6
Day / Time	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:22 to 3:10	3:10 to 3:58
MON	II	III	I		III	
TUE	II	III	I		III	
WED	II	III	I		III	
THUS	III	I	II		III	
FRI	III	I	II		II	
Period	1	2	3	4	5	6
Day / Time	07:30 to 08:18	08:18 to 09:06	09:06 to 09:54	10:04 to 10:52	10:52 to 11:40	11:40 to 12:28
SAT		III	II			

Allotted Workload

Subject : COMMERCE
23

Year : 2022-

Sr. No.	Class	No. of periods per week			Paper Allotted
		Lectures	Tutorials	Practical	
1	B.Com I	05	----	----	----
2	B.Com II	05+02	----	----	----
3	B.Com III	05+05	----	----	----
4	M.Com I	5	----	---	----

Total Workload per week (L+T+P) : 27 (L) + 00 (T) = 27 (21 hrs. 6 m)

Teaching Periods Available per month during the session 2022-23

Faculty : COMMERCE
BMS,CMA,I&WWW

Subject : BEC, ITA,

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July 22	Aug 22	Sept 22	Oct 22	Nov 22	Total	Feb 23	Mar 23	April 23	May 23	Total
B.Com I (PEC, BEC)	Theory	05	18	21	14	16	74	24	27	25	04	80
		--	--	--	--	--	00	--	--	--	--	
B.Com II (ITA, STA)	TH. (ITA)	05	18	21	14	16	74	24	27	25	04	80
	TH. (BMS)	02	08	08	07	06	31	08	09	09	00	26
B.Com III (CMA, I&WWW)	TH. (CMA)	05	18	21	14	16	74	24	27	25	04	80
	TH. (I&WWW)	05	18	21	15	16	75	24	27	25	04	80

Teaching Plan for Theory (First Semester) Class : B com Part I (PEC)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INTRODUCTION	13	
02	UTILITY APPROACH	13	
03	ELASTICITY OF DEMAND	12	
04	PRODUCTION FUNCTION	12	
05	COST AND REVENUE	12	
06	Skill Enhancement Module	12	
Teaching Plan for Tutorial (Second Semester) Class : B com Part I (BEC)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	BUSINESS AND MANEGERIAL ECONOMICS	13	
02	MARKET STRUCTURE	13	
03	MARKET STRUCTURE	13	
04	FACTORS PRICING	14	
05	FACTORS PRICING	14	
06	Skill Enhancement Module	13	
Teaching Plan for Theory (Third Semester) Class : B com Part II (AUD)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	MEANING OF AUDITING	15	
02	INTERNAL CHECK SYSTEM	15	
03	COMPANY AUDITOR	14	
04	AUDIT OF DIVISIBLE PROFIT	15	
05	AUDIT OF BANKING	15	
Teaching Plan for Theory (FourthSemester) Class : B COM II (IT)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	BASIC CONCEPT-INCOME TAX	16	
02	COMPUTATION OF INCOME FROM SALARY	16	
03	INCOME FROM OTHER SOURCES	16	
04	INCOME TAX AUTHORITIES	16	
05	RETURN OF INCOME	16	
Teaching Plan for Theory (ThirdSemester) Class : B com Part II (BMS)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	MATHEMATICS OF FINANCE	15	
02	RATIO AND PROPORITION	16	
Teaching Plan for Theory (FourthSemester) Class : B COM Part II (BST)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	CONCEPT OF DISPERSION	13	
02	CO-EFFICIENT OF DISPERSION	13	
Teaching Plan for Theory (FifthSemester) Class : B com Part III (CAC)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	COST ACCOUNTING	15	
02	MATERIAL COST	15	
03	LABOUR COST	14	
04	OVERHEADS	15	
05	PROCESS COSTING	15	
Teaching Plan for Theory (SixthSemester) Class : B com Part III (MAC)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	MANAGEMENT ACCOUNTING	16	
02	BREAK-EVEN-ANALYSIS	16	
03	RATIO ANALYSIS	16	
04	BUDGET	16	
05	BUDGETARY CONTROL	16	
Teaching Plan for Theory (Fifth Semester) Class : B COM Part III (I&WW-I)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	NETWORK	15	
02	INTERNET	15	
03	ELECTRONIC MAIL	15	
04	THE WORLD WIDE WEB (W3C)	15	
05	DESIGNING WEBSITE/WEBPAGE	15	
Teaching Plan for Theory (Sixth Semester) Class : B com Part III (I&WW-II)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	WEB BROWSING	16	

02	WEB DIRECTORY	16	
03	SOCIAL NETWORKING	16	
04	GOOGLE DRIVE	16	
05	M.S. FRONT PAGE EXPRESS	16	

Time Table

Faculty : Commerce

Subject : B.COM Part I PBM, PBO, CFS-I/II,
B.COM Part II COA, CAT,
B.Com Part III BRFC, CLAW, EOE-I/II

Dr.S.J.Tale

Period	1	2	3	4	5	6
Day / Time	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:22 to 3:10	3:10 to 3:58
MON		B.Com II	B.Com III	B.Com I	B.Com I	
TUE		B.Com I	B.Com III	B.Com III	B.Com II	
WED		B.Com II	B.Com III	B.Com III	B.Com I	
THUS		B.Com II	B.Com I	B.Com III	B.Com I	
FRI	B.Com I	B.Com II	B.Com III	B.Com III		
Period	1	2	3	4	5	6
Day / Time	07:30 to 08:18	08:18 to 09:06	09:06 to 09:54	10:04 to 10:52	10:52 to 11:40	11:40 to 12:28
SAT	B.Com III	B.Com I		B.Com III		

Allotted Workload

Subject : COMMERCE

Year : 2022-

23

Sr. No.	Class	No. of periods per week			Paper Allotted
		Lectures	Tutorials	Practical	
1	B.Com I	08	----	----	
2	B.Com II	05	----	----	
3	B.Com III	10	----	----	

Total Workload per week (L+T+P) : 23 (L) + 00 (T) = 23 (18 hrs. 24 m)

Teaching Periods Available per month during the session 2022-23

Faculty : COMMERCE
I/II,

Subject : : B.COM Part I PBM, PBO, CFS-

B.COM Part II COA, CAT, B.Com Part III BRFC,

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods						Total					Total
B.Com I SEM I (PBO, CFS-I)	PBO (T)	04	17	20	13	15	69	23	26	24	03	75
	CFS-I (T/P)	04	17	20	13	15	69	23	26	24	03	75
B.Com II SEM III (COA)	COA (T)	05	18	21	14	16	74	24	27	25	04	80
B.Com III SEM V (BRFC/ EOE-I)	BRFC (T)	05	18	21	14	16	74	24	27	25	04	80
	EOE (T)	05	18	21	14	16	74	24	27	25	04	80

Teaching Plan for Theory (First Semester) Class : B com Part I (PBO)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Commerce and Industry	15	
02	Business	14	
03	Merger and Acquisition	14	
04	New Enterprises	14	
05	Trade in India	12	
Teaching Plan for Tutorial (First Semester) Class : B com Part I (CFS-I)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Fundamentals of Computer	15	
02	Computer Organization	14	
03	Memory organization of Computer	14	
04	Input/Output Devices of Computer System	14	
05	Word Processing Working with Text IMS-WORD 2007]	12	
Teaching Plan for Theory (Second Semester) Class: B com Part I (PBM)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Management Concept	15	
02	Planning	15	
03	Organizing	15	
04	Directing	15	
05	Controlling	15	
Teaching Plan for Tutorial (Second Semester) Class : B com Part I (CFS-II)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Operating System	15	
02	Operating System [Advance]	15	
03	Modern communications {Concepts only}:	15	
04	Word Processing working with Table and t3raphics: IMS-WORD 20071	15	
05	PowerPoint Presentation	15	

Teaching Plan for Theory (Third Semester) Class : B com Part II (COA)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Issue, Forfeiture and Re-issue of Shares.	15	
02	Final Accounts of Company	15	
03	Profit Prior to Incorporations.	15	
04	Amalgamation of Company	15	
05	Absorption of Company	14	
Teaching Plan for Theory (Fourth Semester) Class : B COM II (CAT)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Final Accounts of Banking Company	16	
02	Final Accounts of Fire and Accident Insurance Company	16	
03	Liquidation of Company	16	
04	Valuation of Goodwill	16	
05	Valuation of Shares	16	
Teaching Plan for Theory (Fifth Semester) Class : B com Part III (BRFC)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Indian Contract Act 1872	15	
02	Special Contracts	15	
03	Sales of Goods Act, 1930 and Consumer Protection Act, 1986	15	
04	Negotiable Instrument Act, 1881	15	
05	Goods and Services Tax Act, 2017	14	
Teaching Plan for Theory (Fifth Semester) Class : B COM Part III (EOE-I)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Basics of E-Commerce	15	
02	E-Commerce in India	15	
03	Retail E-Commerce	15	
04	B2B E-Commerce	15	
05	E- Payment and E-Banking	14	
Teaching Plan for Theory (Sixth Semester) Class : B com Part III (CLAW)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Introduction; Definition, Silent Features of Company, Act 2013	16	
02	Incorporation of Company	16	
03	Share Capital of Company	16	
04	Securities Market	16	
05	Company Secretary and Company Meetings	16	
Teaching Plan for Theory (Sixth Semester) Class : B COM Part III (EOE-II)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Internet E-Commerce Business Models	16	
02	B2C Internet Marketing	16	
03	B2B Online Marketing	16	
04	E-Governance	16	
05	E- Governance Models	16	

Time Table

Faculty : COMMERCE

Subject

:FAC,IFS,ITB,BST,EOD

Mr. S.R.Bhaltadak

Period	1	2	3	4	5	6
Day / Time	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:22 to 3:10	3:10 to 3:58
MON	III (EOD)	I (FAC)		II (IFS)		II (ITB)
TUE	III (EOD)	II(IFS)	II (ITB)	I (FAC)		II (BST)
WED	III (EOD)	I (FAC)	II (BST)	II (ITB)		
THUS	II (ITB)	III (EOD)		II (IFS)	II (BST)	
FRI		III (EOD)	I (FAC)	II (IFS)		
Period	1	2	3	4	5	6
Day / Time	07:30 to 08:18	08:18 to 09:06	09:06 to 09:54	10:04 to 10:52	10:52 to 11:40	11:40 to 12:28
SAT	I (FAC)	II (IFS)		II (ITB)		

Allotted Workload

Subject: FAC,IFS,ITB,BST,EOD

Year : 2022-23

Sr. No.	Class	No. of periods per week			Paper Allotted
		Lectures	Tutorials	Practical	
1	B.COM.I (FAC)	05	----	----	
2	B.COM.II (IFS)	05	----	----	
3	B.COM. II (ITB)	05	----	----	
4	B.COM.II (BST)	03	---	----	
5	B.COM.III (EOD)	05	----	-----	

Total Workload per week (L+T+P) : 23 (L) + 00 (T)+00(P) = 23 (18.24 Hrs)

Teaching Periods Available per month during the session 2022-23

Faculty : COMMERCE

Subject :FAC,IFS,ITB,BST,EOD

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July 22	Aug 22	Sep 22	Oct 22	Nov 22	Total	Feb 23	Mar 23	Apr 23	May 23	Total
B.Com I (FAC)	Th. (FAC)	05	18	22	14	16	75	24	27	25	09	85
B.Com II (IFS, ITB, BST)	TH. (IFS)	05	18	21	14	16	74	23	27	25	09	84
	TH. (ITB)	05	18	21	14	16	74	24	27	25	09	85
	TH. (BST)	03	10	12	08	09	42	12	14	14	05	45
B.Com III (EOD)	TH. (EOD)	05	18	21	14	16	74	24	27	25	08	84

Teaching Plan for Theory (First Sem.) Class : B.Com. Part I Sub-Advanced Accountancy			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	BOOK KEEPING & ACCOUNTANCY	13	
02	ACCOUNTING TRANSACTION	13	
03	SUB-SIDIARY BOOKS	13	
04	RECTIFICATION OF ERROR	12	
05	DEPRICIATION ACCOUNTING	12	
06	SKILL ENHANNCEMENT MODULE	12	
	TOTAL	75	
Teaching Plan for Theory (Second Sem.)Class : B.Com. Part I Sub- Financial Accounting			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	FINAL ACCOUNTS OF INDIVIDUAL	15	
02	BILL OF EXCHANGE	15	
03	ACCOUNTS OF NON PROFIT ORGANIZATION	15	
04	FINAL ACCOUNTS OF CO-OPERATIVE SOCIETIES	13	
05	FINAL ACCOUNTS OF PARTENERSHIP FIRMS	13	
06	SKILL ENHANNCEMENT MODULE	13	
	TOTAL	84	
Teaching Plan for Theory (Third Sem.) Class :B.Com. Part II Sub- Monetary System			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	MONEY	14	
02	VALUE OF MONEY	15	
03	PRICE FLUCTUATIONS	15	
04	MONEY MARKET	15	
05	CAPITAL MARKET	15	
	TOTAL	74	

