SATPUDA EDUCATION SOCIETY, JALGAON JAMOD'S

Arts & Commerce College

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

NAAC Reaccredited with 'B' Grade

College Code : 327

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

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

Website : www.acscwb.co.in

E-mail : 327accwb@gmail.com

Criterion I : Curricular Aspects

1.1
Curriculum Planning and Implementation

Session 2023-2024

Supporting Documents – A

1.1.1 Effective curriculum delivery through a well-planned and documented process

Metric No.	Sr.No.	Content/ File Description	Document Link
1.1.2	B	Adherence to Academic Calendar for Continuous Internal Evaluation (CIE)	

Principal
Arts & Commerce College
Warwat Bakal Dist.Buldana

SATPUDA EDUCATION SOCIETY, JALGAON JAMOD'S

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CERTIFICATE

This is to certify that the document attached as supporting document for Criterion I : Curricular Aspects are verified from the college record and found to be correct to the best of my knowledge.

Arts & Commerce College * Warwat Bakal

Principal
Arts & Commerce College
Warwat Bakal Dist.Buldana

Departmental Academic Calendar

2023-2024

SATPUDA EDUCATION SOCIETY, JALGAON (JAMOD)'S

ARTS & COMMERCE COLLEGE

WARWAT- BAKAL DIST- BULDANA

DEPARTMENT OF HISTORY

DEPRTMENTAL ACADEMIC CALENDAR 2023-24

ARTS & COMMERCE COLLEGE, WARWAT- BAKAL

ACADEMIC CALENDER 2023-2024

(Vide the direction number 08/2023 dated 11th January, 2023)

(Academic Calendar for the Academic Session 2023-24 was published by University vide Notification No. 08/2023. And IQAC in its Meeting dated. ….. vide resolution No. …… approved the Academic Calendar for the session 2023-24 as…

Sr. No.	Particular	From	To
1.	First Session	03rd July, 2023	07th November, 2023
2.	Diwali Vacation	08th November, 2023	27th November, 2023
3.	Second Session	28th November, 2023	27th April, 2024
4.	Summer Vacation	29th April, 2024	11th July 2024

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2022	As per University Indicated in Ordinance No.02/1997, 04/1997 & 18/1998	
03	Teaching Days(Odd Semesters)	15/07/2023	07/11/2023	90
04	Induction Program for First Year Students	11/07/2023	14/07/2023	04
05	First Term Vacation	08/11/2023	27/11/2023	20
06	Odd Semesters University Exam	08/11/2023	30/12/2023	39
07	Academic Session (Second Session)	28/11/2023	27/04/2024	121
08	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	90
09	Second Term Vacation	29/04/2024	10/06/2024	43
10	Even Semesters University Exam	29/04/2024	10/06/2024	35
11	Commencement of next Academic session	11/07/2024		

ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Department of History

Vide the SGB Amravati University Gazette, following Public Holidays are declared for 2023-2024

अ. क्र. (Sr.No.)	सण/सुट्या (Festivals/Holidays)	दिवस व दिनांक (Day & Date)
१.	मोहरम Moharum	शनिवार, दि. २९ जुलै, २०२३ Saturday, 29th July, 2023
२.	स्वातंत्र्य दिन Independence Day	मंगळवार, दि. १५ ऑगस्ट, २०२३ Tuesday, 15th August, 2023
३.	पारशी नूतनवर्ष (शहेनशाही) Parsi New Year (Shahenshahi)	बुधवार, दि. १६ ऑगस्ट, २०२३ Wednesday, 16th August, 2023
४.	रक्षाबंधन Rakshabandhan	बुधवार, दि. ३० ऑगस्ट, २०२३ Wednesday, 30th August, 2023
५.	श्रीगणेश चतुर्थी ShriGanesh Chaturthi	मंगळवार, दि. १९ सप्टेंबर, २०२३ Tuesday, 19th September, 2023
६.	गौरीपूजन Gouri Poojan	शुक्रवार, दि. २२ सप्टेंबर, २०२३ Friday, 22nd September, 2023
७.	अनंत चतुर्दशी/ईद-ए-मिलाद Anant Chaturdashi/Id-E-Milad	गुरूवार, दि. २८ सप्टेंबर, २०२३ Thursday, 28th September, 2023
८.	महात्मा गांधी जयंती Mahatma Gandhi Jayanti	सोमवार, दि. २ ऑक्टोबर, २०२३ Monday, 2nd October, 2023
९.	दसरा Dasara	मंगळवार, दि. २४ ऑक्टोबर, २०२३ Tuesday, 24th October, 2023
१०.	ख्रिसमस Christmas	सोमवार, दि. २५ डिसेंबर, २०२३ Monday, 25th December, 2023
११.	प्रजासत्ताक दिन Republic Day	शुक्रवार, दि. २६ जानेवारी, २०२४ Friday, 26th January, 2024
१२.	छत्रपती शिवाजी महाराज जयंती Chatrapati Shivaji Maharaj Jayanti	सोमवार, दि. १९ फेब्रुवारी, २०२४ Monday, 19th February, 2024
१३.	महाशिवरात्री Mahashivratri	शुक्रवार, दि. ८ मार्च, २०२४ Friday, 8th March, 2024
१४.	होळी (दुसरा दिवस) Holi (Second Day)	सोमवार, दि. २५ मार्च, २०२४ Monday, 25th March, 2024
१५.	गुड फ्रायडे Good Friday	शुक्रवार, दि. २९ मार्च, २०२४ Friday, 29th March, 2024
१६.	गुढीपाडवा Gudhi Padwa	मंगळवार , दि. ९ एप्रिल, २०२४ Tuesday, 9th April, 2024
१७.	रमझान ईद (ईद-उल-फितर) Ramzan Id (Id-Ul-Fitar)	गुरूवार , दि. ११ एप्रिल, २०२४ Thursday, 11th April, 2024
१८.	श्रीराम नवमी Shriram Navmi	बुधवार , दि. १७ एप्रिल, २०२४ Wednesday, 17th April, 2024

TIME TABLE

Faculty : ARTS

Subject : HISTORY

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.A. II		B.A.I	B.A. III	
TUE		B.A. I		B.A. II	B.A. III	
WED	B.A. III				B.A.II	B.A. I
THUS	B.A. II	B.A. I				
FRI	B.A. I		B.A. III			
Period	1	2	3	4	5	6
Day / Time	**7:30 To 8:18**	**8:18 To 9:06**	**9:06 To 9:54**	**10:04 To 10:52**	**10:52 To 11:40**	**11:40 To 12:28**
SAT	B.A. III	B.A. II				

ALLOTTED WORKLOAD

Subject: HISTORY

Year : 2023-24

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 Workload per week (L+T+P) : 15 (L) = 15 (12 Hrs)

Teaching Periods Available per month during the session 2023-24

Faculty: ARTS

Subject : HISTORY

Class	Periods	JUL-23	AUG-23	SEP-23	OCT-23	NOV-23	Total	JAN-24	FEB-24	MAR-24	APR-24	Total
BA I	Theory	11	20	18	20	05	74	18	20	18	17	73
	Tutorial	--	--	--	--	--	--	--	--	--	--	--
BA II	Theory	10	20	19	20	05	74	19	20	20	17	76
	Tutorial	--	--	--	--	--	--	--	--	--	--	--
BA III	Theory	10	19	20	20	05	74	19	19	20	18	76
	Tutorial	--	--	--	--	--	--	--	--	--	--	

Teaching Plan for Theory Available Period During the Session 2023-24

(B.A. Part-I, Semester-I)

Teaching Plan for Theory (First Semester) Class : B. A. Part - I (History of India Earliest Time to 700 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit -I	1) Survey of the Sources of Ancient India 2) Harppan Civilization 3) Vedic Age	15	
02	Unit -II	1) Rise of Religious Movement 2) Mouryan Dynasties	15	
03	Unit -III	1) Mouryan and Post Mauryan Period 2) Shungas, Satavahanas, Kushan	14	
04	Unit -IV	1) Gupta Dynasty 2) Vakatak Dynasty 3) Vardhan Empire	15	
05	Unit -V	1) Educational in Ancient India 2) Position of the Women in Ancient India 3) Judicial Administration in Ancient India	15	

(B.A. Part-I, Semester-II)

Teaching Plan for Theory (Second Semester) Class : B.A. Part - I (History of India from 701 to 1526 A.D)				
Sr. No.	**Unit**	**Topic to be covered**	**Lecture Available**	**Lecture Utilized**
01	Unit -I	1) Arab and Turkas invasion 2) Establishment of Saltant 3) Qutbuddin Aibak 4) Balban	15	
02	Unit -II	1) Allauddin Khilji's Political and Administrative Policy 2) Allauddin Khilji's Economic Policy 3) Mahammad Tughaluq 4) Firoz Shah Tughaluq 5) Invasion of Timur 6) The Sayyids, Lodis and The Decline of the Sultanate	20	
03	Unit -III	1) The Bahamani Kingdom 2) The Vijaynagar Kingdom	10	
04	Unit -IV	1) Political Structure During Sultanate Period 2) State and Society 3) Social Status of Women	13	
05	Unit -V	1) Economic and Technological Development 2) Arts and Education 3) Religious Movement	15	

(B.A. Part-II, Semester-III)

Teaching Plan for Theory (Third Semester), Class : B. A. Part- II, (History of India From 1526 to 1756 A.D.				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit -I	1) Survey of the Sources of Medieval India 2) Establishment and Cansolidation of Mughal Empire 3) Mughal Policy	15	
02	Unit -II	1) Mughal Ruling Classes 2) Mughals Relation with India Power 3) Declined of Mughal Empire	15	
03	Unit -III	1) Mughal Economy 2) Mughal Society 3) Religion 4) Cultural Life	10	
04	Unit -IV	1) Sources of Maratha History 2) Emergence of Maratha Power 3) Maratha Power Under Shivaji 4) Maratha Power Under Sambhaji 5) The Maratha War of Indipendence	19	
05	Unit - V	1) Political Administration Under Maratha 2) Military System Under Maratha 3) Judicial Administration Under Maratha 4) Fiscal Administration of Maratha 5) Religious Policy of Maratha	15	

(B.A. Part-II, Semester-IV)

Teaching Plan for Theory (Forth Semester) Class : B. A. Part - II (History of India From 1757 to 1947 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit -I	1) Advent of European Power 2) Tool of Expansion of British Dominion in India 3) Economic Changes	20	
02	Unit -II	1) Revolt of 1857 2) Socio-religious Movement 3) Modern Education	15	
03	Unit -III	1) Nationalism 2) India National Congres (Early Phase) 3) India National Congres (Leter Phase)	13	
04	Unit - IV	1) Early Gandhian Programme 2) Non Co-oparation Movement 3) Civil Disobedience Movement 4) Quite India Movement	15	
05	Unit - V	1) Constitutional Development 2) Revolutionary Movement 3) Subhashchandra Bose and Azad Hind Army 4) India Towards Indipendence	13	

(B.A. Part-III, Semester-V)

Teaching Plan for Theory (Fifth Semester) Class : B. A. Part - III (History of Modern World From 1780 to 1920 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit - I	1) French Revolution	20	
		2) Emergence of Nepolian Bonaparte		
		3) Congress of Vienna 1815 A.D.		
02	Unit - II	1) Making of the Nation	15	
		2) Foreign policy of Germany Under Bismarck		
		3) Germany Under Kaiser William II		
03	Unit - III	1) Triple Entente	12	
		2) Russo-Japan War		
		3) First World War		
04	Unit - IV	1) The Entry of USA In to First World War	12	
		2) Concept of Communism, Capitalism , Socialism		
		3) The Russian Revolution		
05	Unit - V	1)Paris Peace conference	15	
		2) Versailles Treaty And Other		
		3) The League of Nation Aims, Objective, Structure		

(B.A. Part-III, Semester-VI)

Teaching Plan for Theory (Sixth Semester) Class : B. A. Part - III (History of Modern World From 1921 to 1965 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
1	Unit-I	1)Rise of Fascism in Italy	20	
		2)Rise of Nazism in Germany		
		3)Rise of Stalin in Russia		
		4)The Great Economic Depression 1929		
2	Unit-II	1)Causes and Result of Second World War	15	
		2) Entry of the USA into the Second World War		
		3)Diplomatic Conferences during the War Period		
3	Unit-III	1)United Nations Organization	15	
		2)The Emergence of the USA as world Power		
		3)The Emergence of the USSR as World Power		
4	Unit-VI	1)Post War World.	11	
		2)The Doctrine, The Marshal Plan, Point Four Programme		
		3)Military Alliances – NATO, SEATO, CENTO, Warsaw		
5	Unit-V	1)The Suez Crisis.	15	
		2)European Unity and Disunity, European Common Market, Common Wealth of Nation, The Berlin Crisis, Quba Crisis		

PROGRAMS SCHEDULE (2023-24)

Sr. No.	Particulars	To be organized in
01	Study Circle Formation	SEPTEMBER 2023
02	Guest Lecture	OCTOBER 2023 & FEBRUARY 2024
03	Educational Tour	FEBRURY 2024
04	Debate	OCTOBER 2023 & MARCH 2024
05	Elocution	NOVEMBER 2023 & MARCH 2024
06	Seminar	SEPTEMBER 2023 & MARCH 2024
07	Group Discussion	OCTOBER 2023 & MARCH 2024

ARTS & COMMERCE COLLEGE, WARVAT- BAKAL

DIST- BULDANA

ACADEMIC ACTION PLAN 2023-2024

Department of History

01	Name of Department		Date Appro.	History
02	Name of faculty members with qualification			**Dr. Subhash S. Pawar** (Associate Professor) M.A. M.Phil., Ph.D.
03	Refresher Course / Orientation Program/ Short Term Course /Any Others			Nil
04		iii) Research Articles in UGC, CARE listed Journal		01
		iv) Research Paper in Conference / seminar (Presentation)		01
		v) Research Paper in Conference / Seminar proceeding (Publication)		01
		vi) Conference/ Seminar / Workshop (To be attended)		01
		vii) Resource Person / Chairperson		01
	Conference/ Seminar/ Workshop (To be organized)	01		
	Extension Activities and Social Responsibility	02		
	Academic Activities to be organized (Guest lecture, class room seminar, contest, education tour, celebration of birth and death anniversary of national leaders, no. of visiting & guest faculties etc.	I)Historical tour, ii) Guest lecture, iii) anniversary of Historical person iv) class room seminar		01 02 03 01 (Sem-I) 01 (Sem-II) Total = 02
	Innovative and Best Practices Best Practices should have:- • Name of the title of the Practice • Introduction • Objectives • Theme/ context	Add on course/Certificate Course in History		01

	• Evidence of success Problems encountered and resources tequired			

H.O.D
Department of History

ARTS & COMMERCE COLLEGE

Warwat Bakal Dist- Buldana

DEPARTMENT OF HISTORY

Perspective Plan for Curriculum Implementation 2023-24

Faculty :ARTS Subject : HISTORY

Class	Periods	JUL-23	AUG-23	SEP-23	OCT-23	NOV-23	Total	JAN-24	FEB-24	MAR-24	APR-24	Total
BA I	Theory	11	20	18	20	05	**74**	18	20	18	17	**73**
	Tutorial	--	--	--	--	--	--	--	--	--	--	--
BA II	Theory	10	20	19	20	05	**74**	19	20	20	17	**76**
	Tutorial	--	--	--	--	--	--	--	--	--	--	--
BA III	Theory	10	19	20	20	05	**74**	19	19	20	18	**76**
	Tutorial	--		--	--	--	--	--	--	--	--	

B.A. Part- I; (SEM – I) History of India Earliest Time to 700 A.D.		
Unit	Available Lectures	Duration
Unit-I 1) Survey of the Sources of Ancient India 2) Harppan Civilization 3) Vedic Age	15	15th July 2023 to 04th August 2023
Unit – II 1) Rise of Religious Movement 2) Mouryan Dynasties	15	07th August 2023 to 29th August 2023
Unit - III 1) Mouryan and Post Mouryan Period 2) Shungas, Satavahanas, Kushan	14	31st August 2023 to 20th September 2023
Unit –IV 1) Gupta Dynasty 2) Vakatak Dynasty 3) Vardhan Empire	15	21st September 2023 to 16th October 2023

Unit - V 1) Educational in Ancient India 2) Position of the Women in Ancient India 3) Judicial Administration in Ancient India	15	17th October 2023 to 07th November 2023

B.A. Part- II; (SEM – III) History of India From 713 to 1756 A.D.		
Unit	Available Lectures	Duration
Unit - I 1) Survey of the Sources of Medieval India 2) Establishment and Consolidation of Mughal Empire 3) Mughal Policy	15	15th July 2023 to 02nd August 2023
Unit - II 1) Mughal Ruling Classes 2) Mughals Relation with India Power 3) Declined of Mughal Empire	15	03rd August 202 to 23rd August 2023
Unit - III *1) Mughal Economy* 2) Mughal Society 3) Religion 4) Cultural Life	10	24th August 2023 to 09th September 2023
Unit - IV 1) Sources of Maratha History 2) Emergence of Maratha Power 3) Maratha Power Under Shivaji 4) Maratha Power Under Sambhaji 5) The Maratha War of Independence	19	11th September 2023 to 09th October 2023

Unit - V 1) Political Administration Under Maratha 2) Military System Under Maratha 3) Judicial Administration Under Maratha 4) Fiscal Administration of Maratha 5) Religious Policy of Maratha	15	12 October 2023 to 07th November 2023

B.A. Part- III; (SEM – V) History of Modern World From 1780 to 1920 A.D.)		
Unit	Available Lectures	Duration
Unit - I 1) French Revolution 2) Emergence of Nepolian Bonaparte 3) Congress of Vienna 1815 A.D.	20	15th July 2023 to 04th August 2023
Unit - II 1) Making of the Nation 2) Foreign policy of Germany Under Bismarck 3) Germany Under Kaiser William II	15	05th August 2023 to 26th August 2023
Unit - III 1) Triple Entente 2) Russo-Japan War 3) First World War	12	28th August 2023 to 15th September 2023
Unit - IV 1) The Entry of USA In to First World War 2) Concept of Communism, Capitalism , Socialism 3) The Russian Revolution	12	16th September 2023 to 06th October 2023

Unit - V 1) Paris Peace Conference 2) Versailles Treaty And Other 3) The League of Nation Aims, Objective, Structure	15	07th October 2023 to 07th November 2023

B.A. Part- I; (SEM – II) History of India from 1206 to 1526 A.D		
Unit	Available Lectures	Duration
Unit - I 1) Qutbuddin Aibak 2) Illutmish 3) Razia 4) Balban	15	05th January 2024 to 25th January 2024
Unit - II 1) Allauddin Khilji's Political and Administrative Policy 2) Allauddin Khilji's Economic Policy 3) Mahammad Tughaluq 4) Firoz Shah Tughaluq 5) Invasion of Timur 6) The Sayyids, Lodis and The Decline of the Sultanate	20	29th January 2024 to 26th February 2024
Unit - III 1) The Bahamani Kingdom 2) The Vijaynagar Kingdom	10	27th February 2024 to 13th March 2024
Unit - IV 1) Political Structure During Sultanate Period 2) State and Society 3) Social Status of Women	13	14th March 2024 to 02nd April 2024

Unit - V 1) Economic and Technological Development 2) Arts and Education 3) Religious Movement	15	03rd April 2024 to 27th April 2024

B.A. Part- II; (SEM – IV) History of India From 1757 to 1947 A.D.		
Unit	Available Lectures	Duration
Unit - I 1) Advent of European Power 2) Tool of Expansion of British Dominion in India 3) Economic Changes	20	05th January 2024 to 01st February 2024
Unit - II 1) Revolt of 1857 2) Socio-religious Movement 3) Modern Education	15	03rd February 2024 to 24th February2024
Unit - III 1) Nationalism 2) India National Congres (Early Phase) 3) India National Congres (Leter Phase)	13	26th February 2024 to 13th March 2024
Unit - IV 1) Early Gandhian Programme 2) Non Co-oparation Movement 3) Civil Disobedience Movement 4) Quite India Movement	15	14th March 2024 to 06th April 2024
Unit - V 1) Constitutional Development 2) Revolutionary Movement 3) Subhashchandra Bose and Azad Hind Army	13	08th April 2024 to 27th April 2024

4) India Towards Independence		

B.A. Part- III; (SEM – VI) History of Modern World From 1921 to 1965 A.D.		
Unit	Available Lectures	Duration
Unit - I 1)Rise of Fascism in Italy 2)Rise of Nazism in Germany 3)Rise of Stalin in Russia 4)The Great Economic Depression 1929	20	05th January 2024 to 02nd February 2024
Unit - II 1)Causes and Result of The Second World War 2) Entry of the USA into the Second World War 3)Diplomatic Conferences during the War Period	15	03rd February 2024 to 24th February 2024
Unit - III 1)United Nations Organization 2)The Emergence of the USA as world Power 3)The Emergence of the USSR as World Power	15	26th February 2024 to 15th March 2024
Unit - IV 1)Post War World 2)The Doctrine, The Marshal Plan, Point Four Programme.	11	16th March 2024 to 03rd April 2024

3)Military Alliances – NATO, SEATO, CENTO, Warsaw		
Unit - V 1)The Suez Crisis 2)European Unity and Disunity, European Common Market, Common Wealth of Nation, The Berlin Crisis, Quba Crisis.	15	05th April 2024 to 27th April 2024

Perspective Plan for Co-curricular Activities 2023-24

Sr. No.	Activity	Tentative Duration
01	Study Circle Formation	November 2023
02	Guest Lecture	February 2024
03	Educational Tour	February 2024
07	Elocution	November 2023 & March 2024
08	Seminar	September 2023 & March 2024
09	Group Discussion	October 2023 & March 2024

ARTS & COMMERCE COLLEGE, WARVAT- BAKAL

DIST- BULDANA

ACADEMIC ACTION PLAN 2023-2024

Department of History

01	Name of Department		Date Appro.	History
02	Name of faculty members with qualification			**Dr. Subhash S. Pawar** (Associate Professor) M.A. M.Phil., Ph.D.
03	Refresher Course / Orientation Program/ Short Term Course /Any Others			Nil
04		iii) Research Articles in UGC, CARE listed Journal		01
		iv) Research Paper in Conference / seminar (Presentation)		01
		v) Research Paper in Conference / Seminar proceeding (Publication)		01
		vi) Conference/ Seminar / Workshop (To be attended)		01
		vii) Resource Person / Chairperson		01
	Conference/ Seminar/ Workshop (To be organized)	01		
	Extension Activities and Social Responsibility	02		
	Academic Activities to be organized (Guest lecture, class room seminar, contest, education tour, celebration of birth and death anniversary of national leaders, no. of visiting & guest faculties etc.	I)Historical tour, ii) Guest lecture, iii) anniversary of Historical person iv) class room seminar		01 02 03 01 (Sem-I) 01 (Sem-II) Total = 02
	Innovative and Best Practices Best Practices should have:- • Name of the title of the Practice • Introduction • Objectives • Theme/ context	Add on course/Certificate Course in History		01

	• Evidence of success Problems encountered and resources tequired			

H.O.D
Department of History

SATPUDA EDUCATION SOCIETY, JALGAON (JAMOD)'S

ARTS & COMMERCE COLLEGE

WARWAT- BAKAL DIST- BULDANA

DEPARTMENT OF HISTORY

DEPRTMENTAL ACADEMIC CALENDAR 2023-24

ARTS & COMMERCE COLLEGE, WARWAT- BAKAL

ACADEMIC CALENDER 2023-2024

(Vide the direction number 08/2023 dated 11th January, 2023)

(Academic Calendar for the Academic Session 2023-24 was published by University vide Notification No. 08/2023. And IQAC in its Meeting dated. ….. vide resolution No. …… approved the Academic Calendar for the session 2023-24 as…

Sr. No.	Particular	From	To
1.	First Session	03rd July, 2023	07th November, 2023
2.	Diwali Vacation	08th November, 2023	27th November, 2023
3.	Second Session	28th November, 2023	27th April, 2024
4.	Summer Vacation	29th April, 2024	11th July 2024

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2022	As per University Indicated in Ordinance No.02/1997, 04/1997 & 18/1998	
03	Teaching Days(Odd Semesters)	15/07/2023	07/11/2023	90
04	Induction Program for First Year Students	11/07/2023	14/07/2023	04
05	First Term Vacation	08/11/2023	27/11/2023	20
06	Odd Semesters University Exam	08/11/2023	30/12/2023	39
07	Academic Session (Second Session)	28/11/2023	27/04/2024	121
08	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	90
09	Second Term Vacation	29/04/2024	10/06/2024	43
10	Even Semesters University Exam	29/04/2024	10/06/2024	35
11	Commencement of next Academic session	11/07/2024		

ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Department of History

Vide the SGB Amravati University Gazette, following Public Holidays are declared for 2023-2024

अ. क्र. (Sr.No.)	सण/सुट्या (Festivals/Holidays)	दिवस व दिनांक (Day & Date)
१.	मोहरम Moharum	शनिवार, दि. २९ जुलै, २०२३ Saturday, 29th July, 2023
२.	स्वातंत्र्य दिन Independence Day	मंगळवार, दि. १५ ऑगस्ट, २०२३ Tuesday, 15th August, 2023
३.	पारशी नूतनवर्ष (शहेनशाही) Parsi New Year (Shahenshahi)	बुधवार, दि. १६ ऑगस्ट, २०२३ Wednesday, 16th August, 2023
४.	रक्षाबंधन Rakshabandhan	बुधवार, दि. ३० ऑगस्ट, २०२३ Wednesday, 30th August, 2023
५.	श्रीगणेश चतुर्थी ShriGanesh Chaturthi	मंगळवार, दि. १९ सप्टेंबर, २०२३ Tuesday, 19th September, 2023
६.	गौरीपूजन Gouri Poojan	शुक्रवार, दि. २२ सप्टेंबर, २०२३ Friday, 22nd September, 2023
७.	अनंत चतुर्दशी/ईद-ए-मिलाद Anant Chaturdashi/Id-E-Milad	गुरूवार, दि. २८ सप्टेंबर, २०२३ Thursday, 28th September, 2023
८.	महात्मा गांधी जयंती Mahatma Gandhi Jayanti	सोमवार, दि. २ ऑक्टोबर, २०२३ Monday, 2nd October, 2023
९.	दसरा Dasara	मंगळवार, दि. २४ ऑक्टोबर, २०२३ Tuesday, 24th October, 2023
१०.	ख्रिसमस Christmas	सोमवार, दि. २५ डिसेंबर, २०२३ Monday, 25th December, 2023
११.	प्रजासत्ताक दिन Republic Day	शुक्रवार, दि. २६ जानेवारी, २०२४ Friday, 26th January, 2024
१२.	छत्रपती शिवाजी महाराज जयंती Chatrapati Shivaji Maharaj Jayanti	सोमवार, दि. १९ फेब्रुवारी, २०२४ Monday, 19th February, 2024
१३.	महाशिवरात्री Mahashivratri	शुक्रवार, दि. ८ मार्च, २०२४ Friday, 8th March, 2024
१४.	होळी (दुसरा दिवस) Holi (Second Day)	सोमवार, दि. २५ मार्च, २०२४ Monday, 25th March, 2024
१५.	गुड फ्रायडे Good Friday	शुक्रवार, दि. २९ मार्च, २०२४ Friday, 29th March, 2024
१६.	गुढीपाडवा Gudhi Padwa	मंगळवार , दि. ९ एप्रिल, २०२४ Tuesday, 9th April, 2024
१७.	रमझान ईद (ईद-उल-फितर) Ramzan Id (Id-Ul-Fitar)	गुरूवार , दि. ११ एप्रिल, २०२४ Thursday, 11th April, 2024
१८.	श्रीराम नवमी Shriram Navmi	बुधवार , दि. १७ एप्रिल, २०२४ Wednesday, 17th April, 2024

TIME TABLE

Faculty : ARTS Subject : HISTORY

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.A. II		B.A.I	B.A. III	
TUE		B.A. I		B.A. II	B.A. III	
WED	B.A. III				B.A.II	B.A. I
THUS	B.A. II	B.A. I				
FRI	B.A. I		B.A. III			
Period	1	2	3	4	5	6
Day / Time	**7:30 To 8:18**	**8:18 To 9:06**	**9:06 To 9:54**	**10:04 To 10:52**	**10:52 To 11:40**	**11:40 To 12:28**
SAT	B.A. III	B.A. II				

ALLOTTED WORKLOAD

Subject: HISTORY Year : 2023-24

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 Workload per week (L+T+P) : 15 (L) = 15 (12 Hrs)

Teaching Periods Available per month during the session 2023-24

Faculty: ARTS Subject : HISTORY

Class	Periods	JUL-23	AUG-23	SEP-23	OCT-23	NOV-23	Total	JAN-24	FEB-24	MAR-24	APR-24	Total
BA I	Theory	11	20	18	20	05	74	18	20	18	17	73
	Tutorial	--	--	--	--	--	--	--	--	--	--	--
BA II	Theory	10	20	19	20	05	74	19	20	20	17	76
	Tutorial	--	--	--	--	--	--	--	--	--	--	--
BA III	Theory	10	19	20	20	05	74	19	19	20	18	76
	Tutorial	--	--	--	--	--	--	--	--	--	--	