Teaching Plan for Theory (Fourth Sem.) System		Class : B.Com. Part II	Sub- Indian Financial
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INDIAN FINANCIAL MARKET	18	
02	INDIAN BANKS	18	
03	COMMERCIAL BANKS	18	
04	RESERVE BANK OF INDIA	15	
05	STOCK EXCHANGE	15	
	TOTAL	84	
Teaching Plan for Theory (Third Sem.) Information Technology & Business Data Processing-I		Class : B.Com. Part II	Sub-
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	DATA & DATA PROCESSING	11	
02	DATABASE	10	
03	DATABASE MANAGEMENT SYSTEM	10	
04	SPREADSHEET PACKAGE	19	
05	FORMULAS, FUNCTIONS AND CHART IN EXCELS	24	
	TOTAL	74	
Teaching Plan for Theory (Fourth Sem.) Information Technology & Business Data Processing-II		Class : B.Com. Part II	Sub-
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INFORMATION TECHNOLOGY	10	
02	COMPUTERISED ACCOUNTING PACKAGE	10	
03	ACCOUNTING SOFTWARE	10	
04	WORKING IN TALLY	10	
05	REPORTS & ADVANCED FEATURES IN TALLY	44	
	TOTAL	84	
Teaching Plan for Theory (Third Sem.) Mathematics		Class : B.Com. Part II	Sub- Business
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	NATURAL NUMBERS, INTEGERS	10	
02	H.C.F. & L.C.M.	10	
03	PERCENTAGE-DISCOUNT, COMMISSION & BROKERAGE	10	
04	AVERAGE, PROFIT & LOSS	12	
	TOTAL	42	
Teaching Plan for Theory (Fourth Sem.) Statistics		Class : B.Com. Part II	Sub- Business
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INTRODUCTION OF STATISTICS	15	
02	INDEX NUMBERS	15	
03	ANALYSIS OF UNIVERSAL DATA	15	
	TOTAL	45	
Teaching Plan for Theory (Fifth Sem.)		Class : B.Com. Part III	Sub- Business Environment
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INDIAN BUSINESS ENVIRONMENT	15	
02	INDIAN AGRICULTURAL ENVIRONMENT	15	
03	INDIAN INDUSTRIAL ENVIRONMENT	15	
04	INDIAN SERVICE ENVIRONMENT	15	
05	INDIA & FOREIGN TRADE ENVIRONMENT	14	
	TOTAL	74	
Teaching Plan for Theory (Sixth Sem.)		Class : B.Com. Part III	Sub- Economics Of Development
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	ECONOMIC DEVELOPMENT	15	
02	ECONOMIC GROWTH MODELS	15	
03	ECONOMIC GROWTH MODELS	18	
04	GROWTH- BALANCED & UNBALANCED	18	
05	DEVELOPMENT OF CAPITAL- HUMAN & FINANCIAL	18	
	TOTAL	84	

ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Department: Commerce PROGRAMS SCHEDULE (2022 - 23)

Sr. No.	Particulars	Date
1	Online Bridge Course For First Year Students	04/08/2022
2	Online Quiz Competition On Mahatama Gandhi Jayanti	02/10/2022
3	Study Circle Formation	12/11/2022
4	Debate	15/12/2022
5	Group Discussion	29/12/2022
6	World Consumer Day	15/03/2023
7	Seminar	18/03/2023
8	Guest Lecture	11/04/2023

ARTS & COMMERCE COLLEGE, WARVAT BAKAL**Department of Chemistry****ACADEMIC CALENDER 2022-2023**

1. Session- I: From Friday, 1st July, 2022 to Wednesday, 30th November, 2022
2. Diwali Vacation: From Monday, 24th October, 2022 to Tuesday, 8th November, 2022
3. Session- II: Friday, 1st July, 2022 to Wednesday, 30th November, 2022
4. Summer Vacation: Monday, 23rd January, 2023 to Saturday, 15th May, 2023

Days available during Academic Year 2022-2023

Sr. No.	Activity	Commencement	Cessation	Total Days
1	First Session %	Friday, 1st July, 2022	Wednesday, 30th November, 2022	110
2	Teaching Days (First Session)	Monday, 25th July, 2022	Saturday, 22nd October, 2022	71
		Wednesday, 9th November, 2022	Wednesday, 30th November, 2022	19
3.	First Term Vacation	Monday, 24th October, 2022	Tuesday, 8th November, 2022	16
4.	Non-instructional days	Thursday, 1st December, 2022	Saturday, 21st January, 2023	07
5.	Second Session	Monday, 23rd January, 2023	Saturday, 27th May, 2023	98
6.	Teaching Days (Second Session)	Wednesday, 1st February, 2023	Saturday, 27th May, 2023	91
7.	Preparation for Summer Examination/ Non Instructional Days	Monday, 29th May, 2023	Saturday, 1st July, 2023	29
8.	Second Term Vacation	Monday, 29th May, 2023	Saturday, 1st July, 2023	34

ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Department of Chemistry

Vide the SGB Amravati University Gazette, following Public Holidays are declared for 2022-2023

अ. क्र. (Sr.No.)	सण/सुट्या (Festivals/Holidays)	दिवस व दिनांक (Day & Date)
१.	मोहरम Moharum	मंगळवार, दि. ९ ऑगस्ट, २०२२ Tuesday, 9 th August, 2022
२.	रक्षाबंधन Rakshabandhan	गुरुवार, दि. ११ ऑगस्ट, २०२२ Thursday, 11 th August, 2022
३.	स्वातंत्र्य दिन Independence Day	सोमवार, दि. १५ ऑगस्ट, २०२२ Monday, 15 th August, 2022
४.	पारशी नूतनवर्ष (शहेनशाही) Parsi New Year (Shahenshahi)	मंगळवार, दि. १६ ऑगस्ट, २०२२ Tuesday, 16 th August, 2022
५.	श्रीगणेश चतुर्थी ShriGanesh Chaturthi	बुधवार, दि. ३१ ऑगस्ट, २०२२ Wednesday, 31 st August, 2022
६.	अनंत चतुर्वशी Anant Chaturdashi	शुक्रवार, दि. ९ सप्टेंबर, २०२२ Friday, 9 th September, 2022
७.	दसरा Dasara	बुधवार, दि. ५ ऑक्टोबर, २०२२ Wednesday, 5 th October, 2022

८.	प्रजासत्ताक दिन Republic Day	गुरुवार, दि. २६ जानेवारी, २०२३ Thursday, 26 th January, 2023
९.	महाशिवरात्री Mahashivratri	शनिवार, दि. १८ फेब्रुवारी, २०२३ Saturday, 18 th February, 2023
१०.	होळी (दुसरा दिवस) Holi (Second Day)	मंगळवार, दि. ७ मार्च, २०२३ Tuesday, 7 th March, 2023
११.	गुढीपाडवा Gudhi Padwa	बुधवार, दि. २२ मार्च, २०२३ Wednesday, 22 nd March, 2023
१२.	श्रीराम नवमी Shriram Navmi	गुरुवार, दि. ३० मार्च, २०२३ Thursday, 30 th March, 2023
१३.	महावीर जयंती Mahavir Jayanti	मंगळवार, दि. ४ एप्रिल, २०२३ Tuesday, 4 th April, 2023
१४.	गुड फ्रायडे Good Friday	शुक्रवार, दि. ७ एप्रिल, २०२३ Friday, 7 th April, 2023
१५.	डॉ.बाबासाहेब आंबेडकर जयंती Dr.Babasaheb Ambedkar Jayanti	शुक्रवार, दि. १४ एप्रिल, २०२३ Friday, 14 th April, 2023
१६.	रमझान ईद (ईद-उल-फितर) Ramzan Id (Id-Ul-Fitar)	शनिवार, दि. २२ एप्रिल, २०२३ Saturday, 22 nd April, 2023
१७.	महाराष्ट्र दिन Maharashtra Day	सोमवार, दि. १ मे, २०२३ Monday, 1 st May, 2023
१८.	बुध्द पौर्णिमा Buddha Pournima	शुक्रवार, दि. ५ मे, २०२३ Friday, 5 th May, 2023

PROGRAMS SCHEDULE (2022-2023)

Sr. No.	Particulars	Date	Name of Teacher
01	Chemistry Study Circle Inauguration	10/08/2022	Prof. N.D. Dahake
02	Guest Lecture	05/09/2022	Dr. V.D. Ingale
03	Seminar Competition	19/09/2022	Prof. N.S. Shelke
04	Industrial Tour	10/10/2022	Prof. K.P. Sabale
05	National Science Day	28/02/2023	Common to All Department

Time Table (Odd sem)

1) Mr. Nityanand Devidas Dahake

Faculty: Science

Subject: Chemistry

Period	1	2	3	4	5	6	7	8	9
Day / Time	8:00 to 8:48 (P)	8:48 to 9:36 (P)	9:36 to 10:24 (P)	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	2:30 to 3:18 (P)	3:18 to 4:06 (P)	4:06 to 4:54 (P)
MON	P	P	P			T			
TUE	P	P	P		T				
WED	P	P	P				P	P	P
THUS	P	P	P		T		P	P	P
FRI	P	P	P				P	P	P
Day / Time				07:30 To 08.18	08:18 To 09:06	09:06 To 09.54	10.04 to 12.52 To 12.52 to 3.06		
SAT				T			P	P	P

Allotted Workload

Subject: Chemistry

Year: 2022-2023

Sr. No.	Class	No. of periods per week			Paper Allotted
		Lectures	Tutorials	Practical	
1	B.Sc.-1	03	--	12	--
2	B.Sc.-2	01	--	06	--
3	B.Sc.-3	--	--	12	--
4	M.Sc.-1	01	--	--	--

Total Workload per week (L+P): 05 (L) +30 (P) = 35 (L) (28 hrs.)

Time Table (Even sem)

1) Mr. Nityanand Devidas Dahake

Faculty: Science

Subject: Chemistry

Period	1	2	3	4	5	6	7	8	9
Day / Time	8:00 to 8:48 (P)	8:48 to 9:36 (P)	9.36 to 10:24 (P)	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	2:30 to 3:18 (P)	3:18 to 4:6 (P)	3: to 4:54 (P)
MON	P	P	P			T			
TUE	P	P	P		T				
WED	P	P	P		T		P	P	P
THUS	P	P	P		T		P	P	P
FRI	P	P	P				P	P	P
Day / Time				07:30 To 08.18	08:18To 09:06	09:06 To 09.54	10.04 to 12.52 To 12.52 to 3.06		
SAT							P	P	P
SUN	P	P	P		T		P	P	P

Allotted Workload

Subject: Chemistry

Year: 2022-2023

Sr. No.	Class	No. of periods per week			Paper Allotted
		Lectures	Tutorials	Practical	
1	B.Sc.-1	02	--	12	--
2	B.Sc.-2	01	--	06	--
3	B.Sc.-3	01	--	12	--
4	M.Sc.-1	01	--	--	

Total Workload per week (L+P): 05 (L) + 30 (P) = 35 (L) (28 hrs.)

Teaching Plan for Theory (First Semester)**Class: BSc Part-I**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Unit-3 Basics of Organic Chemistry			
	<p>A) Electronic Displacement and Reactive Intermediates: Inductive, Electromeric, Resonance, Mesomeric effects, Hyperconjugation and their applications, dipole moment, homolytic and heterolytic fission with suitable examples. Electrophiles and nucleophiles. Types, shape and their relative stability of carbocations, carbanions, free radicals and carbenes and nitrene</p> <p>B) Aliphatic Hydrocarbons: Formation and reaction of alkanes, Formation of alkenes and alkynes by elimination reactions (with mechanism of E1, E2, E1cb), Saytzeff and Hofmann eliminations, Reactions of alkenes and alkynes, Diels-Alder reaction.</p> <p>C) Structural isomers: Definition, classification, and examples.</p>	45	
Unit-4 Aromatic Compound			
	<p>A) Structural Properties: Aromaticity and Huckel's rule (Benzenoid and Non Benzenoid compounds), Kekule and Dewar structures, Molecular orbital diagram of benzene, Anti-aromatic and non-aromatic compounds.</p> <p>B) Orientation effect: Effect of substituent groups, Activating and deactivating group, Theory of reactivity and orientation on the basis of inductive and resonance effects.</p> <p>C) Electrophilic aromatic substitution: Halogenation, nitration, Sulphonation and Friedel Craft's alkylation/acylation with their mechanism.</p>		
Unit-5 Gaseous State:			
	<p>Postulates of kinetic theory of gases, Maxwell-Boltzmann distribution of velocities (only qualitative treatment), RMS velocity, Average velocity, most probable velocity, Relationship between RMS velocity and Average velocity, RMS velocity and Most probable velocity, Mean free path, Collision diameter, Collision number or Collision frequency, Deviation of real gases from ideal behavior, Explanation of deviations, Derivation of van der Waal's equation for real gases. Critical phenomenon, Andrew's experiment (isotherms of carbon dioxide) Critical constant P_c, T_c, V_c in terms of van der Waal's constant (a, b) Derivation of reduced equation of state, Law of corresponding state, Numerical.</p>		
Teaching Plan for Practical (First Semester)			
Class: BSc Part-I			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	<ol style="list-style-type: none"> Preparation of Acetyl derivative of aromatic primary amine (aniline or toluidine). Preparation of Benzanilide (Benzoylation). Preparation of Benzoic acid from Benzamide (Hydrolysis). Preparation of Benzoic acid from benzaldehyde (Oxidation). Preparation of phenyl-azo-β-naphthol dye (Diazotization) Base catalyzed Aldol Condensation (Synthesis of dibenzyl propanone). Preparation of p-nitro acetanilide from acetanilide. 	186	

8. Determination of surface tension of a given liquid using Stalagmometer		
9. Determination of the parachor value of -CH ₂ - group (methylene) using Stalagmometer		
10. Determination of coefficient of viscosity of aqueous solution of ethanol or polymer at room temperature		
11. Determination of unknown percentage composition of given glycerol solution from standard 2%, 4%, 6%, 8% and 10% solutions of glycerol		
12. Determination of the heat of solution of KNO ₃ (5% solution)		

Teaching Plan for Theory (Third Semester)
Class: BSc Part-2

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
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Unit-6 Liquid State and Electrochemistry

	A] Liquid state: (i) Surface tension, determination and its S.I. Unit. Effect of temperature on surface tension, derivation of expression for relative surface tension by Drop number method. Application of surface tension. (ii) Viscosity, determination and its S.I. Unit. Effect of temperature on viscosity, derivation of expression for relative viscosity by Ostwald's viscometer method. Applications of viscosity. B] Electrochemistry: (i) Conductance of electrolyte solution. Specific, equivalent and molar conductance. Determination of conductance of electrolyte solution, variation of specific and equivalent conductance with dilution for strong electrolyte. Conductometric titrations. Applications of conductometric titration. (ii) Migration of ions under the influence of electric field. Transport number of ions. Determination of transport number by Hottorf's method and Moving boundary method (iii) Kohlrausch's law of independent migration of ions. Determination of α and degree of dissociation α of a weak electrolyte. Determination of dissociation constant of weak electrolyte. (iv) Numerical.	15	
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Teaching Plan for Practical (Third Semester)
Class: BSc Part-2