Teaching Plan for Theory Available Period During the Session 2023-24

(B.A. Part-I, Semester-I)

Teaching Plan for Theory (First Semester) Class : B. A. Part - I (History of India Earliest Time to 700 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit -I	1) Survey of the Sources of Ancient India	15	
		2) Harppan Civilization		
		3) Vedic Age		
02	Unit -II	1) Rise of Religious Movement	15	
		2) Mouryan Dynasties		
03	Unit -III	1) Mouryan and Post Mauryan Period	14	
		2) Shungas, Satavahanas, Kushan		
04	Unit -IV	1) Gupta Dynasty	15	
		2) Vakatak Dynasty		
		3) Vardhan Empire		
05	Unit -V	1) Educational in Ancient India	15	
		2) Position of the Women in Ancient India		
		3) Judicial Administration in Ancient India		

(B.A. Part-I, Semester-II)

Teaching Plan for Theory (Second Semester) Class : B.A. Part - I (History of India from 701 to 1526 A.D)				
Sr. No.	**Unit**	**Topic to be covered**	**Lecture Available**	**Lecture Utilized**
01	Unit -I	1) Arab and Turkas invasion	15	
		2) Establishment of Saltant		
		3) Qutbuddin Aibak		
		4) Balban		
02	Unit -II	1) Allauddin Khilji's Political and Administrative Policy	20	
		2) Allauddin Khilji's Economic Policy		
		3) Mahammad Tughaluq		
		4) Firoz Shah Tughaluq		
		5) Invasion of Timur		
		6) The Sayyids, Lodis and The Decline of the Sultanate		
03	Unit -III	1) The Bahamani Kingdom	10	
		2) The Vijaynagar Kingdom		
04	Unit -IV	1) Political Structure During Sultanate Period	13	
		2) State and Society		
		3) Social Status of Women		
05	Unit -V	1) Economic and Technological Development	15	
		2) Arts and Education		
		3) Religious Movement		

(B.A. Part-II, Semester-III)

Teaching Plan for Theory (Third Semester), Class : B. A. Part- II, (History of India From 1526 to 1756 A.D.				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit -I	1) Survey of the Sources of Medieval India	15	
		2) Establishment and Cansolidation of Mughal Empire		
		3) Mughal Policy		
02	Unit -II	1) Mughal Ruling Classes	15	
		2) Mughals Relation with India Power		
		3) Declined of Mughal Empire		
03	Unit -III	1) Mughal Economy	10	
		2) Mughal Society		
		3) Religion		
		4) Cultural Life		
04	Unit -IV	1) Sources of Maratha History	19	
		2) Emergence of Maratha Power		
		3) Maratha Power Under Shivaji		
		4) Maratha Power Under Sambhaji		
		5) The Maratha War of Indipendence		
05	Unit - V	1) Political Administration Under Maratha	15	
		2) Military System Under Maratha		
		3) Judicial Administration Under Maratha		
		4) Fiscal Administration of Maratha		
		5) Religious Policy of Maratha		

(B.A. Part-II, Semester-IV)

Teaching Plan for Theory (Forth Semester) Class : B. A. Part - II (History of India From 1757 to 1947 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit -I	1) Advent of European Power	20	
		2) Tool of Expansion of British Dominion in India		
		3) Economic Changes		
02	Unit -II	1) Revolt of 1857	15	
		2) Socio-religious Movement		
		3) Modern Education		
03	Unit -III	1) Nationalism	13	
		2) India National Congres (Early Phase)		
		3) India National Congres (Leter Phase)		
04	Unit - IV	1) Early Gandhian Programme	15	
		2) Non Co-oparation Movement		
		3) Civil Disobedience Movement		
		4) Quite India Movement		
05	Unit - V	1) Constitutional Development	13	
		2) Revolutionary Movement		
		3) Subhashchandra Bose and Azad Hind Army		
		4) India Towards Indipendence		

(B.A. Part-III, Semester-V)

Teaching Plan for Theory (Fifth Semester) Class : B. A. Part - III (History of Modern World From 1780 to 1920 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	Unit - I	1) French Revolution	20	
		2) Emergence of Nepolian Bonaparte		
		3) Congress of Vienna 1815 A.D.		
02	Unit - II	1) Making of the Nation	15	
		2) Foreign policy of Germany Under Bismarck		
		3) Germany Under Kaiser William II		
03	Unit - III	1) Triple Entente	12	
		2) Russo-Japan War		
		3) First World War		
04	Unit - IV	1) The Entry of USA In to First World War	12	
		2) Concept of Communism, Capitalism , Socialism		
		3) The Russian Revolution		
05	Unit - V	1)Paris Peace conference	15	
		2) Versailles Treaty And Other		
		3) The League of Nation Aims, Objective, Structure		

(B.A. Part-III, Semester-VI)

Teaching Plan for Theory (Sixth Semester) Class : B. A. Part - III (History of Modern World From 1921 to 1965 A.D.)				
Sr. No.	**Unit**	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
1	Unit-I	1)Rise of Fascism in Italy	20	
		2)Rise of Nazism in Germany		
		3)Rise of Stalin in Russia		
		4)The Great Economic Depression 1929		
2	Unit-II	1)Causes and Result of Second World War	15	
		2) Entry of the USA into the Second World War		
		3)Diplomatic Conferences during the War Period		
3	Unit-III	1)United Nations Organization	15	
		2)The Emergence of the USA as world Power		
		3)The Emergence of the USSR as World Power		
4	Unit-VI	1)Post War World.	11	
		2)The Doctrine, The Marshal Plan, Point Four Programme		
		3)Military Alliances – NATO, SEATO, CENTO, Warsaw		
5	Unit-V	1)The Suez Crisis.	15	
		2)European Unity and Disunity, European Common Market, Common Wealth of Nation, The Berlin Crisis, Quba Crisis		

PROGRAMS SCHEDULE (2023-24)

Sr. No.	Particulars	To be organized in
01	Study Circle Formation	SEPTEMBER 2023
02	Guest Lecture	OCTOBER 2023 & FEBRUARY 2024
03	Educational Tour	FEBRURY 2024
04	Debate	OCTOBER 2023 & MARCH 2024
05	Elocution	NOVEMBER 2023 & MARCH 2024
06	Seminar	SEPTEMBER 2023 & MARCH 2024
07	Group Discussion	OCTOBER 2023 & MARCH 2024

Arts & Commerce College Warvat Bakal

Principal
Arts & Commerce College
Warvat Bakal Dist.Buldana

SATPUDA EDUCATION SOCIETY, JALGAON (JAMOD)'S

ARTS & COMMERCE COLLEGE

WARVAT BAKAL DIST- BULDANA

DEPARTMENT OF COMMERCE

DEPRTMENTAL ACADEMIC CALENDAR 2023-24

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	TotalDays
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023		
03	Teaching Days(Odd Semesters)	15/07/2023	07/11/2023	90
04	Induction Program for First Year Students	11/07/2023	14/07/2023	04
05	First Term Vacation	08/11/2023	27/11/2023	20
06	Odd Semesters University Exam	08/11/2023	30/12/2023	39
07	Academic Session (Second Session)	28/11/2023	27/04/2024	121
08	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	90
09	Second Term Vacation	29/04/2024	10/06/2024	43
10	Even Semesters University Exam	29/04/2024	10/06/2024	35
11	Commencement of next Academic session	11/07/2024	-----	----

Sr. No.	Public Holiday	Day & Date
01	Moharam	Saturday 29/07/2023
02	Independence Day	Tuesday 15/08/2023
03	Parsi New Year	Wednesday 16/08/2023
04	Rakshabandhan	Wednesday 30/08/2023
05	Shri Ganesh Chaturthi	Tuesday 19/09/2023
06	Anant Chaturthi	Thursday 28/09/2023
07	Mahatama Gandhi Jayanti	Monday 02/10/2023
08	Dasara	Tuesday 24/10/2023
09	Christmas	Monday 25/12/2023
10	Republic Day	Friday 26/01/2024
11	Chatrapti Shivaji Maharaj Jayanti	Monday 19/02/2024
12	Mahashivratri	Friday 08/03/2024
13	Holi (Second Day)	Monday 25/03/2024
14	Good Friday	Friday 29/03/2024
15	Gudhi Padwa	Tuesday 09/04/2024
16	Ramzan ID (Id-Ul-Fitar)	Thursday 11/04/2024
17	Shriram Navmi	Wednesday 17/04/2024

Time Table

Faculty : Commerce

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

Year : 2023-24

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	M.Com II				

Total Workload per week (L+T+P) : 22 (L) + 00 (T) = 22 (17 hrs. 36 m)

Teaching Periods Available per month during the session 2023-24

Faculty : COMMERCE **Subject : BEC, ITA, BMS,CMA,I&WWW**

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July 23	Aug 23	Sept 23	Oct 23	Nov 23	Total	Jan 24	Feb 24	Mar 24	Apr 24	Total
B.Com I (PEC, BEC)	Theory	11	20	19	20	5	75	18	20	18	17	73
B.Com II (MM, BMS)	TH. (ITA)	11	20	19	20	5	75	18	20	18	17	73
	TH. (BMS)	04	08	10	08	02	32	07	08	08	08	31
B.Com III (CMA, I&WWW)	TH. (CMA)	11	20	19	20	5	75	18	20	18	17	73
	TH. (I&WWW)	11	20	20	20	5	76	19	20	20	17	76
M.com I MEC,SMA	TH. MEC,SEM											
M.Com II	TH.											

Teaching Plan for Theory (First Semester) Class : B com Part I (PEC) CBCS			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INTRODUCTION	13	
02	UTILITY APPROACH	13	
03	ELASTICITY OF DEMAND	13	
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) CBCS			
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	12	
05	FACTORS PRICING	12	
06	Skill Enhancement Module	12	
Teaching Plan for Theory (Third Semester) Class : B com Part II (AUD) CBCS			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	MEANING OF AUDITING	13	
02	TYPE S OF AUDIT	13	
03	INTERNAL CHECK SYSTEM	13	
04	AUDITORS REPORT	13	
05	COMPANY AUDIT	13	
06	SKILL MODULES	10	
Teaching Plan for Theory (Fourth Semester) Class : B COM II (IT) CBCS			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	BASIC CONCEPT-INCOME TAX	12	
02	COMPUTATION OF INCOME FROM SALARY	13	
03	INCOME FROM HOUSE PROPERTY	15	
04	BASIC CONCEPT CAPITAL ASSETS	15	
05	DEDUCATION MADE TO GROSS TOTAL INCOME	12	
06	SKILL MODULES	08	
Teaching Plan for Theory (Third Semester) Class : B com Part II (BMS) CBCS			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	PLACE/CHANNEL DECISION	13	
02	PROMOTION DECISION	13	
03	SKILL MODULES	10	
Teaching Plan for Theory (Fourth Semester) Class : B COM Part II (BST) CBCS			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INDEX NUMBER	12	
02	CORRELATION	13	
03	SKILL MODULES	12	
Teaching Plan for Theory (Fifth Semester) Class : B com Part III (CAC) CGS			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	COST ACCOUNTING	15	

02	MATERIAL COST	15	
03	LABOUR COST	15	
04	OVERHEADS	15	
05	PROCESS COSTING	15	
Teaching Plan for Theory (Sixth Semester)		**Class : B com Part III (MAC) CGS**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	MANAGEMENT ACCOUNTING	15	
02	BREAK-EVEN-ANALYSIS	15	
03	RATIO ANALYSIS	15	
04	BUDGET	15	
05	BUDGETARY CONTROL	15	
Teaching Plan for Theory (Fifth Semester)		**Class : B COM Part III (I&WW-I) CGS**	
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) CGS			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	WEB BROWSING	15	
02	WEB DIRECTORY	15	
03	SOCIAL NETWORKING	15	
04	GOOGLE DRIVE	15	
05	M.S. FRONT PAGE EXPRESS	15	

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 : 2023-24

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	----	----	
4	M.Com I				
5	M.Com II				

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

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 : 2023-24

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	----	----	
4	M.Com I				
5	M.Com II				

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

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

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July 23	Aug 23	Sept 23	Oct 23	Nov 23	Total	Jan 24	Feb 24	Mar 24	Apr 24	Total
B.Com I SEM I / II (PBO, PBM CFS-I&II)	PBM/PBO (T)	10	19	18	19	4	**70**	17	19	17	16	**69**
	CFS-I /CFS-II (T/P)	10	19	18	19	4	**70**	17	19	17	16	**69**
B.Com II SEM III/ IV (COA/CAT)	COA /CAT (T)	11	20	19	20	5	**75**	18	20	18	17	**73**
B.Com III SEM V/VI (BRFC/CLAW EOE-I&II)	BRFC/ ClAW (T)	11	20	20	20	5	**76**	19	20	20	17	**76**
	EOE_I / EOE-II (T)	11	20	20	20	5	**76**	19	20	20	17	**76**

Teaching Plan for Theory (First Semester) Class : B com Part I (PBM)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Management Concept	14	
02	Planning	14	
03	Organizing	14	
04	Directing	14	
05	Controlling	14	
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	14	
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]	14	
Teaching Plan for Theory (Second Semester) Class: B com Part I (PBO)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Commerce and Industry	13	
02	Business	14	
03	Merger and Acquisition	14	
04	New Enterprises	14	
05	Trade in India	14	
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	14	
02	0perating System [Advance]	14	
03	Modern communications {Concepts only}:	13	
04	Word Processing working with Table and t3raphics: IMS-WORD 20071	14	
05	PowerPoint Presentation	14	
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	15	
Teaching Plan for Theory (FourthSemester) Class : B COM II (CAT)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Final Accounts of Banking Company	15	
02	Final Accounts of Fire and Accident Insurance Company	15	
03	Liquidation of Company	15	
04	Valuation of Goodwill	14	
05	Valuation of Shares	14	
Teaching Plan for Theory (FifthSemester) Class : B com Part III(BRFC)			

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Indian Contract Act1872	16	
02	Special Contacts	15	
03	Sales of Goods Act, 1930 and Consumer Protection Act, 1986	15	
04	Negotiable Instrument Aet, 1881	15	
05	Goods and Sewices Tax Act, 2017	15	
Teaching Plan for Theory (FifthSemester) Class : B COM Part III (EOE-I)			
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	Basics of E-Commerce	16	
02	E-Commerce in India	15	
03	Retail E-Commerce	15	
04	B28 E-Commerce	15	
05	E- Payment and E-Banking	15	
Teaching Plan for Theory (SixthSemester) 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	15	
02	Incorporation of Company	15	
03	Share Capital of Company	15	
04	Securities Market	15	
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	15	
03	B28 Online Marketing	15	
04	E-Governance	15	
05	E- Governance Models	15	

Time Table (2023-24)

Faculty : COMMERCE

Subject :FAC,IFS,ITB,BST,EOD,BIS

Dr. 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)		I (BIS)
THUS	II (ITB)	III (EOD)		II (IFS)	II (BST)	
FRI		III (EOD)	I (FAC)	II (IFS)		I (BIS)
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,BIS

Year : 2023-24

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	----	-----	
6	M.Com.I(BIS)	02	---	---	

Total Workload per week (L+T+P) : 25 (L) + 00 (T)+00(P) = 25 (20 Hrs)

Teaching Periods Available per month during the session 2023-24

Faculty : COMMERCE **Subject :FAC,IFS,ITB,BST,EOD,BIS**

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July 23	Aug 23	Sep 23	Oct 23	Nov 23	Total	Jan 24	Feb 24	Mar 24	Apr 24	Total
B.Com I (FAC)	Th. (FAC)	14	24	21	22	04	**85**	20	20	22	20	**82**
B.Com II (IFS, ITB, BST)	TH. (IFS)	--	22	21	22	04	**69**	20	21	22	20	**83**
	TH. (ITB)	--	21	21	23	06	**71**	20	20	21	19	**80**
	TH. (BST)	--	11	12	13	03	**39**	11	13	12	10	**46**
B.Com III (EOD)	TH. (EOD)	--	22	22	21	05	**70**	17	21	20	20	**78**
M.Com.I (BIS)	TH. (BIS)	--	08	09	08	02	**27**	08	07	08	06	**29**

TEACHING PLAN 2023-24

Teaching Plan for Theory (First Sem.)	Class : B.Com. Part I	Sub- Principles of 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- Finanncial Accounting**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	FINAL ACCOUNTS OF INDIVIDUAL	12	
02	BILL OF EXCHANGE	12	
03	ACCOUNTS OF NON PROFIT ORGANIZATION	12	
04	FINAL ACCOUNTS OF CO-OPERATIVE SOCIETIES	13	
05	FINAL ACCOUNTS OF PARTENERSHIP FIRMS	13	
06	SKILL ENHANNCEMENT MODULE	13	
	TOTAL	**75**	
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	13	
02	VALUE OF MONEY	13	
03	PRICE FLUCTUATIONS	13	
04	MONEY MARKET	12	
05	DEMONITIZATION IN INDIA	12	
06	SKILL ENHANNCEMENT MODULE	12	
	TOTAL	**75**	
Teaching Plan for Theory (Fourth Sem.)	**Class : B.Com. Part II**	**Sub- Indian Financial System**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INDIAN FINANCIAL MARKET	13	
02	INDIAN BANKS	13	
03	COMMERCIAL BANKS	13	
04	RESERVE BANK OF INDIA	12	
05	STOCK EXCHANGE	12	
06	SKILL ENHANNCEMENT MODULE	12	
	TOTAL	**75**	
Teaching Plan for Theory (Third Sem.)	**Class : B.Com. Part II**	**Sub- Information Technology & Business Data Processing**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	DATA & DATA PROCESSING	07	
02	DATABASE	07	
03	DATABASE MANAGEMENT SYSTEM	07	
04	SPREADSHEET PACKAGE	13	
05	FORMULAS,FUNCTIONS AND CHART IN EXCELS	11	

06	PRACTICALS	30	
	TOTAL	**75**	

Teaching Plan for Theory (Fourth Sem.) **Class : B.Com. Part II** **Sub- InformatiomTechnplogy& Business Data Processing-II**

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Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INFORMATION TECHNOLOGY	07	
02	COMPUTERISED ACCOUNTING SOFTWARE PACKAGE	07	
03	PRACTICALY ACCOUNTING WITH TALLY	07	
04	INVENTORY FEATURE OF TALLY	13	
05	TALLY REPORTS & TAX FEATURES	11	
06	PRACTICALS	30	
	TOTAL	**75**	

Teaching Plan for Theory (Third Sem.) **Class : B.Com. Part II** **Sub- Marketing Mangement**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	INTRODUCTION TO MARKETING MANAGEMENT	13	
02	PRODUCT DICISION	13	
03	PRICE DICISIONS	13	
	TOTAL	**39**	

Teaching Plan for Theory (Fourth Sem.) **Class : B.Com. Part II** **Sub- Business Math. Statistics**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	H.C.F & L.C.M.,RATIO,LINEAR EQUATION, PROPORTION	13	
02	STATISTICS MEANING, SCOPE,LIMITATION, DATA COLLECTION	13	
03	STANDARD DEVIATION	12	
	TOTAL	**38**	

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	15	
	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**	

Teaching Plan for Theory (First Sem.) **Class : M.Com. Part I** **Sub- Banking & Insurance service**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	COMMERCIAL BANKS	12	
02	RESERVE BANK OF INDIA	12	
	TOTAL	**30**	

Teaching Plan for Theory (Second Sem.)	Class : M.Com. Part II	Sub- Strategic Management	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	CONCEPT OF STRATEGY	12	
02	ENVIRONMENTAL ANALYSYS & DIAGNOSIS	12	
	TOTAL	**30**	

ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Department : Commerce

PROGRAMS SCHEDULE (2023 - 24)

Sr. No.	Particulars	Date
1.	Teacher Day celebrates	05 Sept. 2023
2.	Study Circle Formation	12 Dec. 2023
3.	Debate	15 Dec. 2023
4.	Group Discussion	17 Jan. 2024
5.	World Consumer Day	15 March 2024
6.	Bank Visit	08 April 2024
7.	Guest Lecture	19 April 2024

ACADEMIC ACTION PLAN 2023-24

01	Name of the Department		Commerce & Management
02	Name of faculty member		1. Dr. Satish Rane 2. Dr. Sanjay Tale 3. Dr. Suresh Bhaltadak
03	Refresher Course/ Orientation Program/ Short Term Course/ Any Others to be participated		03
04	Research Publication Plan	i) Book Publication	03
		ii) Chapter in Book	03
		iii) Research Articles in UGC CARE listed Journal	03
		iv) Research Paper in conference/ seminar (Presentation)	03
		v) Research Paper in conference/ seminar proceeding (Publication)	03
		vi) Conference/ Seminar/ Workshop (To be attended)	04
		vii) Ph. D registered/Ongoing/Awarded	--
05	Conference/ Seminar/ Workshop (To be organized)		01
06	Extension Activities and Social Responsibility (to be participated)		04
07	Academic Activities to be organized		04

Arts & Commerce College Warvat Bakal

Principal
Arts & Commerce College
Warvat Bakal Dist.Buldana

Satpuda Education Society, Jalgaon (Jamod)'s

ARTS & COMMERCE COLLEGE

WARWAT BAKAL DIST- BULDHAN

Department of Botany

Departmental ACADEMIC CALENDAR
2023-24

Mr. S. S. Mhasal

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	TotalDays
01	FirstSession	03/07/2023	07/11/2023	105
02	AdmissionProcess	03/07/2023	--	--
03	TeachingDays(OddSemesters)	15/07/2023	07/11/2022	90
04	Induction Program for FirstYearStudents	11/07/2023	14/07/2023	04
05	FirstTermVacation	08/11/2023	27/11/2023	20
06	Odd Semesters UniversityExam	08/11/2023	30/12/2023	39
07	Second Session	28/11/2023	27/04/2024	121
08	Teaching Days (EvenSemesters)	05/01/2024	27/04/2024	90
09	SecondTermVacation	29/04/2024	10/06/2024	43
10	Even Semesters University Exam	29/04/2024	10/06/2024	35
11	Commencementofnext Academicsession 2024-25	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharum	Saturday, 29/07/2023
02	Independence Day	Tuesday, 15/08/2023
03	Parsi New Year (Shahenshahi)	Wednesday, 16/08/2023
04	Rakshabandhan	Wednesday, 30/08/2023
05	Shri Ganesh Chaturthi	Tuesday, 19/09/2023
06	Gouri Poojan	Friday, 22/09/2023
07	Anant Chaturdashi/Id-E-Milad	Thursday, 28/09/2023
08	Mahatma Gandhi Jayanti	Monday, 02/10/2023
09	Dasara	Tuesday, 24/10/ 2023
10	Christmas	Monday, 25/12/2023
11	Republic Day	Friday, 26/01/ 2024
12	Chhatrapati Shivaji Maharaj Jayanti	Monday, 19/02/2024
13	Mahashivratri	Friday, 8/03/2024
14	Holi (Second Day)	Monday, 25/03/2024
15	Good Friday	Friday, 29/03/2024
16	Gudhi Padwa	Tuesday, 9/04/2024
17	Ramzan Id (Id-Ul-Fitar)	Thursday, 11/04/2024
18	Shriram Navmi	Wednesday, 17/04/2024

Time Table:

Name: Mr. S. S. Mhasal.

Faculty: SCIENCE

Subject: BOTANY

Period	1	2	3	4	5	6
	Practical	Theory				Practical
Day/ Time	8:30 to 10:54	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:30 to 4:54
MON	**I (Pract.) Batch: (E)**			III (T)		**I (Pract.) Batch: (C)**
TUE				I(T)		**I (Pract.) Batch:(C)**
WED	II (Pract.) Batch:(B)					II (Pract.) Batch:(E)
THUS		II (T)				
FRI						III (Pract.)
		08.00-08.48	08.48-09:36	09:36- 10:24	10:34-12:58	12:58 -03:22
SAT		I(T)				

Allotted Workload

Subject: BOTANY

Year: 2023-24

Sr. No.	Class	Work load		
		Lecture (Theory)	Practical	Paper Allotted
1	B.Sc. - I	02	3 × 3 = 09	1
2	B.Sc. – II	01	2× 3 = 06	1
3	B.Sc. - III	01	1x 3 = 03	1

Total Workload per week (Th +Pract.): 04 (The) + 18 (Pract.) = 22 (17.6 Hrs.).

Teaching Periods Available per month during the session 2023-24

Faculty: SCIENCE

Subject: BOTANY

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	JUL-2023	AUG - 2023	SEP-2023	OCT - 2023	NOV - 2023	Total	JAN-2024	FEB-2024	MAR-2024	APR - 2024	Total
BSc-I	Theory	04	08	08	08	02	30	08	08	09	08	33
	Practical	18	36	33	36	06	129	36	30	30	36	132
BSc –II	Theory	02	05	03	04	01	15	03	05	04	03	15
	Practical	12	24	24	24	06	90	30	24	24	18	96
BSc- III	Theory	.02	04	04	04	01	15	05	03	03	04	15
	Practical	06	12	12	12	03	45	15	12	09	12	48

Teaching Plan for Theory (First Semester)			Class : B.Sc. Part I
Sr. No.	Topic to be covered	Lectures Available	Duration
01	**UNIT-IV:-Fungi & Applied Mycology**	15	July 2023 to September2023
02	**UNIT-II:- Phytopathology**	15	September2023 to November 2023
Teaching Plan for Practical (First Semester)			**Class : B.Sc. Part I**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	Study of types of bacteria from temporary / permanent slides / photographs.	12	July 2023
02	Study of Bacterial Staining (Gram staining)	12	July 2023 to August 2023
03	Study of TMV from Models/ Photographs.	12	August 2023
04	Algae - Preparation of temporary mount, identification with reasons of following algal materials : *Nostoc, Oedogonium, Chara, Vaucheria, Ectocarpus, Batrachospermum*	18	August 2023
05	**Fungi and Plant Pathology :** *1.* Study of following Genera - *Albugo, Rhizopus, Aspergillus. Puccinia, Cercospora,*	18	September2023
06	Study of Crustose, Fruticose and Foliose lichen.	15	September2023
07	Study of symptoms of fungal, viral, bacterial	12	October2024

	diseases.		
08	Photographic herbarium of diseased plant parts from local region	12	October2024
09	**Additional Activities** **1.** Botanical Excursion (short/long) **2.** Visit to any biodiversity-rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of the excursion should be submitted at the time of practical examination	12	October2024
10	**Submission** 1. Photographic herbarium of diseased plant plants. 2. Tour reports or field visit report	06	November 2024

Teaching Plan for Theory (Second Semester) Class: B.Sc. I

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**UNIT-IV :- Mophology of Angiosperms**	16	January 2024 to February 2024
02	**UNIT-V :- Utilization of Plant wealth**	17	March 2024 to April 2024

Teaching Plan for Practical (Second Semester) Class: B.Sc. I

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Bryophyta: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Marchantia and Funaria*	12	January 2024
02	Pteridophyta: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Equisetum and Marsilea*	12	January 2024
03	Gymnosperms: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Pinus and Gnetum*	12	February 2024
04	Morphology: Detail morphological study of following types of plant parts - Root, Stem, Leaves, Inflorescence, Flower, Placentation and Fruits	15	February 2024 to March 2024
05	Utilization of plants: Morphology varieties and economic importance of following plants i) Food plant : Wheat ii) Oil yielding plant: Groundnut iii) Fiber yielding : Cotton	12	March 2024
06	Medicinal plants- *Adhatoda vasica, Asparagus racemosus, Catharanthus roseus, Ocimum sanctum, Rauwolfia serpentina, Withania*	12	March 2024 to April 2024

	somnifera, Tinospora cordifolia		
07	Botanical Excursion (short/long) Visit to any biodiversity rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of excursion should be submitted at the time of practical examination. Photographic collection of bryophytic, pteridophytic and gymnospermic plants specimens	06	April 2024
08	1. Photographic herbarium of Bryophytes, Pteridophytes, Gymnosperms etc. 2. Botanical excursion report	06	April 2024
Teaching Plan for Theory (Third Semester)			**Class : B.Sc. II**
01	**Angiosperm systematics**	15	July 2023 to November 2023
Teaching Plan for Practical (Third Semester)			**Class : B.Sc. II**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	Embryology of Angiosperms: Observation of wide range of flowers available in the locality and methods of their pollination.	06	July 2023
02	Study through permanent slides of T.S. of anthers, microsporogenesis, L.S. of ovule, types of endosperms and embryo of Capsella .	06	July 2023
03	Mounting of T.S. of anthers, Pollen grains and pollinia.	06	August 2023
04	Anatomy of angiosperms : Preparation of double stained slides of root. (Dicot. & Monocot.)	06	August 2023
05	Anatomy of angiosperms : Preparation of double stained slides of stem. (Dicot. & Monocot.)	06	August 2023
06	Anatomy of angiosperms : Preparation of double stained slides of leaf. (Dicot. & Monocot.)	06	August 2023
07	Taxonomic description of family,**Verbanaceae –** *Lantana.*	06	September 2023
08	Taxonomic description of family,**Malvaceae-** *Hibiscus.*	06	September 2023
09	Taxonomic description of family,**Fabaceae-** *Crotalaria.*	06	September 2023
10	Taxonomic description of family,**Caesalpinoidae-** *Caesalpinea.*	06	September 2023
11	Taxonomic description of family,**Asteraceae-** *Tridax.*	06	October 2023
12	Taxonomic description of family,**Apiaceae-** *Corindrum.*	06	October 2023
13	Taxonomic description of family,**Apocynaceae-** *Vinca.*	06	October 2023