Exercise I: a) Volumetric Analysis (Standard solutions to be prepared by students only) 16 Laboratory sessions 1) Prepare 0.1N oxalic acid standard solution and find out the acid neutralizing capacity of an antacid using NaOH as an intermediate solution. 2) Prepare 0.1N H ₂ SO ₄ solution and find out its exact normality using NaOH as an intermediate solution and 0.1N oxalic acid as standard solution. 3) To determine the strength of oxalic acid by titration with KMnO ₄ . 4) To determine percentage purity of Ferrous Ammonium Sulphate (FAS) by titration with KMnO ₄ . 5) To determine strength of FAS by titration with K ₂ Cr ₂ O ₇ using internal indicator.	50	
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<p>6) To determine strength of $K_2Cr_2O_7$ by titration with FAS using internal indicator.</p> <p>7) Estimation of copper (II) in commercial copper sulphate sample by iodometric titration.</p> <p>b) Gravimetric Analysis Estimation of Ba^{2+} as $BaSO_4$, Fe^{3+} as Fe_2O_3 using China and silica crucible and Ni^{2+} as Ni-DMG using sintered glass crucible.</p> <p>Exercise II: Physical Chemistry experiments</p> <p>1) To determine refractive index by Abbe's refractometer.</p> <p>2) To construct phase diagram of phenol-water system and to determine consolute temperature for the system.</p> <p>3) To determine transition temperature of $MnCl_2 \cdot 4H_2O$.</p> <p>4) To study kinetics of hydrolysis of methyl acetate catalyzed by acid.</p> <p>5) To study kinetics of saponification of ethyl acetate by NaOH. (Equal concentration)</p> <p>6) To determine partition coefficient of benzoic acid between benzene and water.</p> <p>7) To determine partition coefficient of iodine between CCl_4/Kerosene and water.</p> <p>8) To determine solubility of benzoic acid at different temperature and heat of solution.</p>		
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Teaching Plan for Theory (Fifth Semester)

Class: BSc Part-3

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	<p>Exercise 1: Inorganic Preparations 12 Laboratory sessions</p> <ol style="list-style-type: none"> 1. Preparation of tetraamminecopper (II)sulphate. 2. Preparation of hexaamminenickel (II)chloride. 3. Preparation of potassiumtrioxalate aluminate (III). 4. Preparation of Prussian blue. 5. Preparation of chrome alum. 6. Preparation of sodium thiosulphate and dithionite. <p>(Comment on VB structure, magnetic properties and color of 1, 2 and 3 complexes)</p> <p>Exercise II: Physical Chemistry experiments 14 Laboratory sessions</p> <p>(Standard oxalic acid solution should be prepared by the students)</p> <ol style="list-style-type: none"> 1. To determine strength of given HCl solution conductometrically. 2. To determine strength of given CH_3COOH solution conductometrically. 3. To determine strength of given HCl solution potentiometrically. 4. To determine strength of HCl and CH_3COOH in a given mixture conductometrically. 5. To determine redox potential of Fe^{+2}/Fe^{+3} system potentiometrically. 6. To determine molecular weight by Rast's method. 7. To determine specific rotation of optically active compound by Polarimeter 		

Teaching Plan for Theory (Second Semester)**Class: BSc Part-1**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Unit 1			
	<p>A) Ionic bonding: Definition of ionic bond. Factors affecting ionic bond formation (energetic of ionic bond formation ionization energy, electron affinity and lattice energy). Born-Haber's cycle to determine lattice energy. Solvation and solvation energy, factors affecting solvation energy.</p> <p>B) Polarization: Definition, polarizing power, polarizability, effect of polarization on nature of bond. Fajan's rules of polarization and its applications.</p> <p>C) Valence bond theory: Directional nature of covalent bond. Hybridization, types of hybridization to explain geometries of BeCl₂, BF₃, CH₄, PCl₅, SF₆ and IF₇</p>	29	
Unit 4			
	<p>A) Phenols: Phenol - Synthesis from toluene, cumene and salicylic acid, Kolbe's carboxylation reaction, Fries rearrangement, Reimer-Tiemann reaction, bromination, acidity of phenol.</p> <p>B) Ethers and epoxides: Diethyl ether - Synthesis from ethanol, Williamson's synthesis, reactions with cold and hot HI and acetic anhydride. Crown ethers - Brief introduction to crown ethers and its applications. Ethylene oxide - Synthesis from ethylene, ring opening reactions with Grignard reagent, HCN and H₂S, reduction with Zn + CH₃COOH, dimerization to dioxane (mechanism). Styrene oxide - Synthesis from styrene, ring opening reactions with acid and alkali, reduction with LiAlH₄.</p> <p>C) Thiols and thioethers: Ethanethiol - Synthesis from ethyl iodide, oxidations with I₂ and H₂O₂. Diethyl sulphide - Synthesis from ethyl bromide, Williamson's synthesis, desulphurization with Raney Ni, decomposition with alkali</p>		
Teaching Plan for Practical (Second Semester)			
Class: BSc Part-1			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	<p>Complete analysis of simple organic compounds (like urea, thiourea, benzoic acid, Salicylic acid, oxalic acid, glucose, naphthalene, para-toluidine, benzamide, etc.) containing one or two functional groups involving following steps.</p> <p>i) Preliminary examination</p> <p>ii) Detection of elements</p> <p>iii) Detection of functional groups</p> <p>iv) Determination of melting point</p> <p>v) Preparation of derivative and determination of its melting point</p> <p>vi) Performance of spot test, if any</p> <ol style="list-style-type: none"> 1. Qualitative analysis of compound-1 2. Qualitative analysis of compound-2 3. Qualitative analysis of compound-3 4. Qualitative analysis of compound-4 5. Qualitative analysis of compound-5 	174	

	<p>6. To determine the strength of oxalic acid by titration with KMnO_4. To determine strength of FAS by titration with KMnO_4 using internal indicator.</p> <p>8 Determination of temporary hardness of water sample.</p> <p>9 To determine the strength of oxalic acid by titration with KMnO_4.</p> <p>10 To determine strength of FAS by titration with KMnO_4 using internal indicator.</p> <p>11 Determination of order of reaction of hydrolysis of methyl acetate by an acid.</p> <p>12 To study kinetics of saponification of ethyl acetate by NaOH.</p>		
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Teaching Plan for Theory (Fourth Semester)

Class: BSc Part-2

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
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Unit 2

	<p>A] Inner transition elements: Definition, Lanthanides and Actinides. Comparative study of Lanthanides with respect to following properties: (i) Electronic configuration (ii) Atomic and ionic radii lanthanide contraction definition, cause and effect of lanthanide contraction (iii) Oxidation states (iv) Magnetic properties (v) Color of salts (vi) Complex formation behavior. Occurrence of lanthanides. Isolation of lanthanides by ion exchange method. Actinides- Electronic configuration and oxidation states. Comparison of lanthanides and actinides</p>	16	
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Teaching Plan for Practical (Fourth Semester)

Class: BSc Part-2

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
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	<p>Exercise I: Inorganic estimations 14 Laboratory sessions</p> <p>1) Chromatographic separation of binary mixture containing $\text{Cu}(\text{II})$, $\text{Co}(\text{II})$ and $\text{Ni}(\text{II})$ ions by paper chromatography and determination of R_f values.</p> <p>2) Estimation of $\text{Zn}(\text{II})$ by complexometric titration.</p> <p>3) To determine the strength of unknown calcium salt solution by complexometric titration.</p> <p>4) Estimation of hardness of water by complexometric titration.</p> <p>5) Colorimetric or spectrophotometric estimation of $\text{Cu}(\text{II})$ in commercial copper sulphate sample as ammonia complex.</p> <p>6) To determination of concentration of unknown KMnO_4 solution from standard solutions of KMnO_4 by colorimetrically or spectrophotometrically.</p> <p>Exercise II: Organic Chemistry Practicals 12 Laboratory Sessions</p> <p>1. Isolation of casein from milk.</p> <p>2. Isolation of nicotine from tobacco leaves.</p> <p>3. Isolation of caffeine from tea leaves.</p> <p>4. Isolation of lycopene from tomato juice.</p> <p>5. Estimation of glucose.</p> <p>6. Estimation of acetamide.</p> <p>7. Determination of equivalent weight of an organic acid.</p>	58	
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Teaching Plan for Theory (Sixth Semester)

Class: BSc Part-3

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Unit 4 NMR and Mass spectroscopy			
	<p>A] NMR spectroscopy: Introduction, spin quantum number, instrumentation, Aspects of NMR- number of signals (equivalent and non-equivalent protons), positions of signals (chemical shift), intensities of signals, splitting of signals (spin-spin coupling), coupling constant, applications.</p> <p>B] Mass spectroscopy: Introduction, theory, instrumentation-(ion sources), Mass spectra of neopentane and methanol, molecular ion peak, base peak, metastable peak, Rules of fragmentation, applications.</p>	16	

Teaching Plan for Practical (Sixth Semester)**Class: BSc Part-3**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	<p>Exercise I: Organic Chemistry Experiments: 16 Laboratory sessions</p> <ol style="list-style-type: none"> 1. Estimation of formaldehyde. 2. Estimation of glycine. 3. Estimation of ascorbic acid (vitamin C). 4. Estimation of phenol by bromination method. 5. Estimation of aniline by bromination method. 6. Estimation of urea by hypobromite method. 7. Estimation of unsaturation by bromination method. 8. Determination of iodine value of oil. 9. Determination of equivalent weight of an ester by saponification. 10. Separation of a mixture of methyl orange and methylene blue by thin layer chromatography (using benzene). 11. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using benzene: petroleum ether = 3:1). 12. Separation of a mixture of dyes by thin layer chromatography (using cyclohexane: ethyl acetate = 8.5:1.5). 13. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using toluene: petroleum ether). <p>Exercise II: Physical Chemistry experiments 10 Laboratory sessions</p> <ol style="list-style-type: none"> 1. To determine dissociation constant of weak acid by conductometry. 2. To determine dissociation constant of weak acid by potentiometry. 3. To study potentiometric titration of KCl and AgNO₃. 4. To determine dissociation constant of dibasic acid by pH-metry. 5. To verify Beer's Lambert's law using KMnO₄/K₂Cr₂O₇. 6. To determine pH of a soil sample by pH-meter. 7. To determine solubility and solubility product of sparingly soluble salts conductometrically. 8. To study strong acid and strong base titration by pH-metry. 	192	

Teaching Plan for Theory (First Semester)
Class: MSc Part-1

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Unit 2 Stereochemistry			
	Conformational analysis of cycloalkanes (5-8 membered rings), substituted cyclohexanes, mono substituted, disubstituted and trisubstituted cyclohexanes, decalin system, effect of conformation on reactivity, Conformational analysis of n-butane and its derivatives, ethylene glycol, 1,2-dihaloethane and related compounds elements of symmetry, Concept of chirality and molecular dissymmetry, molecules with more than one chiral center, meso compounds, threo and erythro isomers, method of resolution, optical purity, topicity of ligands, enantiotropic and distereotopic atoms, groups and faces, prochirality, Cahn-Ingold-Prelog System to describe configuration at chiral centers. Inter conversion of Newman, Sawhorse and Fischer projection. Asymmetrical synthesis, optical activity in absence of chiral carbon (biphenyl, spiranes and allenes), Chirality due to helical shape. Chirality of heteroatoms, stereospecific and stereoselective synthesis.	16	

Teaching Plan for Theory (Second Semester)
Class: MSc Part-1

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Unit 4 Molecular Rearrangement and Green Chemistry			
	A) Molecular rearrangements and fragmentation reactions: Molecular rearrangements: Definition and classification of molecular rearrangements involving: 1. electron deficient carbon: Pinacol-Pinacolone, Semi-Pinacol Wagner- Meerwein, Tiffenev –Demjnov ring expansion, and Arndt-Eistert synthesis, Dienone-phenol rearrangement 2. electron deficient nitrogen: Hofmann, Lossen, Curtius, Schmidt Neber, Stieglitz and Beckmann rearrangements 3. electron deficient oxygen: Baeyer-Villiger oxidation, Dakin reaction 4. Base catalysed rearrangements: Benzil-Benzilic acid, Favorskii, Sommelet-Hauser and Smiles rearrangement Fragmentation reactions: Electron push and pull requirement, Beckmann, Eschenmoser, Alicyclic-Grobb fragmentation. B) Green Chemistry: Designing a green synthesis: Choice of starting material, choice of solvents. Basic principle of green chemistry, Concept of atom economy with suitable examples, Green Synthesis of styrene, urethane, caprolactum, paracetamol, Synthesis of Ibuprofen. Microwave induced green synthesis, Ionic liquids as Green Solvents, Chemical reactions involved in Bhopal gas tragedy, Minamata disease, Seveso (Italy) disaster	16	

2) Dr. V.D. Ingale

Time Table

Faculty: SCIENCE

Subject: CHEMISTRY

Period	1	2	3	4	5	6	
Day / Time	08:00 to 10:24	11:00 to 11:48	11:48 to 12:36	12:36 to 01:24	01:24 to 2:22	2:30 to 4:54	
MON	II (P) B ₁		III (T)			II (P) B ₂	
TUE	II (P) B ₁	III (T)				II (P) B ₂	
WED	III (P)C ₁			II (T)			
THUS	III (P)C ₁			I (T)			
FRI	I (P) A ₁			II (T)		I (P) A ₂	
		7:30 to 8:18	8:18 to 9:06	9:16 to 10:04		10.04to 12.28	12.28 to 2.52
SAT						I(P) A ₁	I(P) A ₂

Allotted Workload

Subject : CHEMISTRY

Year : 2022-2023

Sr. No.	Class	No. of periods per week			Unit Allotted
		Lectures	Tutorials	Practical	
1	B.Sc I	01	---	4×3=12	01
2	B.Sc II	02	---	4×3=12	02
3	B.Sc III	02	---	2×3=06	02
4	Total	05	---	30	05

Total Workload per week (L+T+P) : 05 (L) + 30 (P) = 35 (28 Hrs.)