14	Taxonomic description of family,**Asclepiadaceae**-*Calatropis*.	06	October 2023
15	Taxonomic description of family,**Solanaceae**-*Datura*.	03	November 2023
16	Taxonomic description of family,**Lamiaceae**-*Oscimum*. Record checking, certification & group discussion	03	November 2023
Teaching Plan for Theory (Fourth Semester)			**Class : B.Sc. II**
01	**UNIT III :- Physical Basis of Inheritance**	17	January 2024 to April 2024
Teaching Plan for Practical (Fourth Semester)			**Class : B.Sc. II**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	Squash preparation for the study of various stages of mitosis	12	January 2024
02	Smear preparation for the study of various stages of meiosis.	12	January 2024
03	To prove Mendel's Monohybrid ratio.	06	January 2024
04	To prove Mendel's Dihybrid ratio.	12	February 2024
05	Problems based on Interaction of genes	12	February 2024
06	To demonstrate test for glucose in grapes, & sucrose in cane sugar / beet root.	12	March 2024
07	To demonstrate test for protein.	06	March 2024
08	To demonstrate the lipid test in oily seeds.	06	March 2024
09	To demonstrate the test for starch / cellulose.	09	April 2024
10	To demonstrate the activity of enzyme amylase from germinating Wheat grains.	09	April 2024
Teaching Plan for Theory (Fifth Semester)			**Class : B.Sc. III**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit - I:- Plant Water Realtion**	15	July 2023 to November 2023
Teaching Plan for Practical (Fifth Semester)			**Class : B.Sc. III**
Sr. No.	Topic to be covered	Lectures Available	Duration
1.	To study the effect of temperature and organic solvent on permeability of plasma membrane.	**03**	**July 2023**
2.	To determine the path of water (ascent of sap) & To determine the rate of transpiration by Ganongs photometer.	**03**	**July 2023**
3.	To determine rate of photosynthesis under	**03**	**August 2023**

	varying quality of light and CO2 concentration.		
4.	Separation of chloroplast pigments by paper chromatography method.	03	August 2023
5.	To study antagonism of salts. & To demonstrate exo and endosmosis.	03	August 2023
6.	To study effect of IAA and Gibberellins on seed germination.	03	August 2023
7.	To demonstrate fermentation.	03	September 2023
8.	To demonstrate transpiration by Bell jar.	03	September 2023
9.	To demonstrate anaerobic respiration in germinating seeds.	03	September 2023
10.	To demonstrate the phenomenon of nastic movement with help of *Mimosa pudica*	03	September 2023
11.	Study of morphological and anatomical adaptations in hydrophytes – *Hydrilla*and*Nymphaea.*	03	October 2023
12.	Study of morphological and anatomical adaptations in xerophytes –*Nerium, Casuarina.*	03	October 2023
13.	Determination of pH of different soils and water samples by pH papers	03	October 2023
14.	Study of meteorological instruments –Rain gauge, Hygrometer.	03	October 2023
15.	Record checking, certification & group discussion	03	November 2023

Teaching Plan for Theory(Sixth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit-I :- DNA :- The Genetic Material**	15	January 2024 to April 2024

Teaching Plan for Practical (Sixth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Isolation of DNA by crude method**	12	January 2024
02	**Demonstration of Centrifugation**	03	January 2024
03	**Working Principle and application of Autoclave**	06	February 2024
04	**Working Principle and application of Laminar Air Flow**	06	February 2024
05	**Cleaning and Sterilization of Glassware**	09	March 2024
06	**Demonstration of technique of Micropropogation**	06	April 2024
07	**Preparation of Artificial Seed.**	03	April 2024
08	**Pollen viability test.**	03	April 2024

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	105
02	Admission Process	03/07/2023	--	--
03	Teaching Days (Odd Semesters)	15/07/2023	07/11/2022	**90**
04	Induction Program for First Year Students	11/07/2023	14/07/2023	04
05	First Term Vacation	08/11/2023	27/11/2023	20
06	Odd Semesters University Exam	08/11/2023	30/11/2023	39
07	Second Session	28/11/2023	27/04/2024	121
08	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	**90**
09	Second Term Vacation	29/04/2024	10/06/2024	43
10	Even Semesters University Exam	29/04/2024	10/06/2024	35
11	Commencement of next Academic session 2024-25	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharum	Saturday, 29/07/2023
02	Independence Day	Tuesday, 15/08/2023
03	Parsi New Year (Shahenshahi)	Wednesday, 16/08/2023
04	Rakshabandhan	Wednesday, 30/08/2023
05	Shri Ganesh Chaturthi	Tuesday, 19/09/2023
06	Gouri Poojan	Friday, 22/09/2023
07	Anant Chaturdashi/Id-E-Milad	Thursday, 28/09/2023
08	Mahatma Gandhi Jayanti	Monday, 02/10/2023
09	Dasara	Tuesday, 24/10/ 2023
10	Christmas	Monday, 25/12/2023
11	Republic Day	Friday, 26/01/ 2024
12	Chhatrapati Shivaji Maharaj Jayanti	Monday, 19/02/2024
13	Mahashivratri	Friday, 8/03/2024
14	Holi (Second Day)	Monday, 25/03/2024
15	Good Friday	Friday, 29/03/2024
16	Gudhi Padwa	Tuesday, 9/04/2024
17	Ramzan Id (Id-Ul-Fitar)	Thursday, 11/04/2024
18	Shriram Navmi	Wednesday, 17/04/2024

Time Table:

Name: Dr. N K More

Faculty: SCIENCE

Subject: BOTANY

Period	1	2	3	4	5	6
	Practical	Theory				Practical
Day/ Time	8:30 to 10:54	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:30 to 4:54
MON						I (Pract.) Batch: (C+D)
TUE		III(T)			SS	I (Pract.) Batch: (C+D)
WED				II (T)	CE	II (Pract.) Batch:(D+E)
THUS	II (Pract.) Batch:(A+B+C)		I (T)		RE	
FRI				II (T)		
		08.00-08.48	08.48-09:36	09:36- 10:24	10:34-12:58	12:58 -03:22
SAT						III (Pract.) Batch: (A+B)

Allotted Workload

Subject: BOTANY

Year: 2023-24

Sr. No.	Class	Work load		
		Lecture (Theory)	Practical	Paper Allotted
1	B.Sc. - I	01	2 × 3 = 06	1
2	B.Sc. – II	02	2 × 3 = 06	1
3	B.Sc. - III	01	1 × 3 = 03	1

Total Workload per week (Theory +Pract.): 04 (Theory) + 15 (Pract.) = 19 (15 Hrs & 50 min).

Teaching Periods Available per month during the session 2023-24

Faculty: SCIENCE

Subject: BOTANY

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	JUL-2023	AUG - 2023	SEP-2023	OCT - 2023	NOV - 2023	Total	JAN-2024	FEB-2024	MAR-2024	APR - 2024	Total
BSc-I	Theory	04	05	03	04	01	**17**	04	05	04	03	**16**
	Practical	24	**24**	**21**	**24**	**06**	**99**	**30**	**21**	**21**	**21**	**93**
BSc –II	Theory	08	07	08	08	02	**33**	08	08	07	07	**30**
	Practical	24	24	21	24	06	**99**	27	27	24	18	**96**
BSc- III	Theory	04	04	03	04	00	**15**	05	04	04	03	**16**
	Practical	**12**	**12**	**15**	**12**	**03**	**54**	**12**	**12**	**15**	**12**	**51**

Teaching Plan for Theory (First Semester) Class : B.Sc. Part I			
Sr. No.	Topic to be covered	Lectures Available	Duration
01	**UNIT-III: Algae**	17	July 2023 to November 2023

Teaching Plan for Practical (First Semester) Class : B.Sc. Part I

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Study of types of bacteria from temporary / permanent slides / photographs.	12	July 2023
02	Study of Bacterial Staining (Gram staining)	12	July 2023
03	Study of TMV from Models/ Photographs.	06	August 2023
04	Algae - Preparation of temporary mount, identification with reasons of following algal materials : *Nostoc, Oedogonium, Chara, Vaucheria, Ectocarpus, Batrachospermum*	18	August 2023
05	**Fungi and Plant Pathology :** *1.* Study of following Genera - *Albugo, Rhizopus, Aspergillus and Puccinia, Cercospora,*	15	September 2023

06	Study of Crustose, Fruticose and Foliose lichen.	06	September 2023
07	Study of symptoms of fungal, viral, bacterial diseases.	12	October2023
08	Photographic herbarium of diseased plant parts from local region	06	October2023
09	**Additional Activities** **1.** Botanical Excursion (short/long) **2.** Visit to any biodiversity-rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of the excursion should be submitted at the time of practical examination	06	October2023
10	**Submission** 1. Photographic herbarium of diseased plant plants. 2. Tour reports or field visit report	06	November 2023

Teaching Plan for Theory (Second Semester) Class: B.Sc. I

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**UNIT-III : Gymnosperms and Palaeobotany**	16	January 2024 to April 2024

Teaching Plan for Practical (Second Semester) Class: B.Sc. I

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Bryophyta: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Marchantia and Funaria*	15	January 2024
02	Pteridophyta: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Equisetum and Marsilea*	15	January 2024
03	Gymnosperms: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Pinus and Gnetum*	12	February 2024
04	Morphology: Detail morphological study of following types of plant parts - Root, Stem, Leaves, Inflorescence, Flower, Placentation and Fruits	12	February 2024 to March 2024
05	Utilization of plants: Morphology varieties and economic importance of	12	March 2024

	following plants i) Food plant : Wheat ii) Oil yielding plant: Groundnut iii) Fiber yielding : Cotton		
06	Medicinal plants- *Adhatoda vasica, Asparagus racemosus, Catharanthus roseus, Ocimum sanctum, Rauwolfia serpentina, Withania somnifera, Tinospora cordifolia*	12	March 2024 to April 2024
07	Botanical Excursion (short/long) Visit to any biodiversity rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of excursion should be submitted at the time of practical examination. Photographic collection of bryophytic, Pteridophytic and Gymnospermic plants specimens	09	April 2024
08	1. Photographic herbarium of Bryophytes, Pteridophytes, Gymnosperms etc. 2. Botanical excursion report	06	April 2024

Teaching Plan for Theory (Third Semester) **Class : B.Sc. II**

01	**UNIT I: Angiosperm Systematics and Biodiversity**	12	July 2023 to August 2023
02	**UNIT II: Classification and Angiosperm Systematics**	12	August, September 2023 to October 2023
03	**UNIT III: Angiosperm Systematics**	09	July 2023 to August 2023

Teaching Plan for Practical (Third Semester) **Class : B.Sc. II**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Embryology of Angiosperms: Observation of wide range of flowers available in the locality and methods of their pollination.	06	July 2023
02	Study through permanent slides of T.S. of anthers, microsporogenesis, L.S. of ovule, types of endosperms and embryo of Capsella.	06	July 2023
03	Mounting of T.S. of anthers, Pollen grains and Pollinia.	06	July 2023
04	Anatomy of angiosperms: Preparation of double stained slides of root. (Dicots. & Monocot)	06	July 2023
05	Anatomy of angiosperms: Preparation of double stained slides of stem. (Dicots & Monocot)	06	August 2023
06	Anatomy of angiosperms: Preparation of double stained slides of leaf.	06	August 2023

	(Dicots & Monocot)		
07	Taxonomic description of family, **Verbenaceae –** *Lantana.*	06	August 2023
08	Taxonomic description of family, **Malvaceae-** *Hibiscus.*	06	August 2023
09	Taxonomic description of family, **Fabaceae-** *Crotalaria.*	06	September 2023
10	Taxonomic description of family, **Caesalpiniaceae-** *Caesalpinia.*	06	September 2023
11	Taxonomic description of family, **Asteraceae-** *Tridax.*	06	September 2023
12	Taxonomic description of family, **Apiaceae-** *Coriandrum.*	06	September 2023, October 2023
13	Taxonomic description of family, **Apocynaceae-** *Vinca.*	06	October 2023
14	Taxonomic description of family, **Asclepiadaceae-***Calatropis.*	06	October 2023
15	Taxonomic description of family, **Solanaceae-** *Datura.*	06	October 2023
16	Taxonomic description of family, **Lamiaceae-** *Oscimum.*	06	October 2023, November 2023
17	Record checking, certification & group discussion	03	November 2023

Teaching Plan for Theory (Fourth Semester) **Class : B.Sc. II**

01	**UNIT-I: Cell Biology-Ultra structure and functions of cell**	15	January 2024 to February 2024
02	**UNIT-II: Cell Biology-Cell Cycle**	15	March 2024 to April 2024

Teaching Plan for Practical (Fourth Semester) **Class : B.Sc. II**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Squash preparation for the study of various stages of mitosis	12	January 2024
02	Smear preparation for the study of various stages of meiosis.	12	January 2024
03	To prove Mendel's Monohybrid ratio.	12	January 2024, February 2024
04	To prove Mendel's Dihybrid ratio.	12	February 2024
05	Problems based on Interaction of genes	15	February 2024, March 2024
06	To demonstrate test for glucose in grapes, & sucrose in cane sugar / beet root.	09	March 2024
07	To demonstrate test for protein.	06	March 2024

08	To demonstrate the lipid test in oily seeds.	06	April 2024
09	To demonstrate the test for starch / cellulose.	06	April 2024
10	To demonstrate the activity of enzyme amylase from germinating Wheat grains.	06	April 2024

Teaching Plan for Theory (Fifth Semester) Class : B.Sc. III

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit - VI: Ecosystem**	15	July 2023 to November 2023

Teaching Plan for Practical (Fifth Semester) Class : B.Sc. III

Sr. No.	Topic to be covered	Lectures Available	Duration
01	To study the effect of temperature and organic solvent on permeability of plasma membrane.	03	July 2023
02	To determine the path of water (ascent of sap)	03	July 2023
03	To determine the rate of transpiration by Ganong's photometer.	03	July 2023
04	To determine rate of photosynthesis under varying quality of light and CO2 concentration.	03	July 2023
05	Separation of chloroplast pigments by paper chromatography method.	03	August 2023
06	To study antagonism of salts.	03	August 2023
07	To study effect of IAA and Gibberellins on seed germination.	03	August 2023
08	To demonstrate exo and endosmosis.	03	August 2023
09	To demonstrate fermentation.	03	September 2023
10	To demonstrate transpiration by Bell jar.	03	September 2023
11	To demonstrate anaerobic respiration in germinating seeds.	03	September 2023
12	To demonstrate the phenomenon of nastic movement with help of *Mimosa pudica*	03	September 2023
13	Study of morphological and anatomical adaptations in hydrophytes – *Hydrilla* and *Nymphaea.*	03	September 2023
14	Study of morphological and anatomical adaptations in xerophytes –*Nerium, Casuarina.*	03	October 2023