Classes	Periods	ODD SEMESTER						EVEN SEMESTER				
		JUL-22	AUG-22	SEP-22	OCT-22	NOV-22	Total	FEB-23	MAR-23	APR-23	MAY-23	Total
B.Sc I	Theory	01	03	05	03	03	15	04	05	04	04	17
	Practical	12	48	48	36	36	180	42	54	42	42	180
B.Sc II	Theory	02	08	08	05	07	30	07	08	06	07	28
	Practical	12	42	48	42	33	177	48	42	48	42	180
B.Sc III	Theory	02	07	08	06	06	29	08	07	08	07	30
	Practical	12	42	54	30	42	180	42	48	48	48	186

Syllabus:

Teaching Plan for Theory (First Semester)		Class : B.Sc Part I	
Sr. No.	Topic to be covered	Lectures Available 15L	Lectures Utilized
01	Unit-VI	14	
	<p>A) Liquid State: Definition of surface tension, Its SI unit and effect of temperature on surface tension, Derivation of expression for relative surface tension by stalagmometer method. Applications of surface tension. Viscosity, definition of coefficient of viscosity, Its SI unit and effect of temperature on viscosity, Derivation of expression for relative viscosity by Ostwald's viscometer method, Applications of viscosity.</p> <p>B) Physical Properties and Molecular Structure: I. Electrical Properties: (i) Polar and non-polar molecules. Dipole moment. (ii) Induced polarization and orientation polarization. Clausius Mossotti equation (only qualitative treatment). (iii) Measurement of dipole moment by temperature and refractivity methods. (iv) Applications of dipole moment for the determination of molecular structure. i.e. percentage ionic character of covalent bonding, molecular geometry, cis-trans isomers, ortho, meta and para isomers of a disubstituted benzene.</p> <p>II. Magnetic Properties: (i) Paramagnetic and diamagnetic substances, origin of paramagnetism, diamagnetism, ferromagnetism and antiferromagnetism. (ii) Volume, specific, mass and molar susceptibility. Relationship between molar magnetic susceptibility and magnetic moment. (iii) Relationship between magnetic moment and number of unpaired electrons. (iv) Gouy's balance method for determination of magnetic susceptibility. (v) Application of magnetic moment in the determination of molecular structure. (vi) Numerical</p>	14	

	Unit Test	01	
Teaching Plan for Practical (First Semester)		Class : B.Sc Part I	
Sr. No.	List of Practical/Laboratory Experiments/Activities etc	Lectures Available	Lectures Utilized
		180L	
01	Preparation of Acetyl derivative of aromatic primary amine (aniline or toluidine).	15	
02	Preparation of Benzanilide (Benzoylation).	15	
03	Preparation of Benzoic acid from Benzamide (Hydrolysis).	15	
04	Preparation of Benzoic acid from benzaldehyde (Oxidation).	15	
05	Preparation of phenyl-azo-β-naphthol dye (Diazotisation)	15	
06	Base catalysed Aldol Condensation (Synthesis of dibenzal propanone).	15	
07	Preparation of p-nitroacetanilide from acetanilide.	15	
08	Determination of surface tension of a given liquid using Stalagmometer	15	
09	Determination of the parachor value of -CH ₂ - group (methylene) using Stalagmometer	15	
10	Determination of coefficient of viscosity of aqueous solution of ethanol or polymer at room temperature.	15	
11	Determination of unknown percentage composition of given glycerol solution from standard 2%, 4%, 6%, 8% and 10% solutions of glycerol	15	
12	Determination of the heat of solution of KNO ₃ (5% solution)	15	
Teaching Plan for Theory (Second Semester)		Class : B.Sc Part I	
Sr. No.	Topic to be covered	Lectures Available 14L	Lectures Utilized
01	UNIT-II		
	A) VSEPR Theory: Various rules under VSEPR theory to explain molecular geometry (following examples may be taken to explain various rules- SnCl ₂ , CH ₄ , NH ₃ , H ₂ O, SF ₄ , ClF ₃ , XeF ₄ , XeO ₃ , PCl ₃ . Limitations of VSEPR theory	04	
	B) Molecular Orbital Theory: Postulates of MO theory. LCAO approximation. Formation of bonding and antibonding MOs. Rules for LCAO. MO energy level diagram. Concept of bond order. MO structure of homonuclear diatomic molecules of namely He ₂ , H ₂ , N ₂ and O ₂ . Stability sequence of species of O ₂ i.e. O ₂ , O ₂ ⁺ , O ₂ ²⁺ , O ₂ ⁻ and O ₂ ²⁻ . Paramagnetic nature of O ₂ . MO structure of heteronuclear diatomic molecules viz. NO, HF and CO (Coulson's structure). Explanation of important properties of CO viz. – triple bond, almost nonpolar nature, electron donor and acceptor behavior. Comparison of VB and MO theories	10	
Teaching Plan for Practical (Second Semester)		Class : B.Sc Part I	
Sr. No.	Topic to be covered	Lectures Available 180L	Lectures Utilized
01	Exercise I: Organic Qualitative Analysis (05) Complete analysis of simple organic compounds (like urea, thiourea, benzoic acid,	138	

	Salicylic acid, oxalic acid, glucose, naphthalene, para-toluidine, benzamide, etc.) containing one or two functional groups involving following steps. i) Preliminary examination ii) Detection of elements iii) Detection of functional groups iv) Determination of melting point v) Preparation of derivative and determination of its melting point vi) Performance of spot test, if any		
	1) Qualitative analysis of compound-1	27	
	2) Qualitative analysis of compound-2	27	
	3) Qualitative analysis of compound-3	28	
	4) Qualitative analysis of compound-4	28	
	5) Qualitative analysis of compound-5	28	
02	Exercise II: Volumetric Analysis	42	
	6) To determine the strength of oxalic acid by titration with KMnO ₄ .	6	
	7) To determine strength of FAS by titration with KMnO ₄ using internal indicator.	6	
	8) Determination of temporary hardness of water sample.	6	
	9) Estimation of Zn ⁺⁺ ions by complexometric titration.	6	
	10) Prepare 0.1N H ₂ SO ₄ solution and find out its exact normality using NaOH as an intermediate solution and 0.1N oxalic acid as a standard solution.	6	
	11) Determination of order of reaction of hydrolysis of methyl acetate by an acid.	6	
	12) To study kinetics of saponification of ethyl acetate by NaOH	6	
Teaching Plan for Theory (Third Semester)		Class : B.Sc Part II	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	UNIT-I & III	30L	
02	UNIT-I	14	
	a) Covalent Bonding: Molecular Orbital Theory. Postulates of MO theory. LCAO approximation. Formation of bonding and antibonding MOs. Rules for LCAO. MO energy level diagram. Concept of bond order. MO structure of homonuclear diatomic molecules of namely He ₂ , H ₂ , N ₂ and O ₂ . Stability sequence of species of O ₂ i.e. O ₂ , O ₂ ⁺ , O ₂ ²⁺ , O ₂ ⁻ and O ₂ ²⁻ . Paramagnetic nature of O ₂ . MO structure of heteronuclear diatomic molecules viz. NO, HF and CO (Coulson's structure). Explanation of important properties of CO viz. – triple 15 16 bond, almost nonpolar nature, electron donor and acceptor behaviour. Comparison of VB and MO theories	06	
	b) Metallic Bonding: Free electron theory and properties of metals such as electrical and thermal conduction, malleability, ductility and metallic lusture. VB theory or Resonance theory	03	

	of metals. Band theory to explain nature of conductors, insulators and semiconductors (both intrinsic and extrinsic).		
	c)VSEPR Theory: Various rules under VSEPR theory to explain molecular geometry (following examples may be taken to explain various rules- BeCl ₂ , BF ₃ , CH ₄ , NH ₄ ⁺ , PCl ₅ , SF ₆ , IF ₇ , SnCl ₂ , NH ₃ , H ₂ O, SF ₄ , ClF ₃ , BrF ₅ , XeF ₆ , SOF ₄ , COF ₂ , PCl ₃ ,). Limitations of VSEPR theory.	05	
	Unit Test	01	
03	UNIT-III	14	
	A] Aldehydes and Ketones: Preparation of acetaldehyde from ethanol, ethylidene chloride and acetylene. Preparation of benzaldehyde from benzene (Gattermann-Koch reaction) and toluene. Preparation of acetone from isopropyl alcohol, isopropylidene chloride and propyne. Preparation of acetophenone from benzene and ethyl benzene. Structure of carbonyl group, acidity of α -hydrogen in carbonyl compounds. Reactions of aldehydes & ketones: Cannizaro's, Reformatsky, Perkin with mechanism, Mannich reaction, Benzoin and Aldol condensations. Clemmensen, Wolf-Kishner, MPV and LiAlH ₄ reductions.	08	
	B] Carboxylic acids: Structure and reactivity of carboxylic groups. Acidity of carboxylic acids, effects of substituents on acids strength. Oxalic acid: Preparation from ethylene glycol and cyanogen. Reactions: Reaction with ethyl alcohol, ammonia, glycerol and action of heat. Lactic acid: Preparation from acetaldehyde and pyruvic acid. Reactions: Reaction with ethanol, PCl ₅ , action of heat, oxidation and reduction. Benzoic acid: Preparation from toluene, benzyl alcohol, phenyl cyanide and benzamide. Reactions : Reaction with ethanol, PCl ₅ and ammonia. Salicylic acid: Preparation by Reimer-Tiemann reaction. Reactions: Reaction with CH ₃ COCl, CH ₃ OH and C ₆ H ₅ OH	06	
	Unit Test	01	

Teaching Plan for Practical (Third Semester)

Class : B.Sc Part II

Sr. No.	Topic to be covered	Lectures Available 177L	Lectures Utilized
01	EXERCISE I: a) Volumetric Analysis (07)	100	
	1) Prepare 0.1N oxalic acid standard solution and find out the acid neutralizing capacity of an antacid using NaOH as an intermediate solution.	15	
	2) Prepare 0.1N H ₂ SO ₄ solution and find out its exact normality using NaOH as an intermediate solution and 0.1N oxalic acid as standard solution.	15	
	3) To determine the strength of oxalic acid by titration with KMnO ₄ .	14	
	4) To determine percentage purity of Ferrous Ammonium Sulphate (FAS) by titration with KMnO ₄ .	14	
	5) To determine strength of FAS by titration with K ₂ Cr ₂ O ₇ using internal indicator.	14	
	6) To determine strength of K ₂ Cr ₂ O ₇ by titration with FAS using internal indicator.	14	
	7) Estimation of copper (II) in commercial copper sulphate	14	

	sample by iodometric titration		
02	b) Gravimetric Analysis (03):	20	
	Estimation of Ba ²⁺ as BaSO ₄	6	
	Estimation of Fe ³⁺ as Fe ₂ O ₃ using china and silica crucible	7	
	Estimation of Ni ²⁺ as Ni-DMG using sintered glass crucible	7	
03	EXERCISE II: Physical Chemistry Experiment (08)	60	
	1) To determine refractive index by Abbe's refractometer.	8	
	2) To construct phase diagram of phenol-water system and to determine consolute temperature for the system.	8	
	3) To determine transition temperature of MnCl ₂ .4H ₂ O.	6	
	4) To study kinetics of hydrolysis of methyl acetate catalyzed by acid.	6	
	5) To study kinetics of saponification of ethyl acetate by NaOH. (Equal concentration)	6	
	6) To determine partition coefficient of benzoic acid between benzene and water.	8	
	7) To determine partition coefficient of iodine between CCl ₄ /Kerosene and water.	8	
	8) To determine solubility of benzoic acid at different temperature and heat of solution.	7	

Teaching Plan for Theory (Fourth Semester)

Class : B.Sc Part II

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	UNIT-III & UNIT-IV	28	
02	UNIT-III	14	
	a) Polynuclear Hydrocarbon: Naphthalene - Haworth synthesis, orbital picture, Reactions – electrophilic substitution (orientation) Preparation of naphthols from naphthalene sulphonic acids and naphthylamines from naphthols.	04	
	b) Reactive Methylene Compounds: Malonic Ester: Synthesis from acetic acid, Synthetic applications- Synthesis of acetic acid, succinic acid, glutaric acid, crotonic acid and malonyl urea. Acetoacetic ester: Synthesis from ethyl acetate, Synthetic applications- Synthesis of acetic acid, propionic acid, isobutyric acid, succinic acid, glutaric acid, crotonic acid, acetyl acetone and 4-methyl uracil	06	
	c) Carbohydrates: Constitution of glucose, cyclic structure, Pyranose and Furanose structure, Epimerization, conversion of glucose to fructose and vice-versa, Introduction to fructose, ribose, 2-deoxyribose, maltose, sucrose. (their structures only determination not needed).	04	
03	UNIT-IV	15	
	a) Aromatic Nitro Compounds: Nitrobenzene: Synthesis from benzene, Reduction of nitrobenzene in acidic, neutral and alkaline medium	03	
	b) Amino Compounds: Basicity and effect of substituents. Methods of preparation of aniline from nitrobenzene, Reactions: with acetyl and benzoyl chlorides, Br ₂ (aq) and Br ₂ (CS ₂), Carbylamine reaction, alkylation, Hoffmann's exhaustive methylation and its mechanism.	04	
	c) Diazonium Salts: Preparation benzene diazonium	03	

	chloride, Synthetic applications- Preparation of benzene, phenol, halobenzene, nitrobenzene, benzonitrile, coupling with phenol and aniline		
	d) amino Acids and Proteins: Classification, Strecker and Gabriel phthalimide synthesis, Zwitterion structure, Isoelectric point, peptide synthesis, Structure determination of polypeptides by end group analysis	04	
04	UNIT TEST	01	
Teaching Plan for Practical I (Fourth Semester)		Class : B.Sc Part II	
Sr. No.	Topic to be covered	Lectures Available 180L	Lectures Utilized
01	EXERCISE I: Inorganic Estimation (06)	120	
	1) Chromatographic separation of binary mixture containing Cu(II), Co(II) and Ni(II) ions by paper chromatography and determination of R _f values.	20	
	2) Estimation of Zn(II) by complexometric titration.	20	
	3) To determine the strength of unknown calcium salt solution by complexometric titration.	20	
	4) Estimation of hardness of water by complexometric titration.	20	
	5) Colorimetric or spectrophotometric estimation of Cu(II) in commercial copper sulphate sample as ammonia complex.	20	
	6) To determination of concentration of unknown KMnO ₄ solution from standard solutions of KMnO ₄ by calorimetrically or spectrophotometrically	20	
02	EXERCISE II: Organic Practical (07)	60	
	1. Isolation of casein from milk.	8	
	2. Isolation of nicotine from tobacco leaves.	9	
	3. Isolation of caffeine from tea leaves.	9	
	4. Isolation of lycopene from tomato juice.	8	
	5. Estimation of glucose.	9	
	6. Estimation of acetamide.	9	
	7. Determination of equivalent weight of an organic acid	8	
Teaching Plan for Theory (Fifth Semester)		Class : B.Sc Part III	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	UNIT-III & IV	29	
	UNIT-III	14	
	A] Heterocyclic compounds: Nomenclature, Pyrrole: Synthesis from acetylene, succinimide and furan, Basicity, Electrophilic substitution reactions (orientation) – nitration, sulphonation, acetylation and halogenation, Molecular orbital structure	04	
	Pyridine: Synthesis from acetylene and pentamethylene diamine hydrochloride, Basicity, Electrophilic substitution reactions (orientation) – nitration, sulphonation, Nucleophilic substitution reactions (orientation)- with NaNH ₂ , C ₆ H ₅ Li and KOH	03	
	Organometallic compounds: Grignard reagents: Methyl magnesium bromide- Synthesis from methyl bromide (only reaction) Synthetic applications:	04	

	Electrophilic substitution reactions-formation of alkanes, alkenes, higher alkynes and other organometallic compounds, Nucleophilic substitution reactions- Reaction with aldehydes and ketones, ethylene oxide, acetyl chloride, methyl cyanide and CO ₂ .		
	Methyl lithium-Synthesis and reaction with water, formaldehyde, acetaldehyde, acetone, ethylene oxide and CO ₂ .	03	
04	UNIT-IV	14	
	a)Dyes: Classification on the basis of structure and mode of application, Preparation and uses of Methyl orange, Crystal violet, Phenolphthalein , Alizarin and Indigo	05	
	b)Drugs: Analgesic and antipyretics: Synthesis and uses of phenylbutazone. Sulpha drugs: Synthesis and uses of sulphanilamide and sulphadiazine. Antimalarials: Synthesis of chloroquine from 4,7 dichloroquinoline and its uses	05	
	c)Pesticides: Insecticides: Synthesis and uses of malathion. Herbicides: Synthesis and uses of 2,4 dichloro phenoxy acetic acid (2,4-D). Fungicides: Synthesis and uses of thiram (tetramethyl thiuram disulphide).	05	
05	UNIT TEST	01	
Teaching Plan for Practical (Fifth Semester)		Class : B.Sc Part III	
Sr. No.	Topic to be covered	Lectures Available 180 L	Lectures Utilized
01	EXERCISE I: Inorganic Preparation (06)	60	
	1. Preparation of tetraamminecopper (II)sulphate.	6	
	2. Preparation of hexaamminenickel (II)chloride.	6	
	3. Preparation of potassiumtrioxalate aluminate (III).	6	
	4. Preparation of Prussian blue.	6	
	5. Preparation of chrome alum.	6	
	6. Preparation of sodium thiosulphate and dithionite. (Comment on VB structure, magnetic properties and color of 1, 2 and 3 complexes)	6	
02	EXERCISE II: Physical Chemistry Experiments (06)	120	
	1. To determine strength of given HCl solution conductometrically.	18	
	2. To determine strength of given CH ₃ COOH solution conductometrically.	18	
	3. To determine strength of given HCl solution potentiometrically.	18	
	4. To determine strength of HCl and CH ₃ COOH in a given mixture conductometrically.	18	
	5. To determine redox potential of Fe ⁺² /Fe ⁺³ system potentiometrically.	16	
	6. To determine molecular weight by Rast's method.	16	
	7. To determine specific rotation of optically active compound by Polarimeter.	16	

Teaching Plan for Theory (Sixth Semester)		Class : B.Sc Part III	
Sr. No.	Topic to be covered	Lectures Available 30L	Lectures Utilized
01	UNIT-I	14	
	A) Kinetic Aspects of Metal Complexes : Thermodynamic and kinetic stability of the complexes, factors affecting stability of complexes. Brief idea about substitution reactions, SN ¹ -dissociative and SN ² -associative mechanism. Labile and inert complexes. Factors affecting lability of complexes namely arrangement of d-electrons (on the basis of VB theory), size of central metal ion, charge of central metal ion, geometry of complexes. Substitution reactions in square planar complexes mechanism.	06	
	B) Analytical Chemistry : 1) Spectrophotometry and Colorimetry :- Concept of ϵ_{max} , Beer-Lambert's law (Only statement and final equation, no derivation). Calibration curve and its importance. Validity and limitations of Beer-Lambert's law. Verification of Beer's law. Block diagram of colorimeter and spectrophotometer with brief description of each component and its function. Difference between colorimetric and spectrophotometric technique for determination of concentration of metal ion (Example of determination of Cu(II)).	04	
	2) Paper Chromatography :- Definition and classification of chromatographic techniques. Principle of differential migration. Principle and technique of paper chromatography -ascending, descending and circular, R _f value and factors affecting R _f value.	04	
	Unit Test	01	
02	UNIT-II		
	a) Organometallic Chemistry: Definition, nomenclature and classification of organometallic compounds. Metal carbonyls- definition and classification. Preparation, properties, structure and bonding in Ni(CO) ₄ , Fe(CO) ₅ , Cr(CO) ₆ . Nature of M-C bond in metal carbonyls.	05	
	b) Inorganic Polymer: Definition and classification. Silicones: preparation, properties structure and bonding and applications. Phosphonitrile halides polymers- preparation, properties, structure and bonding in cyclic polymers	05	
	c) Bioinorganic Chemistry: Essential and trace elements in biological processes. Biological role of Na ⁺ , K ⁺ , Ca ²⁺ and Mg ²⁺ ions. Metalloporphyrins- Haemoglobin and Myoglobin and their role in oxygen transport	04	
03	UNIT TEST	01	

Teaching Plan for Practical (Sixth Semester)		Class : B.Sc Part III	
Sr. No.	Topic to be covered	Lectures Available 186L	Lectures Utilized
01	EXERCISE I: Organic Chemistry Preparation (13)	100	
	1. Estimation of formaldehyde.	8	
	2. Estimation of glycine.	8	
	3. Estimation of ascorbic acid (vitamine C).	8	
	4. Estimation of phenol by bromination method.	8	
	5. Estimation of aniline by bromination method.	8	
	6. Estimation of urea by hypobromite method.	8	
	7. Estimation of unsaturation by bromination method.	8	
	8. Determination of iodine value of oil.	8	
	9. Determination of equivalent weight of an ester by saponification.	8	
	10. Separation of a mixture of methyl orange and methylene blue by thin layer chromatography (using benzene).	7	
	11. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using benzene : petroleum ether = 3:1).	7	
	12. Separation of a mixture of dyes by thin layer chromatography (using cyclohexane: ethyl acetate = 8.5:1.5).	7	
	13. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using toluene: petroleum ether).	7	
02	EXERCISE II: Physical Chemistry Experiments (08)	86	
	1. To determine dissociation constant of weak acid by conductometry.	10	
	2. To determine dissociation constant of weak acid by potentiometry.	10	
	3. To study potentiometric titration of KCl and AgNO ₃ .	11	
	4. To determine dissociation constant of dibasic acid by pH-metry.	11	
	5. To verify Beer's Lambert's law using KMnO ₄ /K ₂ Cr ₂ O ₇ .	11	
	6. To determine pH of a soil sample by pH-meter.	11	
	7. To determine solubility and solubility product of sparingly soluble salts conductometrically.	11	
	8. To study strong acid and strong base titration by pH-metry. Distribution of Marks for Practical Examination	11	

3) Name: Mr. K P Sabale

Time Table: Odd Semester

Faculty: SCIENCE

Subject: CHEMISTRY

	Period	1	2	3	4	5	6
		Practical	Theory				Practical
	Day / Time	8 to 10:24(Pr)	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:22 to 4:46(Pr)
UG	MON	II(B ₁)					II(B ₂)
UG	TUE	II(B ₁)					II(B ₂)
UG	WED	III(C ₁)		III(T)			III(C ₂)
PG	WED					MSC-I	
UG	THUS	III(C ₁)		III(T)			III(C ₂)
UG	FRI	I(A ₁)		I(T)			--
			7:30 to 8:18	8:18 to 9:06	9:06 to 9:54	10:04 to 12:28	12:28 to 2:52
UG	SAT				II(T)	BSc-I(P)(A ₁)	--

Allotted Workload

Subject: CHEMISTRY

Year: 2022-23

Sr. No.	Class	Allotted workload per week		
		Lectures	Practical	Paper Allotted
1	BSc-I	01	2 x 3 = 6	1
2	BSc-II	01	4 x 3 = 12	1
3	BSc-III	02	4 x 3 = 12	2
4	MSc-I	01	-	1
4	Total	05(Th)	30(Pr)	05

Total Workload per week (T+P): 04 (L) + 30 (Pr) = 34 (27.12 Hrs.)

Allotted Workload

Subject: CHEMISTRY

Year: 2022-23

Sr. No.	Class	Allotted workload per week		
		Lectures	Practical	Paper Allotted
1	BSc-I	02	2 x 3 = 6	2
2	BSc-II	01	4 x 3 = 12	1
3	BSc-III	01	4 x 3 = 12	1
5	MSc-I	01	-	1
4	Total	05(Th)	30(Pr)	05

Total Workload per week (T+P): 05 (L) + 30 (Pr) = 35 (28 Hrs.)

Teaching Periods Available per month during the session 2022-23 (Odd/Even Sem)

Faculty: SCIENCE

Subject: CHEMISTRY

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	JUL - 2022	AUG- 2022	SEP - 2022	OCT - 2022	NOV- 2022	Tot al	FEB- 2023	MAR - 2023	APR - 2023	MAY- 2023	Tota l
BSc-I	Theory	01	04	05	03	03	16	12	13	14	-	39
	Practical	02	08	08	07	06	31	08	09	09	-	26
BSc - II	Theory	01	04	04	04	03	16	04	05	04	01	14
	Practical	04	14	16	12	12	58	16	16	16	-	48
BSc- III	Theory	02	07	09	05	07	30	04	05	04	01	14
	Practical	04	14	18	10	14	60	16	20	16	-	52

Allotted Units 2022-23

Sr No	Unit Name					
	Unit No	Odd Semester	Class	Unit No	Even Semester	Class
1	II	Acids & Bases	BSc-1	III	Haloalkanes, Haloarenes, Polyhydric alcohols	BSc-1
2	V	Thermodynamics and Equilibrium	BSc-2	VI	Chemical Kinetics	BSc-1
3	I	Co-Ordination Compounds-I	BSc-3	I	Chemistry of elements of transition series & Extraction of Elements	BSc-2
4	II	Crystal Field theory & Electronic Spectra of transition Metal Complexes	BSc-3	III	Electronic Spectroscopy & IR Spectroscopy	BSc-3
5	III	Symmetry of Molecules	MSc-I			

Teaching Plan for Theory (First Semester)		Class : BSc Part I	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Unit- II			
Unit II	A) Acids and Bases - Arrhenius, Bronsted-Lowry, and Lewis's theory of acids and bases, Theory of solvent systems and Lux-Flood concept of acids and bases. Hard and soft acids and bases. Pearson's HSAB or SHAB principle with important applications. B) Nonaqueous Solvents -Requirements of a good solvent. Water as a universal solvent. Physical properties of solvents namely liquid range, dielectric constant, dipole moment, heat of vaporization and solubility behavior. Classification of solvents. Acid base, precipitation, redox, solvolysis and complexation reactions in liquid ammonia. Merits and demerits of liquid ammonia as a solvent.	16	
	Unit Test		
Teaching Plan for Practical (First Semester)		Class : BSc Part I	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Exercise-1 Organic Preparations		31	
1	Preparation of Acetyl derivative of aromatic primary amine (aniline or toluidine).		
2	Preparation of Benzanilide (Benzoylation).		
3	Preparation of Benzoic acid from Benzamide (Hydrolysis).		
4	Preparation of Benzoic acid from benzaldehyde (Oxidation).		
5	Preparation of phenyl-azo-β-naphthol dye (Diazotisation)		
6	Base catalysed Aldol Condensation (Synthesis of dibenzal propanone).		
7	Preparation of p-nitroacetanilide from acetanilide.		
Exercise II: Physical Chemistry Experiments			
8	Determination of surface tension of a given liquid using Stalagmometer		
9	Determination of the parachor value of -CH ₂ - group (methylene) using Stalagmometer		
10	Determination of coefficient of viscosity of aqueous solution of ethanol or polymer at room temperature		
11	Determination of unknown percentage composition of given glycerol solution from standard 2%, 4%, 6%, 8% and 10% solutions of glycerol		
12	Determination of the heat of solution of KNO ₃ (5% solution)		
Teaching Plan for Theory (Second Semester)		Class : BSc Part I	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Unit III & Unit VI		39	
01	Unit- III		
A]	Haloalkanes: Vinyl chloride - Synthesis from acetylene and ethylene dichloride, reactions with aqueous and alcoholic KOH, polymerization. Allyl chloride - Synthesis from propylene, reactions with aqueous and alcoholic KOH. Allyl bromide - Synthesis from propylene using NBS, reaction with HBr. Comparison of reactivity of vinyl and allyl chloride.		
B]	Haloarenes: Chlorobenzene - Synthesis from phenol, reaction with acetonitrile. Bromobenzene - Synthesis from silver salt of benzoic acid (Hunsdiecker reaction), Wurtz-Fittig reaction. Iodobenzene - Synthesis from benzene diazonium chloride, Ullmann reaction.		