15	Determination of pH of different soils and water samples by pH papers	03	October 2023
16	Study of meteorological instruments –Rain gauge, Hygrometer.	06	October 2023
17	Record checking, certification & group discussion	03	November 2022

Teaching Plan for Theory (Sixth Semester) Class : B.Sc. III

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit-VI : Plant Tissue Culture**	16	January 2024 to April 2024

Teaching Plan for Practical (Sixth Semester) Class : B.Sc. III

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Isolation of DNA by crude method	06	January 2024
02	Demonstration of Centrifugation	06	January 2024
03	Working Principle and application of Autoclave	06	February 2024
04	Working Principle and application of Laminar Air Flow	06	February 2024
05	Cleaning and Sterilization of Glassware	06	March 2024
06	Demonstration of technique of Micropropogation	09	March 2024
07	Preparation of Artificial Seed.	06	April 2024
08	Pollen viability test.	06	April 2024

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	105
02	Admission Process	03/07/2023	--	--
03	Teaching Days (Odd Semesters)	15/07/2023	07/11/2022	**90**
04	Induction Program for First Year Students	11/07/2023	14/07/2023	04
05	First TermVacation	08/11/2023	27/11/2023	20
06	Odd Semesters UniversityExam	08/11/2023	30/11/2023	39
07	Second Session	28/11/2023	27/04/2024	121
08	Teaching Days (EvenSemesters)	05/01/2024	27/04/2024	**90**
09	SecondTermVacation	29/04/2024	10/06/2024	43
10	Even Semesters University Exam	29/04/2024	10/06/2024	**35**
11	Commencement of next Academic session 2024-25	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharum	Saturday, 29/07/2023
02	Independence Day	Tuesday, 15/08/2023
03	Parsi New Year (Shahenshahi)	Wednesday, 16/08/2023
04	Rakshabandhan	Wednesday, 30/08/2023
05	Shri Ganesh Chaturthi	Tuesday, 19/09/2023
06	Gouri Poojan	Friday, 22/09/2023
07	Anant Chaturdashi/Id-E-Milad	Thursday, 28/09/2023
08	Mahatma Gandhi Jayanti	Monday, 02/10/2023
09	Dasara	Tuesday, 24/10/ 2023
10	Christmas	Monday, 25/12/2023
11	Republic Day	Friday, 26/01/ 2024
12	Chhatrapati Shivaji Maharaj Jayanti	Monday, 19/02/2024
13	Mahashivratri	Friday, 8/03/2024
14	Holi (Second Day)	Monday, 25/03/2024
15	Good Friday	Friday, 29/03/2024
16	Gudhi Padwa	Tuesday, 9/04/2024
17	Ramzan Id (Id-Ul-Fitar)	Thursday, 11/04/2024
18	Shriram Navmi	Wednesday, 17/04/2024

Time Table:

Name: Dr. Kishor B. Theng

Faculty: SCIENCE

Subject: BOTANY

Period	1	2	3	4	5	6
	Practical	Theory				Practical
Day/ Time	8:30 to 10:54	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:30 to 4:54
MON	I (Pract.) Batch:(B)		I (T)			
TUE						I (Pract.) Batch:(B)
WED	II (Pract.) Batch:(C)		III(T)			
THUS	II (Pract.) Batch:(C)			III(T)		II (Pract.) Batch: (D)
FRI				I(T)		
		08.00-08.48	08.48-09:36	09:36- 10:24	10:34-12:58	12:58 -03:22
SAT				II (T)		

Allotted Workload

Subject: BOTANY

Year: 2023-24

Sr. No.	Class	Work load		
		Lecture (Theory)	Practical	Paper Allotted
1	B.Sc. - I	02	2 × 3 = 06	1
2	B.Sc. – II	01	3 × 3 = 09	1
3	B.Sc. - III	02	--	1

Total Workload per week (Th +Pract.): 05 (The) + 15 (Pract.) = 20 (16Hrs.).

Teaching Periods Available per month during the session 2023-24

Faculty: SCIENCE

Subject: BOTANY

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	JUL-2023	AUG - 2023	SEP-2023	OCT - 2023	NOV - 2023	Total	JAN-2024	FEB-2024	MAR-2024	APR - 2024	Total
BSc-I	Theory	04	08	09	08	02	**31**	07	07	06	08	**28**
	Practical	15	**24**	**21**	**24**	**06**	**90**	**24**	**21**	**21**	**21**	**87**
BSc –II	Theory	02	04	05	04	01	**16**	04	04	05	04	**17**
	Practical	18	39	30	36	09	**132**	30	42	36	27	**135**
BSc- III	Theory	04	08	07	07	02	**28**	07	09	08	06	**30**
	Practical	--	--	--	--	--	--	--	--	--	--	--

Teaching Plan for Theory (First Semester) **Class : B.Sc. Part I**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**UNIT-I: Introduction to Microbial World**	15	July 2023 to September2023
02	**UNIT-II: Cyanobacteria & Algae**	16	September2023 to November 2023

Teaching Plan for Practical (First Semester) **Class : B.Sc. Part I**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Study of types of bacteria from temporary / permanent slides / photographs. .	12	July 2023
02	Study of Bacterial Staining (Gram staining)	12	July 2023 to August 2023
03	Study of TMV from Models/ Photographs.	06	August 2023
04	Algae - Preparation of temporary mount, identification with reasons of following algal materials : *Nostoc, Oedogonium, Chara, Vaucheria, Ectocarpus, Batrachospermum*	12	August 2023 to September2023
05	**Fungi and Plant Pathology :** *1.* Study of following Genera - *Albugo, Rhizopus, Aspergillus. Puccinia, Cercospora,*	12	September2023
06	Study of Crustose, Fruticose and Foliose lichen.	06	September2023
07	Study of symptoms of fungal, viral, bacterial	12	October2024

	diseases.		
08	Photographic herbarium of diseased plant parts from local region	06	October2024
09	**Additional Activities** **1.** Botanical Excursion (short/long) **2.** Visit to any biodiversity-rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of the excursion should be submitted at the time of practical examination	06	October2024
10	**Submission** 1. Photographic herbarium of diseased plant plants. 2. Tour reports or field visit report	06	November 2024

Teaching Plan for Theory (Second Semester) Class: B.Sc. I

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**UNIT-I : Bryophytes**	14	January 2024 to February 2024
02	**UNIT-II : Pteridophytes**	14	March 2024 to April 2024

Teaching Plan for Practical (Second Semester) Class: B.Sc. I

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Bryophyta: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Marchantia and Funaria*	12	January 2024
02	Pteridophyta: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Equisetum and Marsilea*	12	January 2024
03	Gymnosperms: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Pinus and Gnetum*	12	February 2024
04	Morphology: Detail morphological study of following types of plant parts - Root, Stem, Leaves, Inflorescence, Flower, Placentation and Fruits	15	February 2024 to March 2024
05	Utilization of plants: Morphology varieties and economic importance of following plants i) Food plant : Wheat ii) Oil yielding plant: Groundnut iii) Fiber yielding : Cotton	12	March 2024
06	Medicinal plants- *Adhatoda vasica, Asparagus racemosus, Catharanthus roseus, Ocimum sanctum, Rauwolfia serpentina, Withania*	12	March 2024 to April 2024

	somnifera, Tinospora cordifolia		
07	Botanical Excursion (short/long) Visit to any biodiversity rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of excursion should be submitted at the time of practical examination. Photographic collection of bryophytic, pteridophytic and gymnospermic plants specimens	06	April 2024
08	1. Photographic herbarium of Bryophytes, Pteridophytes, Gymnosperms etc. 2. Botanical excursion report	06	April 2024
Teaching Plan for Theory (Third Semester)			**Class : B.Sc. II**
01	Embryology	16	July 2023 to November 2023
Teaching Plan for Practical (Third Semester)			**Class : B.Sc. II**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	Embryology of Angiosperms: Observation of wide range of flowers available in the locality and methods of their pollination.	12	July 2023
02	Study through permanent slides of T.S. of anthers, microsporogenesis, L.S. of ovule, types of endosperms and embryo of Capsella .	12	July 2023 to August 2023
03	Mounting of T.S. of anthers, Pollen grains and pollinia.	12	August 2023
04	Anatomy of angiosperms : Preparation of double stained slides of root. (Dicot. & Monocot.)	12	August 2023
05	Anatomy of angiosperms : Preparation of double stained slides of stem. (Dicot. & Monocot.)	12	August 2023 to September 2023
06	Anatomy of angiosperms : Preparation of double stained slides of leaf. (Dicot. & Monocot.)	12	September 2023
07	Taxonomic description of family,**Verbanaceae –** *Lantana.*	06	September 2023
08	Taxonomic description of family,**Malvaceae-** *Hibiscus.*	06	September 2023
09	Taxonomic description of family,**Fabaceae-** *Crotalaria.*	06	September 2023 to October 2023
10	Taxonomic description of family,**Caesalpinoidae-** *Caesalpinea.*	06	October 2023
11	Taxonomic description of family,**Asteraceae-** *Tridax.*	06	October 2023
12	Taxonomic description of family,**Apiaceae-** *Corindrum.*	06	October 2023
13	Taxonomic description of family,**Apocynaceae-** *Vinca.*	06	October 2023

14	Taxonomic description of family,**Asclepiadaceae**-*Calatropis*.	06	October 2023
15	Taxonomic description of family,**Solanaceae**-*Datura.*	06	October 2023 to November 2023
16	Taxonomic description of family,**Lamiaceae**-*Oscimum.*	03	November 2023
17	Record checking, certification & group discussion	03	November 2023
Teaching Plan for Theory (Fourth Semester)			**Class : B.Sc. II**
01	Plant Breeding	17	January 2024 to April 2024
Teaching Plan for Practical (Fourth Semester)			**Class : B.Sc. II**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	Squash preparation for the study of various stages of mitosis	24	January 2024
02	Smear preparation for the study of various stages of meiosis.	24	January 2024 to February 2024
03	To prove Mendel's Monohybrid ratio.	12	February 2024
04	To prove Mendel's Dihybrid ratio.	12	February 2024
05	Problems based on Interaction of genes	33	March 2024
06	To demonstrate test for glucose in grapes, & sucrose in cane sugar / beet root.	06	March 2024 to April 2024
07	To demonstrate test for protein.	06	April 2024
08	To demonstrate the lipid test in oily seeds.	06	April 2024
09	To demonstrate the test for starch / cellulose.	06	April 2024
10	To demonstrate the activity of enzyme amylase from germinating Wheat grains.	06	April 2024
Teaching Plan for Theory (Fifth Semester)			**Class : B.Sc. III**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit - II: Metabolism-**	14	July 2023 to September 2023
02	**Unit - III: Metabolism and growth**	14	September 2023 to November 2023
Teaching Plan for Practical (Fifth Semester)			**Class : B.Sc. III**
Sr. No.	Topic to be covered	Lectures Available	Duration
01	To study the effect of temperature and organic solvent on permeability of plasma membrane.	**06**	**September 2021**
02	To determine the path of water (ascent of sap)	**06**	**October 2021**
03	To determine the rate of transpiration by Ganongs photometer.	**06**	**October 2021**

04	To determine rate of photosynthesis under varying quality of light and CO2 concentration.	06	October 2021
05	Separation of chloroplast pigments by paper chromatography method.	06	October 2021
06	To study antagonism of salts.	03	November2021
07	To study effect of IAA and Gibberellins on seed germination.	03	November2021
08	To demonstrate exo and endosmosis.	03	November2021
09	To demonstrate fermentation.	03	November2021
10	To demonstrate transpiration by Bell jar.	03	November2021
11	To demonstrate anaerobic respiration in germinating seeds.	03	December 2021
12	To demonstrate the phenomenon of nastic movement with help of *Mimosa pudica*	06	December 2021
13	**S**tudy of morphological and anatomical adaptations in hydrophytes – *Hydrilla*and*Nymphaea.*	06	December 2021
14	Study of morphological and anatomical adaptations in xerophytes –*Nerium, Casuarina.*	06	December 2021
15	Determination of pH of different soils and water samples by pH papers	06	December, January 2022
16	Study of meteorological instruments –Rain gauge, Hygrometer.	03	January 2022
17	Record checking, certification & group discussion	03	January 2022

Teaching Plan for Theory (Sixth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit-III : Regulation of Gene Expression**	15	January 2024 to February 2024
02	**Unit-VI : Applications of Biotechnology**	15	February 2024 to April 2024

Teaching Plan for Practical (Sixth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Isolation of DNA by crude method	12	February 2022
02	Demonstration of Centrifugation	06	February, March 2022
03	Working Principle and application of Autoclave	12	March 2022
04	Working Principle and application of Laminar Air Flow	12	March, April 2022
05	Cleaning and Sterilization of Glassware	12	April 2022
06	Demonstration of technique of Micropropogation	06	April 2022
07	Preparation of Artificial Seed.	12	May 2022
08	Pollen viability test.	12	May 2022

(REMOVE THIRD YEAR PRACTICAL)

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03 July 2023	07 Nov-2023	104
02	Admission Process	03 July 2023	-	-
03	Teaching Days (Odd Semesters)	15 July 2023	07 Nov 2023	90
04	Induction Program for First Year Students	11 July 2023	14 July 2023	04
05	First Term Vacation	08 Nov-2023	27 Nov-2023	20
06	Odd Semesters University Exam	08 Nov 2023	30 Dec 2023	39
07	Second Session	28 Nov-2023	27 April-2024	121
08	Teaching Days (Even Semesters)	05 Jan-2024	27 April 2024	90
09	Second Term Vacation	29 April-2024	10 June-2024	43
10	Even Semesters University Exam	29 April-2024	10 June-2024	35
11	Commencement of next Academic session 2022-23	11 June 2024		

Sr. No.	Public Holiday	Day & Date
01	Moharum	Saturday, 29 July -2023
02	Independence day	Tuesday, 15 Aug-2023
03	Parshi New Year	Wednesday, 16 Aug-2023
04	Rakshabandhan	Wednesday, 30 Aug-2023
05	Ganesh Chaturthi	Tuesday, 19 Sept- 2023
06	Gauri Poojan	Friday, 22 Sept-2023
07	Anant Chaturdashi	Thursday, 28 Sept-2023
08	Mahatma Gandhi Jayanti	Monday, 02 Oct-2023
09	Dasara	Tuesday, 24 Oct-2023
10	Cristmas	Monday, 25 Dec-2023
11	Republic Day	Friday, 26 Jan-2024
12	Chatrapati Shivaji Maharaj Jayanti	Monday, 19 Feb-2024
13	Mahashivratri	Friday, 08 March-2024
14	Holi (Second Day)	Monday, 25 March-2024
15	Good Friday	Friday, 29 March-2024
16	Gudhi Padwa	Tuesday, 09 April-2024
17	Ramjan Eid	Thursday, 11 April-2024
18	Shri Ram Navmi	Wednesday, 17 April-2024

Time Table

Stream : Science

Subject : Botany

Name of Faculty: **Dr. Dnyaneshwar K. Sherkar**

Period	1	2	3	4	5
Day / Time	08:30am-10:54am	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	02:30pm-04:54pm
MON	I (P)	II (T)			
TUE	I (P)		II (T)		
WED	II (P)	I (T)			
THUS	II (P)				II (P)
FRI		III (T)			
Day / Time	07:30am-08:28am	08:28 am to 09:16am	09:16 am to 10:04am		11:40am-02:04pm
SAT		III (T)			

Allotted Workload

Subject :Botany

Year : 2023-24

Sr. No.	Class	No. of periods per week		Paper Allotted
		Lectures	Practical	
1	B.Sc. I	01	06	01
2	B.Sc. II	02	09	01
3	B.Sc. III	02	00	01

Total Workload per week **(UG)** (L+P):- 05 (L) + 15 (P) = 20 (16 hrs. 00 min.)

(PG) (L+P):- 0 (L) + 00 (P) = 00 (00 hrs. 00 min.)

Teaching Periods Available per month during the session 2023-24

Stream: Science

Subject :Botany

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July-2023	Aug-2023	Sept-2023	Oct-2023	Nov-2023	Total	Jan-2024	FEB-2024	MAR-2024	APR - 2024	Total
BSc I	Theory	02	03	04	04	01	**14**	04	04	04	03	**15**
	Practical	12	24	21	24	06	**87**	24	21	21	21	**87**
BSc II	Theory	04	08	07	08	02	**29**	08	07	07	07	**29**
	Practical	18	39	30	36	09	**132**	30	42	36	27	**135**
BSc III	Theory	03	08	09	07	02	**29**	07	08	08	08	**31**
	Practical	00	00	00	00	00	**00**	00	00	00	00	**00**

Teaching Plan for Theory (First Semester)		**Class : B.Sc. Part I**	
Sr. No.	Topic to be covered	Lectures Available	Duration
1	**Introduction to Fungi**		
	General Characteristics of Fungi	01	July-2023
	Classification of Fungi (Ainsworth-1973)	03	Aug-2023
	General Charecteristics of following sub-divisions and		
	Life Cycle of Genus- Mastigomycotina- Albugo	03	Sept-2023
	Life Cycle of Genus- Zygomycotina- Rhizopus	03	Oct-2023
	Life Cycle of Genus- Ascomycotina- Aspergillus	03	Oct-Nov-2023

Teaching Plan for Practical (First Semester)		**Class : B.Sc. Part I**	
Sr. No.	Topic to be covered	Lectures Available	Duration
01	**ALGAE :-** Preparation of temporary mount, identification with reason of following algal materials-Oedogonium.	06	July-2023
02	Preparation of temporary mount, identification with reason of following algal materials- Vaucheria.	12	Aug-2023
03	Preparation of temporary mount, identification with reason	06	Aug- 2023

	of following algal materials- Sargassum.		
04	**FUNGI AND PLANT PATHOLOGY** Study of genus Albugo & Uncinula.	12	Aug-Sept-2023
05	Study of genus Puccinia & Cercospora.	12	Sept-2023
06	Study of symptoms of fungal, viral, bacterial and Mycoplasmal diseases.	12	Sept-2023
07	Study of Crustose, Fruticose and Foliose lichen.	06	Oct-2023
08	Photographic herbarium of diseased plant parts from local region.	06	Oct-2023
09	**Activities** **1.** Botanical Excursion (short/long) **2.** Visit to any biodiversity-rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of the excursion should be submitted at the time of practical examination	09	Oct-2023
10	**Submission** 1. Photographic herbarium of diseased plant plants. 2. Tour reports or field visit report	06	Nov-2023

Teaching Plan for Theory (Second Semester) **Class : B.Sc. I**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Gymnosperms		

Teaching Plan for Practical (Second Semester) **Class : B.Sc. I**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Bryophyta: Study of morphology and anatomy of vegetative and reproductive parts of	12	January 2024

	following genera – *Marchantia and Funaria*		
02	Pteridophyta: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Equisetum and Marsilea*	12	January 2024
03	Gymnosperms: Study of morphology and anatomy of vegetative and reproductive parts of following genera – *Pinus and Gnetum*	12	February 2024
04	Morphology: Detail morphological study of following types of plant parts - Root, Stem, Leaves, Inflorescence, Flower, Placentation and Fruits	15	February 2024 to March 2024
05	Utilization of plants: Morphology varieties and economic importance of following plants i) Food plant : Wheat ii) Oil yielding plant: Groundnut iii) Fiber yielding : Cotton	12	March 2024
06	Medicinal plants- *Adhatoda vasica, Asparagus racemosus, Catharanthus roseus, Ocimum* *sanctum, Rauwolfia serpentina, Withania somnifera, Tinospora cordifolia*	12	March 2024 to April 2024
07	Botanical Excursion (short/long) Visit to any biodiversity rich area to study the plant diversity in natural habitat. The botanical excursion is compulsory for all students and the report of excursion should be submitted at the time of practical examination. Photographic collection of bryophytic, pteridophytic and gymnospermic plants specimens	06	April 2024
08	1. Photographic herbarium of Bryophytes, Pteridophytes, Gymnosperms etc. 2. Botanical excursion report	06	April 2024

Teaching Plan for Theory (Third Semester) **Class : B.Sc. II**

Sr. No.	Topic to be covered	Lectures Available	Duration

01	**UNIT IV: Anatomy**	14	July-Aug-2023
02	**UNIT V: Anatomy**	15	Sept-Oct-Nov-2023

Teaching Plan for Practical (Third Semester) **Class : B.Sc. II**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Embryology of Angiosperms: Observation of wide range of flowers available in the locality and methods of their pollination.	12	July 2023
02	Study through permanent slides of T.S. of anthers, microsporogenesis, L.S. of ovule, types of endosperms and embryo of Capsella .	12	July 2023 to August 2023
03	Mounting of T.S. of anthers, Pollen grains and pollinia.	12	August 2023
04	Anatomy of angiosperms : Preparation of double stained slides of root. (Dicot. & Monocot.)	12	August 2023
05	Anatomy of angiosperms : Preparation of double stained slides of stem. (Dicot. & Monocot.)	12	August 2023 to September 2023
06	Anatomy of angiosperms : Preparation of double stained slides of leaf. (Dicot. & Monocot.)	12	September 2023
07	Taxonomic description of family,**Verbanaceae** – *Lantana.*	06	September 2023
08	Taxonomic description of family,**Malvaceae**- *Hibiscus.*	06	September 2023
09	Taxonomic description of family,**Fabaceae**- *Crotalaria.*	06	September 2023 to October 2023
10	Taxonomic description of family,**Caesalpinoidae**- *Caesalpinea.*	06	October 2023
11	Taxonomic description of family,**Asteraceae**- *Tridax.*	06	October 2023
12	Taxonomic description of family,**Apiaceae**- *Corindrum.*	06	October 2023
13	Taxonomic description of family,**Apocynaceae**- *Vinca.*	06	October 2023
14	Taxonomic description of family,**Asclepiadaceae**- *Calatropis.*	06	October 2023
15	Taxonomic description of family,**Solanaceae**- *Datura.*	06	October 2023 to November 2023
16	Taxonomic description of family,**Lamiaceae**-*Oscimum.*	03	November 2023
17	Record checking, certification & group discussion	03	November 2023

Teaching Plan for Theory (Fourth Semester) **Class : B.Sc. II**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit–IV: Genetics**	14	Jan-Feb-2024
02	**Unit – V Genetics**	15	March-April-2024

Teaching Plan for Practical (Fourth Semester) **Class : B.Sc. II**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Squash preparation for the study of various stages of mitosis	24	January 2024
02	Smear preparation for the study of various stages of meiosis.	24	January 2024 to February 2024
03	To prove Mendel's Monohybrid ratio.	12	February 2024
04	To prove Mendel's Dihybrid ratio.	12	February 2024
05	Problems based on Interaction of genes	33	March 2024
06	To demonstrate test for glucose in grapes, & sucrose in cane sugar / beet root.	06	March 2024 to April 2024
07	To demonstrate test for protein.	06	April 2024
08	To demonstrate the lipid test in oily seeds.	06	April 2024
10	To demonstrate the activity of enzyme amylase from germinating Wheat grains.	06	April 2024

Teaching Plan for Theory (Fifth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit – IV: Plant responses**	14	July-Aug-2023
02	**Unit- V: Ecology and environment**	15	Sept-Oct-Nov-2023

Teaching Plan for Practical (Fifth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	To study the effect of temperature and organic solvent on permeability of plasma membrane.	06	
02	To determine the path of water (ascent of sap).	06	
03	To determine the rate of transpiration by Ganongs photometer.	06	
04	To determine rate of photosynthesis under varying quality of light and CO2 concentration.	06	
05	Separation of chloroplast pigments by paper chromatography method.	06	
06	To study antagonism of salts.	03	

07	To study effect of IAA and Gibberellins on seed germination.	03	
08	To demonstrate exo and endosmosis.	03	
09	To demonstrate fermentation.	03	
10	To demonstrate transpiration by Bell jar.	03	
11	To demonstrate anaerobic respiration in germinating seeds.	03	
12	To demonstrate the phenomenon of nastic movement with help of *Mimosa pudica*	06	
13	Study of morphological and anatomical adaptations in hydrophytes – *Hydrilla*and*Nymphaea.*	06	
14	Study of morphological and anatomical adaptations in xerophytes - *Nerium, Casuarina.*	06	
15	Determination of pH of different soils and water samples by pH papers	06	
16	Study of meteorological instruments -Rain gauge, Hygrometer.	03	
17	Practical record checking, certification, group discussion	03	

Teaching Plan for Theory(Sixth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	**Unit-IV : Genetic Engineering -**	15	Jan-Feb-2024
02	**Unit-II:**	16	March-April-2024

Teaching Plan for Practical (Sixth Semester) **Class : B.Sc. III**

Sr. No.	Topic to be covered	Lectures Available	Duration
01	Isolation of DNA by crude method	12	
02	Demonstration of Centrifugation	06	
03	Working Principle and application of Autoclave	12	
04	Working Principle and application of Laminar Air Flow	12	
05	Cleaning and Sterilization of Glassware	06	
06	Demonstration of technique of Micropropogation	06	
07	Preparation of Artificial Seed.	12	
08	Pollen viability test.	12	

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SATPUDA EDUCATION SOCIETY, JALGAON (JAMOD)'S

ARTS & COMMERCE COLLEGE

WARWAT BAKAL DIST- BULDANA

Department of ECONOMICS

DEPRTMENTAL ACADEMIC

CALENDAR 2023-24

Departmental Academic Calendar (2023-24)

Sr.No.	Activity	Commencement	Cessation	
01	First Session	9/07/2023	07/11/2023	
02	First Term Vacation	08/11/2023	27/11/2023	
03	Teaching Days (Even Semesters)	25/07/2023	07/11/2023	
04	WinterVacation	08/11/2023	27/11/2023	
05	Second Session	28/11/2023	27/04/2024	
06	Summer Vacation	29/04/2024	10/06/2024	
07	Commencement of next Academic session	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharam	Saturday 29 July 2023
02	Independence Day	Tuesday 15 August 2023
03	Parsi New Year	Wednesday 16 August 2023
04	Rakshabandhan	Wednesday 30 August 2023
05	Ganesh Chaturthi	Tuesday,19 September, 2023
06	Gauri Pujan	Friday 22 September 2023
07	Anant Chaturdashi	Thursday 28 September 2023
08	Gandhi Jayanti	Monday 02 October 2023
09	Dasara	Tuesday, 24 Octoberr,2023
10	Christmas	Monday 25 Desember 2023
11	Republic Day	Friday, 26 January, 2024
12	Shivaji Maharaj Jayanti	Monday 19 February 2024
13	Mahashivratri	Friday 8,March 2024
14	Holi (Second Day)	Monday, 25, March, 2024
15	Good Friday	Friday,29 ,March, 2024
16	Gudhipadwa	Tuesday 09, April, 2024
17	Ramzan Id	Thursday,11 April,2024
18	Shriram Navami	Wednesday 17,April,2024

Teaching Periods Available per month during the session 2023-24

Faculty : ARTS

Subject : Economics

			ODD SEMESTER								EVEN SEMESTER					
Class	Periods	JULY-22	AUG-21	SEPT-21	OCT-21	NOV-21	DEC-21	JAN-22	Total	JAN-22	FEB-22	MAR-22	April-22	MAY-22	JUN-22	Total
BA I	Theory	15	19	21	14	16	01	9	**95**	00	6	28	27	10	00	**71**
BA II	Theory	00	13	20	16	16	0	9	**74**	00	6	27	26	7	00	**66**
BA III	Theory	00	12	21	16	15	01	10	**75**	00	6	28	26	7	00	**67**
MA.I	Theory	00	00	13	12	12	18	16+2	**73**	00	6	18	17	7	00	**48**

TEACHING PLAN OF DEPARTMENT OF ECONOMICS			
Theory BA SEM I	Sr. No.	Topic to be covered	Lectures Available
	01	Introduction to Economics	20
	02	Demand and Supply	18
	03	Cost and Revenue Analysis	19
	04	Market Structures	20
	05	Factors of Production	18
Theory BA SEM II	Sr. No.	Topic to be covered	Lectures Available
	01	Geographical and Economy Features of Maharashtra	15
	02	Population Features of Maharashtra	14
	03	Agricultural Economy	14
	04	Industry and Infrastructure in Maharashtra	13
	05	Economy of Vidarbha	15
Theory BA SEM III	Sr. No.	Topic to be covered	Lectures Available
	01	Introduction to Macro Economics	15
	02	Money and Value of Money	14
	03	Inflation and Deflation	15
	04	Production and Employment	15
	05	International Trade	15
Theory BA SEM IV	Sr. No.	Topic to be covered	Lectures Available
	01	Commercial bank	14
	02	Central Bank	13
	03	Co-operative Bank and Nabard	12
	04	International Monetary Fund & World Bank	13
	05	Recent Servicesin banking Sector	14
Theory BA SEM V	Sr. No.	Topic to be covered	Lectures Available
	01	Indian Economy and Planning	15
	02	Agriculture	15
	03	Industry	15
	04	External sectors and Important areas of concern	14
	05	Environment and pollution	16
Theory BA SEM VI	Sr. No.	Topic to be covered	Lectures Available
	01	Introduction of Demography	14
	02	Fertality and Mortality	13
	03	Migration of population	13
	04	Urbanization of population	13
	05	Population and Development	14