	Benzyl chloride - Synthesis from toluene and benzene, reactions with Mg and NaCN. Comparison of reactivity of chlorobenzene and benzyl chloride, benzyne intermediate mechanism.		
C]	Polyhydric alcohols: Ethylene glycol - Synthesis from ethylene and ethylene dibromide, reactions with PCl_5 , CH_3COOH and acetone, dehydrations using conc. H_2SO_4 , ZnCl_2 and phosphoric acid. Pinacol - Synthesis from acetone and α -diketone, Pinacol-Pinacolone rearrangement (mechanism). Glycerol - Synthesis from propylene and 3-chloropropylene, reactions with HNO_3 , HCl and Na, dehydration using KHSO_4		
D]	Unit Test		
02	Unit-VI- Chemical Kinetics		
A]	Explanation of terms like rate of reaction, order of a reaction and molecularity. Definition with one example of zero, first and second order reaction. Half-life period of a reaction. Derivation of rate equation for first and second order reaction with equal initial concentration and different initial concentration of a reactant. Characteristics of first and second order reaction. Examples of first and second order reaction and their kinetics study with modified rate equation viz. the reactions (i) decomposition of H_2O_2 , (ii) reaction between $\text{K}_2\text{S}_2\text{O}_8$ and KI , (iii) hydrolysis of methyl acetate catalyzed by acid, (iv) saponification of ethyl acetate by NaOH and (v) inversion of cane sugar. Determination of order of a reaction by integration, graphical, equifractional change, vant Hoff's differential method and Ostwald's isolation method. Effect of temperature on reaction rates. Arrhenius equation, activation energy and its determination using Arrhenius equation. Numerical.		
B]	Unit Test		

Teaching Plan for Practical (Second Semester)

Class : BSc Part I

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
Exercise-1 Organic Qualitative Analysis		26	
	Complete analysis of simple organic compounds (like urea, thiourea, benzoic acid, Salicylic acid, oxalic acid, glucose, naphthalene, paratoluidine, benzamide, etc.) containing one or two functional groups involving following steps. i) Preliminary examination ii) Detection of elements iii) Detection of functional groups iv) Determination of melting point v) Preparation of derivative and determination of its melting point Performance of spot test, if any		
1	Qualitative analysis of compound-1		
2	Qualitative analysis of compound-2		
3	Qualitative analysis of compound-3		
4	Qualitative analysis of compound-4		
5	Qualitative analysis of compound-5		
Exercise II: Volumetric Analysis			
6	To determine the strength of oxalic acid by titration with KMnO_4 .		
7	To determine strength of FAS by titration with KMnO_4 using internal indicator.		
8	Determination of temporary hardness of water sample.		
9	Estimation of Zn^{++} ions by complexometric titration.		

10	Prepare 0.1N H ₂ SO ₄ solution and find out its exact normality using NaOH as an intermediate solution and 0.1N oxalic acid as a standard solution.		
11	Determination of order of reaction of hydrolysis of methyl acetate by an acid.		
12	To study kinetics of saponification of ethyl acetate by NaOH.		

Teaching Plan for Theory (Third Semester)

Class : BSc Part II

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit V - Thermodynamics and Equilibrium	16	
A]	(i) Gibb's and Helmholtz's free energy function. Physical significance of Gibb's free energy, Change in free energy as a criterion of spontaneity and equilibrium. Variation of free energy G with P & T. Gibb's-Helmholtz's equation in terms of G and its application. (ii) Partial molal function, chemical potential, derivations of Gibb's-Duhem equation. Chemical potential of an ideal gas in gaseous mixture. Derivation of vant Hoff's isotherm and its application to equilibrium state. Derivation of vant Hoff's equation and its applications. (iii) Numericals		
B]	Phase Equilibrium: (i) Immiscible liquids, Nerst distribution law and its application to association and dissociation of solute in one of the solvents. Process of extraction, derivation of formula for the amount of solute left unextracted after n th extraction. (ii) Phase transition - Clausius-Clyperon equation (only qualitative statement). (iii) Partially miscible liquids - Phase diagram of phenol-water, triethyl amine - water and nicotine-water systems. (iv) Numericals		
C]	Unit Test		

Teaching Plan for Practical (Third Semester)

Class : BSc Part II

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Exercise I: Volumetric Analysis	58	
A)	1) Prepare 0.1N oxalic acid standard solution and find out the acid neutralizing capacity of an antacid using NaOH as an intermediate solution. 2) Prepare 0.1N H ₂ SO ₄ solution and find out its exact normality using NaOH as an intermediate solution and 0.1N oxalic acid as standard solution. 3) To determine the strength of oxalic acid by titration with KMnO ₄ . 4) To determine percentage purity of Ferrous Ammonium Sulphate (FAS) by titration with KMnO ₄ . 5) To determine strength of FAS by titration with K ₂ Cr ₂ O ₇ using internal indicator. 6) To determine strength of K ₂ Cr ₂ O ₇ by titration with FAS using internal indicator. 7) Estimation of copper (II) in commercial copper sulphate sample by iodometric titration.		
B)	Gravimetric Analysis Estimation of Ba ²⁺ as BaSO ₄ , Fe ³⁺ as Fe ₂ O ₃ using china and silica crucible and Ni ²⁺ as Ni-DMG using sintered glass crucible		
C)	Exercise-II: Physical Chemistry experiments		
	1) To determine refractive index by Abbe's refractometer. 2) To construct phase diagram of phenol-water system and to determine consolute temperature for the system. 3) To determine transition temperature of MnCl ₂ .4H ₂ O.		

	<p>4) To study kinetics of hydrolysis of methyl acetate catalyzed by acid.</p> <p>5) To study kinetics of saponification of ethyl acetate by NaOH. (Equal concentration)</p> <p>6) To determine partition coefficient of benzoic acid between benzene and water.</p> <p>7) To determine partition coefficient of iodine between CCl₄/Kerosene and water.</p> <p>8) To determine solubility of benzoic acid at different temperature and heat of solution.</p>		
Teaching Plan for Theory (Fourth Semester)		Class : BSc Part II	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit- I	14	
A]	<p>Chemistry of elements of transition series: Definition of transition elements. General characteristics of transition elements. Comparative study of first transition series elements (3d) with reference to following properties: (i) Electronic configuration (ii) Atomic and ionic size (iii) Ionization energy (iv) Metallic nature (v) Oxidation states (vi) Magnetic properties (vii) Color of salts (viii) Catalytic properties (ix) Complex formation behavior. Study of 4d and 5d series elements-Electronic configuration. Comparison of 3d series elements with 4d and 5d series elements with respect to size, oxidation states, magnetic properties and color.</p>		
B]	<p>Extraction of elements: Principles involved in extraction of elements. Major methods of extraction of elements. Factors affecting choice of extraction method. Thermodynamics of reduction processes-Ellingham diagrams for oxides and importance of this diagram (only preliminary ideas).</p>		
C]	Unit Test		
Teaching Plan for Practical (Fourth Semester)		Class : BSc Part II	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Exercise I: Inorganic estimations	48	
	<p>1) Chromatographic separation of binary mixture containing Cu(II), Co(II) and Ni(II) ions by paper chromatography and determination of R_f values.</p> <p>2) Estimation of Zn(II) by complexometric titration.</p> <p>3) To determine the strength of unknown calcium salt solution by complexometric titration.</p> <p>4) Estimation of hardness of water by complexometric titration.</p> <p>5) Colorimetric or spectrophotometric estimation of Cu(II) in commercial copper sulphate sample as ammonia complex.</p> <p>6) To determination of concentration of unknown KMnO₄ solution from standard solutions of KMnO₄ by colorimetrically or spectrophotometrically.</p>		
02	Exercise II: Organic Chemistry Practical's		
	<p>1. Isolation of casein from milk.</p> <p>2. Isolation of nicotine from tobacco leaves.</p> <p>3. Isolation of caffeine from tea leaves.</p> <p>4. Isolation of lycopene from tomato juice.</p> <p>5. Estimation of glucose.</p> <p>6. Estimation of acetamide.</p> <p>7. Determination of equivalent weight of an organic acid.</p>		

Teaching Plan for Theory (Fifth Semester)		Class : BSc Part III	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Unit-I & Unit-II	30	
01	Unit-I		
A]	Coordination Compounds: Important terms namely molecular or addition compounds, double salts, complex salts, complex ion, ligand, coordination number, central metal ion, etc. Werner's theory of coordination and its experimental verification on the basis of conductance data and formation of AgCl precipitate in case of cobaltammines. Sidgwick's electronic interpretation and its drawbacks, effective atomic number. IUPAC rules for nomenclature of coordination compounds. Structural isomerism-ionization, linkage and coordination in complexes. Geometrical isomerism in octahedral complexes of the type Ma_4b_2 , Ma_3b_3 , $Ma_2b_2c_2$, Ma_4bc , $M(AA)_2b_2$. Square planar complexes of the type Ma_2b_2 and Ma_2bc . Optical isomerism in octahedral complexes of type $Ma_2b_2c_2$, $Mabcdef$, $M(AA)_3$, $M(AA)_2b_2$ and tetrahedral complexes of the type $Mabcd$ and $M(AA)_2$. Optical isomerism in square planar complexes. Valence bond theory as applied to structure and bonding in complexes of 3d-series elements (Only 4 and 6 coordinates complexes). Inner and outer orbital complexes. Magnetic properties of complexes of 3d series elements. Limitations of VB theory.		
B]	Chelates: Definition, classification and applications of chelates in analytical chemistry. Stability of chelate with special reference to chelate effect.		
C]	Unit Test		
02	Unit II		
A]	Crystal Field Theory (CFT): Postulates of CFT, Crystal field splitting in octahedral, distorted octahedral, square planar tetrahedral complexes, concept of CFSE, high spin and low spin complexes on the basis of Δ_0 and pairing energy, distribution of electrons in t_{2g} and e_g orbitals in high spin and low spin octahedral complexes. Factor affecting magnitude of crystal field splitting in octahedral complexes.		
B]	Electronic Spectra of Transition Metal Complexes: Introduction to spectra, selection rules for d-d transitions, spectroscopic terms-determination of ground term symbols for d^1 to d^{10} , spectra of d^1 and d^9 octahedral complexes, Orgel diagram for d^1 and d^9 states, electronic spectrum of $[Ti(H_2O)_6]^{3+}$ complex ion. Spectrochemical series.		
C]	Unit Test		
Teaching Plan for Practical (Fifth Semester)		Class : BSc Part III	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Exercise 1: Inorganic Preparations	60	
	<ol style="list-style-type: none"> 1. Preparation of tetraamminecopper(II)sulphate. 2. Preparation of hexaamminenickel(II)chloride. 3. Preparation of potassiumtrioxalate aluminate (III). 4. Preparation of Prussian blue. 5. Preparation of chrome alum. 6. Preparation of sodium thiosulphate and dithionite. (Comment on VB structure, magnetic properties and color of 1, 2 and 3 complexes) 		

02	Exercise II: Physical Chemistry experiments		
	<ol style="list-style-type: none"> To determine strength of given HCl solution conductometrically. To determine strength of given CH₃COOH solution conductometrically. To determine strength of given HCl solution potentiometrically. To determine strength of HCl and CH₃COOH in a given mixture conductometrically. To determine redox potential of Fe⁺²/Fe⁺³ system potentiometrically. To determine molecular weight by Rast's method. To determine specific rotation of optically active compound by Polarimeter. 		

Teaching Plan for Theory (Sixth Semester)		Class : BSc Part III	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Unit-III	14	
01	Unit-III		
A]	Electronic spectroscopy: Introduction, theory, instrumentation, types of electronic transitions, presentation of electronic spectrum, terms used- chromophore, auxochrome, bathochromic shift, hypsochromic shift, hyperchromic effect and hypochromic effect , Applications in the structure determination of dienes, á,â-unsaturated aldehydes and ketones, aromatic compounds.		
B]	Infrared spectroscopy: Introduction, Types of molecular vibrations- stretching and bending, Calculation of vibrational modes, force constant, instrumentation, interpretation of IR, H-stretching, triple bond, double bond and Finger print regions, IR spectra of H ₂ O, CO ₂ , C ₂ H ₅ OH, CH ₃ CHO, CH ₃ COOH and CH ₃ CONH ₂ .		
C]	Unit Test		

Teaching Plan for Practical (Sixth Semester)		Class : BSc Part III	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Exercise I: Organic Chemistry Experiments	52	
	<ol style="list-style-type: none"> Estimation of formaldehyde. Estimation of glycine. Estimation of ascorbic acid (vitamine C). Estimation of phenol by bromination method. Estimation of aniline by bromination method. Estimation of urea by hypobromite method. Estimation of unsaturation by bromination method. Determination of iodine value of oil. Determination of equivalent weight of an ester by saponification. Separation of a mixture of methyl orange and methylene blue by thin layer chromatography (using benzene). Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography(using benzene : petroleum ether = 3:1). Separation of a mixture of dyes by thin layer chromatography (using cyclohexane:ethyl acetate = 8.5:1.5). 		

	13. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using toluene: petroleum ether).		
02	Exercise II: Physical Chemistry experiments		
	1. To determine dissociation constant of weak acid by conductometry. 2. To determine dissociation constant of weak acid by potentiometry. 3. To study potentiometric titration of KCl and AgNO ₃ . 4. To determine dissociation constant of dibasic acid by pH-metry. 5. To verify Beer's Lambert's law using KMnO ₄ /K ₂ Cr ₂ O ₇ . 6. To determine pH of a soil sample by pH-meter. 7. To determine solubility and solubility product of sparingly soluble salts conductometrically. 8. To study strong acid and strong base titration by pH-metry. Distribution of Marks for Practical Examination		

Teaching Plan for Theory Sem-I

MSC-I

Class:

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
1	Symmetry of Molecules		
	Symmetry Operations – Symmetry Elements: Rotational Axis of Symmetry and Types of Rotational Axes, Plane of Symmetry and types of Planes, Improper Rotational Axis of Symmetry, Inversion Center and Identity Element –More about Symmetry Elements – Molecular Point Groups: Definition and Notation of Point Groups, Classification Molecules in to C ₁ , C _s , C _i , C _n , C _{nv} , C _{nh} , C _{∞v} , D _n , D _{nh} , D _{nd} , D _{∞h} , S _n (n=even), T _d , O _h , I _h , K _h Groups. Descent in Symmetry with Substitution – Exercises in Molecular Point Groups – Symmetry and Dipole moment – Symmetry criteria for Optical activity. Group multiplication table, matrix representation of symmetry elements. Reducible and irreducible representation, character of representation, character of matrix, Conjugate matrix, Properties of irreducible representations, Great orthogonality theorem (without proof) and its importance, construction of character table of C _{2v} & C _{3v} point group. Mulliken symbolism rules for irreducible representations and its applications with examples.		

4) Mr. N.S. Shelke

Time Table

Faculty: SCIENCE

Subject : CHEMISTRY

Period	1	2	3	4	5	6	
Day / Time	08:00 to 10:24	11:00 to 11:48	11:48 to 12:36	12:36 to 01:24	01:30 to 2:30	2:30 to 4:54	
MON	B.Sc. II (P) B ₁			B.Sc. II (T)		B.Sc. II (P) B ₂	
TUE	B.Sc. II (P) B ₁			B.Sc. II (T)	M.Sc. I (T)	B.Sc. II (P) B ₂	
WED	B.Sc III (P)C ₁		B.Sc I (T)				
THUS	B.Sc III (P)C ₁						
FRI	B.Sc I (P) A ₁	B.Sc III (T)				I (P) A ₂	
		7:30 to 8:18	8:18 to 9:06	9:16 to 10:04		10.04 to 12.28	12.28 to 2.52
SAT			B.Sc III (T)			B.Sc I(P) A ₁	B.Sc I(P) A ₂

Allotted Workload

Subject : CHEMISTRY

Year : 2022-2023

Sr. No.	Class	No. of periods per week			Unit Allotted
		Lectures	Tutorials	Practical	
1	B.Sc. I	01	---	4×3=12	01
2	B.Sc. II	02	---	4×3=12	02
3	B.Sc. III	02	---	2×3=06	02
4	M.Sc. I	01	---	---	01
4	Total	06	---	30	06

Total Workload per week (L+P): 06 (L) + 30 (P) = 35 (29 Hrs.)

Available Teaching days in 2022-23

Odd SEM teaching Days (90) : 25/07/2022 to 22/10/2022 = 71 and 09/11/2022 to 30/11/2022=19 Total=90

Even SEM Teaching Days (90) : 01/02/2023 to 27/05/2023 = 90

	JUL- 22	AUG- 22	SEP- 22	OCT- 22	NOV- 22	FEB- 23	MAR- 23	APR- 23	MAY- 23	
MON	01	04	04	03	03	04	04	04	03	
TUE	01	03	04	03	03	04	03	03	04	
WED	01	04	04	02	04	04	04	04	04	
THUS	01	03	05	03	03	04	04	04	04	
FRI	01	04	04	03	03	04	05	02	03	
SAT	01	04	04	04	03	03	04	04	04	
Total	06	22	25	18	19	23	24	21	22	
	90					90				

Teaching Periods Available per month during the session 2022-23

Faculty : SCIENCE
CHEMISTRY

Subject :

Class	Periods	ODD SEMESTER						EVEN SEMESTER				
		JUL -22	AUG -22	SEP- 22	OCT -22	NO V - 22	Total	FEB- 23	MAR -23	APR- 23	MAY- 23	Total
B.Sc I	Theory	01	04	04	02	04	15	04	04	04	04	16
	Practical	12	48	48	42	36	186	42	54	36	42	174
B.Sc II	Theory	02	07	08	06	06	29	08	07	07	07	29
	Practical	12	42	48	36	36	174	48	42	42	42	174
B.Sc III	Theory	02	08	08	07	06	31	07	09	06	07	29
	Practical	06	21	27	15	21	90	24	24	24	24	96
M.Sc. I	Theory	01	03	04	03	03	14	04	03	03	04	14

Syllabus:

Teaching Plan for Theory (First Semester)		Class : B.Sc Part I	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit-I Periodicity of Elements:	15L	
	Periodic properties: s and p block elements: Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau principle. Shapes of s and p orbitals. Electronic configuration for s and p block elements. Detailed discussion of the following properties of the elements, with reference to s and p-block. (a) Nuclear charge and number of shell and its variations (b) Atomic and ionic radii and their variations	05L	
	(d) oxidation states (e) Ionization potential, Successive ionization potential and its variations. (f) Electron affinity and its trends. (g) Electronegativity and its variations. Effect of ionization energy and electronegativity on different properties of elements namely metallic and non-metallic character, relative reactivity, oxidizing and reducing	09L	

	properties. Diagonal relationships: Li with Mg, B with Al. Abnormal behavior of nitrogen. P		
	Unit Test	01L	
Teaching Plan for Practical (First Semester)		Class : B.Sc Part I	
Sr. No.	List of Practical/Laboratory Experiments/Activities etc	Lectures Available	Lectures Utilized
		186L	
01	Preparation of Acetyl derivative of aromatic primary amine (aniline or toluidine).	15L	
02	Preparation of Benzanilide (Benzoylation).	15L	
03	Preparation of Benzoic acid from Benzamide (Hydrolysis).	15L	
04	Preparation of Benzoic acid from benzaldehyde (Oxidation).	15L	
05	Preparation of phenyl-azo- β -naphthol dye (Diazotisation)	15L	
06	Base catalysed Aldol Condensation (Synthesis of dibanzal propanone).	15L	
07	Preparation of p-nitroacetanilide from acetanilide.	15L	
08	Determination of surface tension of a given liquid using Stalagmometer	15L	
09	Determination of the parachor value of -CH ₂ - group (methylene) using Stalagmometer	15L	
10	Determination of coefficient of viscosity of aqueous solution of ethanol or polymer at room temperature.	15L	
11	Determination of unknown percentage composition of given glycerol solution from standard 2%, 4%,6%,8% and 10% solutions of glycerol	18L	
12	Determination of the heat of solution of KNO ₃ (5% solution)	18L	
Teaching Plan for Theory (Second Semester)		Class : B.Sc Part I	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit-5 Crystalline state:	16L	
	Crystalline state: Symmetry in crystal, plane of symmetry, axis of symmetry and point of symmetry. Law of constancy of interfacial angles. Elements of symmetry in cubic crystals. Laws of symmetry. Law of rational indices, Weiss and Miller indices of a lattice planes, calculation of interplanar distance $d(h,k,l)$ from Miller indices in a cubic system.	05L	
	Seven crystal systems and fourteen Bravais lattices, Bravais lattices of cubic system. Simple cubic system (S.C.C.), body centered cubic system (B.C.C.) and face centered cubic system (F.C.C.). Calculation of number of constituent units in S.C.C., B.C.C. and F.C.C. Ratio of interplanar distances for 100, 110 and 111 lattice planes in S.C.C., B.C.C. and F.C.C. (No geometrical derivation). Derivation of Bragg's equation for X-ray diffraction, Bragg's X-ray spectrometer 10 method for the determination of crystal structure of NaCl and KCl. Anomalous behavior of KCl towards X-ray. Numerical.	10L	
	Unit test	01L	

Teaching Plan for Practical (Second Semester)

Class : B.Sc Part I

Sr. No.	Topic to be covered	Lectures Available 174L	Lectures Utilized
01	Exercise I: Organic Qualitative Analysis (05) Complete analysis of simple organic compounds (like urea, thiourea, benzoic acid, Salicylic acid, oxalic acid, glucose, naphthalene, para-toluidine, benzamide, etc.) containing one or two functional groups involving following steps. i) Preliminary examination ii) Detection of elements iii) Detection of functional groups iv) Determination of melting point v) Preparation of derivative and determination of its melting point vi) Performance of spot test, if any	42L	
	1) Qualitative analysis of compound-1	18L	
	2) Qualitative analysis of compound-2	18L	
	3) Qualitative analysis of compound-3	18L	
	4) Qualitative analysis of compound-4	18L	
	5) Qualitative analysis of compound-5	18L	
02	Exercise II: Volumetric Analysis		
	6) To determine the strength of oxalic acid by titration with KMnO_4 .	6L	
	7) To determine strength of FAS by titration with KMnO_4 using internal indicator.	6L	
	8) Determination of temporary hardness of water sample.	6L	
	9) Estimation of Zn^{++} ions by complexometric titration.	6L	
	10) Prepare 0.1N H_2SO_4 solution and find out its exact normality using NaOH as an intermediate solution and 0.1N oxalic acid as a standard solution.	6L	
	11) Determination of order of reaction of hydrolysis of methyl acetate by an acid.	6L	
	12) To study kinetics of saponification of ethyl acetate by NaOH	6L	

Teaching Plan for Theory (Third Semester)

Class : B.Sc. Part II

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Unit II & IV	29L	
01	UNIT-II	15L	
	A) Volumetric Analysis: Introduction:- Volumetric analysis, titrant, titrate, end point, equivalence point, indicator etc. Requirements of volumetric analysis. Definition of standard solution, primary standard substance. Requirements of primary standard substance. Terms to express concentrations namely- molarity, normality,	08L	

	6) To determine strength of $K_2Cr_2O_7$ by titration with FAS using internal indicator.		
	7) Estimation of copper (II) in commercial copper sulphate sample by iodometric titration	12L	
02	b) Gravimetric Analysis (03):		
	Estimation of Ba^{2+} as $BaSO_4$	12L	
	Estimation of Fe^{3+} as Fe_2O_3 using china and silica crucible	12L	
	Estimation of Ni^{2+} as Ni-DMG using sintered glass crucible	12L	
03	EXERCISE II: Physical Chemistry Experiment (08)		
	1) To determine refractive index by Abbe's refractometer.	6L	
	2) To construct phase diagram of phenol-water system and to determine consolute temperature for the system.	9L	
	3) To determine transition temperature of $MnCl_2 \cdot 4H_2O$.	6L	
	4) To study kinetics of hydrolysis of methyl acetate catalyzed by acid.	6L	
	5) To study kinetics of saponification of ethyl acetate by NaOH. (Equal concentration)	9L	
	6) To determine partition coefficient of benzoic acid between benzene and water.	6L	
	7) To determine partition coefficient of iodine between CCl_4 /Kerosene and water.	6L	
	8) To determine solubility of benzoic acid at different temperature and heat of solution.	6L	

Teaching Plan for Theory (Fourth Semester)

Class : B.Sc. Part II

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Unit V & VI	29L	
01	UNIT-V: Colligative Properties of Dilute Solutions	14L	
	A) Definition and examples of colligative properties. Elevation of boiling point, thermodynamic derivation of the relationship between elevation of boiling point and molar mass of a non-volatile solute. Cottrell's method for determination of elevation of boiling point.	06L	
	B) Depression of freezing point, thermodynamic derivation of the relationship between depression of freezing point and molar mass of a non-volatile solute. Rast's method for determination of depression of freezing point. Abnormal behavior of solution. Van't Hoff's factor 'i'. Determination of degree of association and dissociation from Van't Hoff's factor. Numericals.	07L	
	Unit Test	01L	
02	UNIT-VI Crystalline State	15L	
	A) Symmetry in crystal, plane of symmetry, axis of symmetry and point of symmetry. Law of constancy of interfacial angles. Elements of symmetry in cubic crystals. Laws of symmetry. Law of rational indices, Weiss and Miller indices of a lattice planes, calculation of interplaner distance $d(h,k,l)$ from Miller indices in a cubic system. Seven crystal systems and fourteen Bravais lattices, Bravais lattices of cubic system.	07L	
	B) Simple cubic system (S.C.C.), body centered cubic system (B.C.C.) and face centered cubic system (F.C.C.). Calculation of number of constituent units in S.C.C., B.C.C. and F.C.C. Ratio of interplaner distances for 100, 110 and	07L	

	111 lattice plane in S.C.C., B.C.C. and F.C.C. (No geometrical derivation). Derivation of Bragg's equation for X-ray diffraction, Bragg's X-ray spectrometer method for the determination of crystal structure of NaCl and KCl. Anomalous behaviour of KCl towards X-ray. Numericals.		
	UNIT TEST	01L	

Teaching Plan for Practical I (Fourth Semester)

Class : B.Sc. Part II

Sr. No.	Topic to be covered	Lectures Available 174L	Lectures Utilized
01	EXERCISE I: Inorganic Estimation (06)		
	1) Chromatographic separation of binary mixture containing Cu(II), Co(II) and Ni(II) ions by paper chromatography and determination of R _f values.	15L	
	2) Estimation of Zn(II) by complexometric titration.	15L	
	3) To determine the strength of unknown calcium salt solution by complexometric titration.	15L	
	4) Estimation of hardness of water by complexometric titration.	15L	
	5) Colorimetric or spectrophotometric estimation of Cu(II) in commercial copper sulphate sample as ammonia complex.	15L	
	6) To determination of concentration of unknown KMnO ₄ solution from standard solutions of KMnO ₄ by calorimetrically or spectrophotometrically	15L	
02	EXERCISE II: Organic Practical (07)		
	1. Isolation of casein from milk.	12L	
	2. Isolation of nicotine from tobacco leaves.	12L	
	3. Isolation of caffeine from tea leaves.	12L	
	4. Isolation of lycopene from tomato juice.	12L	
	5. Estimation of glucose.	12L	
	6. Estimation of acetamide.	12L	
	7. Determination of equivalent weight of an organic acid	12L	

Teaching Plan for Theory (Fifth Semester)

Class : B.Sc. Part III

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	UNIT-V & VI	31L	
01	UNIT-V Photochemistry	15L	
	A) Photochemical and thermal reactions. Lambert's law - Statement and derivation. Beer's law - Statement and derivation. Reasons for deviation from Beer's law. Laws of photochemistry. Quantum yield of photochemical reaction. Reasons for high and low quantum yield. Experimental determination of quantum yield. Photosensitized reaction. Kinetics of photochemical decomposition of HI. Fluorescence and Phosphorescence. Selection rule for electronic transition. Internal conversion and inter-system crossing. Explanation of fluorescence and phosphorescence on the basis of Joblonski diagram. Chemiluminescence and Bioluminescence with examples. Numericals.	08L	
	B) Kinetics of photochemical decomposition of HI. Fluorescence and Phosphorescence. Selection rule for electronic transition. Internal conversion and inter-system	06L	

	crossing. Explanation of fluorescence and phosphorescence on the basis of Jablonski diagram. Chemiluminescence and Bioluminescence with examples. Numericals		
	UNIT TEST	01L	
02	UNIT-VI Molecular Spectroscopy	16L	
	Electromagnetic radiation, characteristics of electromagnetic radiation in terms of wavelength, wave number, frequency and energy of photon. Spectrum of electromagnetic radiation. Types of spectra - Emission and absorption spectra, atomic and molecular spectra, line and band spectra Translational, vibrational, rotational and electronic motion. The degree of freedom in each motion. Energy level diagram of a molecule indicating electronic, vibrational and rotational transitions. Condition for pure rotational spectrum (i.e. microwave active molecules), selection rule for rotational transition. Derivation of expression for moment of inertia of a diatomic rigid rotor. Isotope effect. Applications of microwave spectroscopy for the determination of moment of inertia and bonding. Condition for exhibiting vibrational spectra (i.e. IR active molecule),	07L	
	Selection rule for vibrational transition. Vibrational energy levels of a simple harmonic oscillator. Zero-point energy, position of a spectral line. Determination of force constant of a covalent bond. Raman effect - Raman's spectrum of a molecule. Condition for exhibiting Raman spectrum (i.e. Raman active molecule), selection rule for rotational transitions. Pure rotational spectrum of diatomic molecule, vibrational Raman spectrum of a diatomic molecule. Numericals. rule for vibrational transition. Vibrational energy levels of a simple harmonic oscillator. Zero-point energy, position of a spectral line. Determination of force constant of a covalent bond. Raman effect - Raman's spectrum of a molecule. Condition for exhibiting Raman spectrum (i.e. Raman active molecule), selection rule for rotational transitions. Pure rotational spectrum of diatomic molecule, vibrational Raman spectrum of a diatomic molecule. Numericals.	08L	
	UNIT TEST	01L	

Teaching Plan for Practical (Fifth Semester)

Class : B.Sc Part III

Sr. No.	Topic to be covered	Lectures Available 90 L	Lectures Utilized
01	EXERCISE I: Inorganic Preparation (06)		
	1. Preparation of tetraamminecopper (II)sulphate.	6L	
	2. Preparation of hexaamminenickel (II)chloride.	6L	
	3. Preparation of potassiumtrioxalate aluminate (III).	6L	
	4. Preparation of Prussian blue.	6L	
	5. Preparation of chrome alum.	6L	
	6. Preparation of sodium thiosulphate and dithionite. (Comment on VB structure, magnetic properties and color of 1, 2 and 3 complexes)	6L	
02	EXERCISE II: Physical Chemistry Experiments (06)		
	1. To determine strength of given HCl solution conductometrically.	9L	

	2. To determine strength of given CH ₃ COOH solution conductometrically.	9L	
	3. To determine strength of given HCl solution potentiometrically.	6L	
	4. To determine strength of HCl and CH ₃ COOH in a given mixture conductometrically.	9L	
	5. To determine redox potential of Fe ⁺² /Fe ⁺³ system potentiometrically.	9L	
	6. To determine molecular weight by Rast's method.	6L	
	7. To determine specific rotation of optically active compound by Polarimeter.	6L	

Teaching Plan for Theory (Sixth Semester)

Class : B.Sc Part III

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	UNIT-V & VI	29L	
01	UNIT-V Elementary Quantum Mechanics	14L	
	A) Limitations of classical mechanics. Plank's quantum theory (postulates only). Photoelectric effect - Experiments, observation and Einstein's explanation. Compton effect and its explanation. (ii) de Broglie hypothesis of matter waves. de Broglie's equation. Heisenberg's uncertainty principle. (iii) Classical wave equation, derivation of time independent Schrodinger's wave equation in one-dimension and its extension to a three-dimensional space. Well behaved wave function, physical significance of wave function (Born interpretation).	08L	
	B) Application of Schrodinger wave equation to a particle in one- dimensional box and its extension to a three-dimensional box. Concept of atomic orbital. Numericals.	05L	
	Unit Test	01L	
02	UNIT-VI Electrochemistry and Nuclear Chemistry	15L	
	A) Electrochemistry: Types of electrode- Standard hydrogen electrode, Calomel electrode, Quinhydrone electrode and Glass electrode. Principle of Potentiometric titration. Study of acid-base, redox and precipitation titration. pH of a solution and pH scale. Determination of pH of a solution using hydrogen, quinhydrone and glass electrodes. Advantage and disadvantage of these electrodes. pH-metric titrations. Determination of pka of a weak acid by pH-metric measurement. Concentration cells - Types of concentration cells, concentration cell without transfer and determination of its emf. Numericals	07L	
	B) Nuclear Chemistry: Shell model of a nucleus - Assumptions, evidences for existence of magic numbers, advantages and limitations. Liquid drop model of a nucleus - Assumptions, similarities between nucleus and liquid drop, advantages and limitations, explanation of nuclear fission reaction on the basis of liquid drop model. Nuclear force and its explanation on the basis of Meson theory. Characteristics of nuclear reaction, difference between nuclear and chemical reactions. Calculation of Q	07L	

	value of a nuclear reaction. Characteristics of nuclear fission reaction, fission yield. Fission reaction as an alternative source of energy. Nuclear fusion reaction - Characteristic of a nuclear fusion reaction. Thermonuclear reactions as a source of energy of sun and other stars. Fusion reactions as a potential future source of energy. Applications of radio isotopes in industry, agriculture, medicines and bio-sciences with two examples each. Numericals.		
	UNIT TEST	01L	

Teaching Plan for Practical (Sixth Semester)

Class : B.Sc Part III

Sr. No.	Topic to be covered	Lectures Available 96L	Lectures Utilized
01	EXERCISE I: Organic Chemistry Preparation (13)		
	1. Estimation of formaldehyde.	6L	
	2. Estimation of glycine.	6L	
	3. Estimation of ascorbic acid (vitamine C).	6L	
	4. Estimation of phenol by bromination method.	6L	
	5. Estimation of aniline by bromination method.	6L	
	6. Estimation of urea by hypobromite method.	6L	
	7. Estimation of unsaturation by bromination method.	6L	
	8. Determination of iodine value of oil.	6L	
	9. Determination of equivalent weight of an ester by saponification.	6L	
	10. Separation of a mixture of methyl orange and methylene blue by thin layer chromatography (using benzene).	3L	
	11. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using benzene : petroleum ether = 3:1).	6L	
	12. Separation of a mixture of dyes by thin layer chromatography (using cyclohexane:ethyl acetate = 8.5:1.5).	3L	
	13. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using toluene: petroleum ether).	6L	
02	EXERCISE II: Physical Chemistry Experiments (08)		
	1. To determine dissociation constant of weak acid by conductometry.	3L	
	2. To determine dissociation constant of weak acid by potentiometry.	3L	
	3. To study potentiometric titration of KCl and AgNO ₃ .	3L	
	4. To determine dissociation constant of dibasic acid by pH-metry.	3L	
	5. To verify Beer's Lambert's law using KMnO ₄ /K ₂ Cr ₂ O ₇ .	3L	
	6. To determine pH of a soil sample by pH-meter.	3L	
	7. To determine solubility and solubility product of sparingly soluble salts conductometrically.	3L	
	8. To study strong acid and strong base titration by pH-metry. Distribution of Marks for Practical Examination	3L	

Teaching Plan for Practical (First Semester)

Class : M.Sc Part I

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
1	Analytical Chemistry Unit II: Separation techniques	14L	

	A] Chromatography: Definition and Classification. Techniques used in Paper, Thin Layer and Column chromatography. Applications in qualitative and quantitative analysis.	04L	
	B] Ion exchange: Principle and technique. Types of ion exchangers. Ion exchange equilibria. Ion exchange capacity. Effect of complexing ions. Zeolites as ion-exchangers. Applications	04L	
	C] Solvent extraction: Principle and techniques. Distribution ratio and distribution coefficient. Factors affecting extraction efficiency: Ion association complexes, chelation, synergistic extraction, pH. Numericals based on multiple extractions. Role of chelating ligands, crown ethers, calixarenes and cryptands in solvent extraction. Introduction to Solid phase extraction (SPE) and Microwave assisted extraction (MAE), Applications	05L	
	Unit Test	01L	

Teaching Plan for Practical (Second Semester)

Class : M.Sc Part I

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
1	Analytical Chemistry Unit I: Modern Separation techniques	14L	
	A] Gas Chromatography: Principle including concept of theoretical plates and van-Deemter equation. Instrumental set up- carrier gas, sampling system, column and detector. Types of columns, their advantages and limitations. Detectors in GC analysis. Temperature programmed GC. Factors affecting retention, peak resolution and peak broadening. B] Liquid chromatography: Principle, Instrumentation, Advantages and applications of HPLC. Types of columns and detectors. Principle and applications of size exclusion, gel permeation, ion retardation, normal phase and reverse phase chromatography. C] Supercritical fluid chromatography: Introduction and applications	06L	
	B] Liquid chromatography: Principle, Instrumentation, Advantages and applications of HPLC. Types of columns and detectors. Principle and applications of size exclusion, gel permeation, ion retardation, normal phase and reverse phase chromatography. C] Supercritical fluid chromatography: Introduction and applications	04L	
	C] Supercritical fluid chromatography: Introduction and applications	03L	
	Unit Test	01L	

Mr. N. D. Dahake
HOD

SATPUDA EDUCATION SOCIETY JALGAON
ARTS COMMERCE COLLEGE
WARVAT BAKAL DIST- BULDANA

DEPARTMENT OF POL-SCIENCE

DEPARTMENTAL ACADEMIC
CALENDAR - 2022-2023

Departmental Academic Calendar (2022-2023)

Sr. No.	Activity	Commencement	Cessation	TotalDays
01	FirstSession	01/07/2022	30/11/2022	110
02	AdmissionProcess	01/07/2022	16/07/2022	14
03	TeachingDays(OddSemesters)	27/09/2021	15/01/2022	90
04	Academic Session (Second Session)	25/07/2022	22/10/2022	109
05	Induction Program for FirstYearStudents	18/07/2022	23/07/2022	06
06	FirstTermVacation	24/10/2022	08/11/2022	16
07	Odd Semesters UniversityExam	01/12/2022	21/01/2023	45
09	Teaching Days (Even-Semester)	23/01/2023	27/05/2023	98
10	SecondTermVacation	29/05/2023	01/07/2023	29
11	Even Semesters UniversityExam	29/05/2023	01/07/2023	30
12	CommencementofnextAcademic Session-2023-2024	03/07/2023		

Sr. No.	Public Holiday	Day & Date
01	Moharum	Tuesday 09 August 2022
02	Rakshabandhan	Thursday 11 August 2022
03	Independence Day	Monday 15 August 2022
04	Parsi New Year	Tuesday 16 August 2022
05	Shri Ganesh Chaturthi	Wednesday 31 August 2022
06	Anant Chaturdashi	Friday 09 September 2022
07	Dasara	Wednesday 05 October 2022
08	Republic Day	Thursday 26 January 2023
09	Mahashivratri	Saturday 18 February 2023
10	Holi { second day }	Tuesday 07 March 2023
11	Gudhipadava	Saturday 22 March 2023
12	Shriram Navami	Thursday 30 March, 2023
13	Mahivir Jayanti	Tuesday 04 April 2023
14	Good Friday	Friday 07 April 2023
15	Dr. Babasaheb Ambedkar Jayanti	Friday 14 April 2023
16	Ramzan Id	Saturday 22 April 2023

17. Maharashtra Day Monday 01 May 2023

18 Buddha Purnima

Friday 05 May 2023

Time Table

Faculty : Humanities

Subject : Poi-Science

Period	1	2	3	4	5	6
Day / Time	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:22 to 3:10	3:10 to 3:58
MON	II	III			I	
TUE	I		II	III		
WED		I	III			
THUS	III	I	II			
FRI			II	III		
SAT	II			I		

Allotted Workload Subject : Pol-Science Year : 2022-2023

Sr. No.	Class	No. of periods per week			Paper Allotted
		Lectures	Tutorials	Practical	
1	BA I (A)	05	-	----	
2	BA II	05	-	----	
3	BA III	05	-	----	
	Total	15	----	-	

Total Workload per week – 15 Period

Teaching Periods Available per month during the session 2022-2023
Faculty :Humanity **Subject : Pol-Science**

		ODD SEMESTER								EVEN SEMESTER						
Class	Periods	AUG-22	SEP T-22	OCT -22	NO V-22	DEC -22	JAN -23	TOT AL	FEB-23	M AR -23	APR -23	MA Y-23	JUN -23		Total	
BA I	Theory	-	12	16	15	16	10	69	16	18	19	20	-	-	73	
BA II	Theory	-	10	15	14	15	09	63	15	16	21	18	-	-	70	
BA III	Theory	-	12	14	15	13	10	64	16	14	20	17	-	-	67	

TEACHING PLAN-2022-2023

DEPARTMENT OF POLITICAL-SCIENCE

Teaching Plan for Theory Class : B A Part I - (First Semester) SUB : Pol-Science			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit-I	21	
02	Unit-II	19	
03	Unit-III	20	
04	Unit-IV	19	
05	Unit-V	20	
Teaching Plan for Theory Class : B A Part I - (Second Semester) SUB : Pol-Science			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Election Commission of India	18	
02	State Executive	15	
03	State Legislature of Maharashtra	13	
04	Local Seif Government of Maharashtra	14	
05	Women Participation in Panchayat Raj	15	
Teaching Plan for Theory Class : B A Part II - (Third Semester) SUB: Pol-Science			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Constitution of U.K.	20	
02	Parliamentary System of U.K.	19	
03	Constitution of U.S.A.	20	
04	Legislature of U.S.A.	19	
05	SAARC	20	
Teaching Plan for Theory Class : B A Part II (Fourth Semester) SUB ; Pol-Science			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Constitution Of CHINA	18	
02	Executive Of China	15	
03	United Nation Organization (UNO)	14	
04	Strcture of UNO	14	
05	Indo-China Relations –Major Issues	15	
Teaching Plan for Theory Class : B A Part III (Fifth Semester) SUB : Pol-Science			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Leadership	21	
02	Reservation	19	
03	Nationalism	20	
04	Communalism	19	
05	Terrorism	20	
Teaching Plan for TheoryClass : B A III (Sixth Semester) SUB : Pol-Science			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Concept of State	18	
02	Concept of Democracy	15	
03	Concept of Nationalism	13	
04	Concept of Socialism	14	
05	Behaviouralism and Sovereignty	15	

PROGRAMS SCHEDULE (2022- 23)

Sr. No.	Particulars	To be organized in	
01	Constitutional Day	26 November 2022	
02	Human Rights Day	10 December 2022	
03	Study Forum	18 December 2022	
04	National Essay Competition	11 January 2023	




Principal
Arts & Commerce College
Warvat Bakal Dist. Buldana