TEACHING PLAN OF DEPARTMENT OF ECONOMICS (M.A.I & II)			
	Sr. No.	Topic to be covered	Lectures Available
Theory M.A.I SEM I	1	Research Methodology& IPR	75
	2	Advanced Micro Economics-I	75
	3	Advanced Macro Economics-I	60
	4	Agriculture Economics	60
	5	Rural & Urban Development	60
Theory M.A.II SEM III	1	Economic Growth, Development & Planning-I	75
	2	International Trade & Finance -I	75
	3	Financial Institutions & Market	60
	4	Research Methodology for Economic	60
Theory M.A.I SEM II	1	Advanced Micro Economics-II	75
	2	Advanced Macro Economics-II	75
	3	Public Economics	60
	4	Human Development	60
Theory M.A.II SEM IV	1	Economic Growth, Development & Planning- II	75
	2	International Trade & Finance -II	75
	3	Demography	60
	4	Welfare Economics	60
	5	Project	75

ACADEMIC ACTION PLAN 2023-24

Department of Economics

01	Name of the Department		Economics
02	Name of faculty members with qualification		1)Dr.Subhash Gurjar (M.A.Eco,M.phil,Ph.d,SET) 2) Miss.ArchanaBarabde M.A.(Economics) 3) Mr. Dhananjay Sonone (M.A.M.Phil,B.ed.)
03	Refresher Course/ Orientation Program/ Short Term Course/ Any Others		01
04	Research Publication	i) Book Publication	01
		ii) Chapter in Book	01
		iii) Research Articles in UGC CARE listed Journal	02
		iv) Research Paper in conference/ seminar (Presentation)	02
		v) Research Paper in conference/ seminar proceeding (Publication)	00
		vi) Conference/ Seminar/ Workshop (To be attended)	02
		vii) Resource Person/ Chairperson	01
		viii) Ph. D registered/Ongoing/Awarded	Awarded

		xv) Ph. D guide and no. of students registered /to be registered under	Ph.d Guide
		xvi) Minor/ Major Project	---
05	Conference/ Seminar/ Workshop (To be organized)		01
06	Collaboration		00
07	Consultancy		Nil
08	Extension Activities and Social Responsibility		Social awareness program
09	Academic Activities to be organized (Guest lecture, class room seminar, contest, education tour, celebration of birth and death anniversary of national leaders, no. of visiting & guest faculties etc.)		Guest lecture :- 01 Seminar :- 02 Education tour :- 01 Bank visit :- 01 Farm visit :- 01
10	Innovative and Best Practices • Name of the title of the practice. • Introduction • Objectives • Theme/ context • The practice • Evidence of success • Problems encountered and resources required		Banking awareness
11	Any other if you wish to add		---
12	Curriculum Enrichment (Draft the letter to the concerned BOS of University)		Paper setting Moderation Discuss the syllabus

ARTS AND COMMERCE COLLEGE
Warwat Bakal, Dist- Buldana
Department of Economics

Perspective Plan for Curriculum Implementation 2023-24

BA Part I SEM I		
Unit	Available Lectures	Duration
I Introduction to Economics	18 periods	August 30 to September 2021
II Demand & Supply	18 periods	September 2021 to October 2021
III Cost & Revenue	17 periods	November to December 2021
IV Market Structures	17 periods	December 2021 to January 2022
V Factors of Production	17 periods	January 2022
BA Part II SEM III		
Unit	Available Lectures	Duration
I Introduction to Macro Economics	10 periods	August 30 to September 2021
II Money &Value of Money	10 periods	September 2021 to October 2021
III Inflation &Deflation	10 periods	November to December 2021
IV Production & Employment	11 periods	December 2021 to January 2022
V International Trade	09 periods	January 2022
BA Part III SEM V		
Unit	Available Lectures	Duration
I Indian Economy and Planning	12 periods	August 30 to September 2021

II Agriculture	11 periods	September 2021 to October 2021
III Industry	11 periods	November to December 2021
IV External Sectors & Important areas of concern	11 periods	December 2021 to January 2022
V Environment and pollution	11 periods	January to February 2022
BA Part I SEM II		
Unit	Available Lectures	Duration
I Geographical & Economy Features of Maharashtra	18 periods	January to February 2022
II Population features of Maharashtra	18 periods	February to March 2022
III Agricultural Economy	17 periods	March to April 2022
IV Industry & Infrastructure in Maharashtra	17 periods	April To MAY 2022
V Economy of Maharashtra	18 periods	MAY 2022
BA Part II SEM IV		
Unit	Available Lectures	Duration
I Commercial Bank	18 periods	January to February 2022
II Central Bank	18 periods	February to March 2022
III Co-operative Bank &Nabard	18 periods	March to April 2022
IV International Monetary fund & World Bank	17 periods	April To MAY 2022
V Recent services in Banking sector	17 periods	MAY 2022
BA Part III SEM VI		
Unit	Available Lectures	Duration
I Introduction of Demography	18 periods	January to February 2022
II Fertality and Mortality	17 periods	February to March 2022
III Migration of Population	18 periods	March to April 2022
IV Urbanization of Population	17 periods	April To MAY 2022
V Population and Development	18 periods	MAY 2022

Department of Economics

Perspective Plan for Co-curricular Activities 2023-24`

Sr. No.	Activity	Tentative Duration
1.	Welcome Program of First year students	Third Week of September 2023
2.	Book published	September 2023
3.	Quiz Competition of Banking	October 2023
4.	Study Circle Formation of Economics	October 2023
5.	Celebration of National consumer day	24 December 2023
6.	Bank Visit	Last week of December 2023
7.	Celebration of World consumer day	15 March 2024
8.	Farm Visit	April 2024

Principal
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2023-24

Satpuda Education Society, Jalgaon Jamod's

Arts and Commerce college Warwat Bakal

Department- Zoology

Academic Departmental Calendar

2023-24

Departmental Academic Calendar (2023-2024)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023	As per ordinance No. 02/1997, 04/1997 and 18/1998	--
03	Induction Program for First Year Students	11/07/2023	14/07/2023	04
04	Teaching Days (Odd Semesters)	15/07/2023	07/11/2023	**90**
05	First Term Vacation	08/11/2023	27/11/2023	20
06	University Exam Winter 2023 (Odd semesters)	08/11/2023	30/12/2023	39
07	Second Session	28/11/2023	27/04/2024	121
08	Noninstructional Days	01/01/2024	04/01/2024	04
09	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	**90**
10	University Exam Summer 2024 (Even Semesters)	29/04/2024	10/06/2024	35
11	Second Term Vacation	29/04/2024	10/06/2024	43
12	Commencement of next Academic session 2024-2025	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharram	Saturday, 29th July, 2023
02	Independence Day	Tuesday, 15th August, 2023
03	Parsi New Year	Wednesday, 16th August, 2023
04	Raksha Bandhan	Wednesday, 30th August, 2023
05	Shri Ganesh Chaturthi	Tuesday, 19th September, 2023
06	Gouri Poojan	Friday, 23nd September, 2023
07	Anant Chaturdashi/Eid-a-Milad	Thursday, 28th September, 2023
08	Mahatma Gandhi Jayanti	Monday, 02nd October, 2023
09	Dasara	Tuesday, 24th October, 2023
10	Christmas	Monday, 25th December, 2023
11	Republic Day	Friday, 26th January, 2024
12	Chhatrapati Shivaji Maharaj Jayanti	Monday, 19th February, 2024
13	Mahashivratri	Friday, 08th March, 2024
14	Holi (Second Day)	Monday, 25th March, 2024

15	Good Friday	Friday, 29th March, 2024
16	Gudhi Padwa	Tuesday, 09th April, 2024
17	Ramzan Eid (Eid-Al-Fitr)	Thursday, 11th April,2024
18	Shriram Navami	Wednesday, 17nd April,2024

Tentative schedule of departmental Activities 2023-24

Sr. No.	Activity	Tentative Duration
1.	Induction program of B.Sc I	Jully 2023
2	Zoological Study circle formation	September 2023
3.	Wild Life Week Celebration	October 2023
4	National Science Day celebration	February 2024
5	International Women's Day	March 2024
6	World Sparrow day	March 2024
7	Health camp	April 2024

ARTS & COMMERCE COLLEGE

Warvat Bakal Dist- Buldana

Department of Zoology

Perspective Plan for Curriculum Implementation 2023-24

B.Sc Part I SEM I		
Unit	Available Lectures	Duration
I. Classification of non-chordate and phylum protozoa	15 period	Jully 2023 to sept 2023
II. Phylum Porifera and phylum Coelenterate	15 periods	Jully 2023 to Nov 2023
III Phylum Platyhelminthes and phylum Aschelminths	15 periods	Jully 2023 to sept 2023
IV Phylum Annelida and Arthropoda	16 periods	Jully 2023 to Nov 2023
V phylum Mollusca and Phylum Echinodermata	15 periods	Sept 2023 to Nov 2023
VI Hemichordata, coral Reefs, Parasitic Adaptation in Helminth	14 Periods	Sept 2023 to Nov 2023
B.Sc. Part II SEM III		
Unit	Available Lectures	Duration
I Plasma Member	15 periods	Jully 2023 to sept 2023
II General organization of Eukaryotic chromosome.	17Periods	Jully 2023 to Sept 2023
III Cell organells	12 Periods	Sept 2023 to Nov 2023
IV meiosis and mitosis	15 periods	Jully 2023 to Sept 2023
V Cleavage , blastulation and Gastrulation	16 periods	Sept 2023 to Nov 2023
VI Placentation	15 period	Sept 2023 to Nov 2023
B.Sc. Part III SEM V		
Unit	Available Lectures	Duration
I Respiration and Circulation	15 periods	Jully 2023 to Nov 2023
II Muscle Physiology	15 periods	Jully 2023 to Nov 2023
III Nerve physiology and chemical Coordination	16 Periods	Jully 2023 to Sept 2023
IV Reproductive physiology, Homeostasis	15 periods	Jully 2023 to Sept 2023
V Agricultural Zoology: Economic Importance of Insect	14 periods	Sept 2023 to Nov 2023
VI- Aquaculture	15 periods	Sept 2023 to Nov 2023
B.Sc. Part I SEM II		
Unit	Available	Duration

	Lectures	
I Phylum-chordata	15 periods	January 2024 to April 2024
II Class Amphibia	16 Periods	January 2024 to April 2024
III Class – Aves	13 Periods	January 2024 to March 2024
IV Evolution: Meaning and scope	15 periods	January 2024 to March 2024
V Evolutionary Process	15 periods	March 2024 to April 2024
VI Adaptive Radiation	13 period	March 2024 to May 2024
B.Sc. Part II SEM IV		
Unit	Available Lectures	Duration
I Concept of genes	16 periods	January 2024 to March 2024
II Linkage	15 periods	January to March 2024
III Sex Determination	14 Periods	January 24 to march 24
IV Genetic Screening and Prenatal Diagnosis	15 periods	March to April 2024
V Ecology: Concept and scope	14 periods	March to April 2024
VI Ecosystem	16 periods	April 2024 to May 2024
B,Sc Part III SEM VI		
Unit	Available Lectures	Duration
I Genetic material (DNA and RNA)	15 periods	January 2024 to March 2024
II DNA replication	16 periods	January 2024 to April 2024
III The Genetic code, protein synthesis and Gene regulation	13 periods	January 2024 to March 2024
IV Mutation	13 periods	March 2024 to April 2024
V Biotechnology : Genetic Engineering	14 periods	March 2024 to April 2024
VI Immunology	14 Periods	January 2024 to April 2024

Teaching Plan 2023-24

Teaching Periods Available per month during the session 2023-24

Time Table: 2023-2024

Faculty: Science

Subject: ZOOLOGY

Name of Faculty: Dr. Megha R. Solanke

Period	PRACTICAL	1	2	3	4	PRACTICAL
Day / Time	08.00 to 10.24	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:23	2:30 to 4.54
MON				II (Th.)		III (Pr.)
TUE						
WED				I(Th.)		I (Pr.)
THUS	I (Pr.)		III (Th.)			I(Pr.)
FRI	II (Pr.)	II (Th.)				
		7.30 to 8.18	8.18 to 9.06	9.06 to 9.54 am	Practical 10.04 - 12.28 pm	Practical 12.28 to 2.52 pm
SAT						II (Pr.)

Allotted Workload

Subject: Zoology

Year: 2023-24

Sr. No.	Class	No. of periods per week	
		Lectures (L)	Practical (P)
1	B. Sc I	01	09
2	B. Sc II	02	06
3	B. Sc III	01	03

Total Workload per week (L+P): 04 (L) + 18(P) = 22 (17 hrs36 min)

Even SEM Teaching Days (90): 5 January 2024 to 27 April 2024 = 90

	15 JULY-23	AUG-23	SEPT-23	OCT-23	7 NOV-23		5 JAN-24	FEB-24	MARCH-24	27 APR-24	
MON	03	04	04	04	01	Odd	04	03	03	04	Even
TUE	02	04	03	04	01	Sem	04	04	04	03	Sem
WED	02	03	04	04	01	Exam	04	04	04	03	Exam
THUS	02	05	03	04	01	08/11/23	03	05	04	03	29/04/24
FRI	02	04	04	04	01	–	03	04	03	04	–
SAT	02	04	05	04	01	30/12/23	04	04	05	04	10/06/24
Total	90						90				

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July 23	Aug 23	Sep 23	Oct 23	Nov 23	Total	Jan-24	Feb-24	March-24	April-21	Total
B Sc. I	Theory	02	03	04	04	01	**14**	04	04	04	03	**15**
	Practical	12	24	21	24	06	**87**	21	27	24	18	**90**
B. Sc. II	Theory	05	08	08	08	02	**31**	07	07	06	08	**28**
	Practical	12	24	27	24	06	**93**	21	24	24	24	**93**
B.Sc. III	Theory	02	05	03	04	01	**15**	03	05	04	03	**15**
	Practical	06	12	09	12	03	**42**	12	12	12	09	**45**

Teaching Periods Available per month during the session 2023- 2024

Faculty : Science (**Dr. M. R. Solanke**) Subject : Zoology

Teaching Plan for Theory (First Semester)		**Class : B .Sc. Part I**	
Sr. No.	**Life and diversity of non-chordate (chapter -Phylum -Porifera mand Phylum-Coelenterata)**	**Lectures Available 14**	**Lectures Utilized**
1	Phylum Porifera: General Characters		
2	Type study: Scypha: a) Habit, Habitat, External Features b) Cell types and Spicules c) Structure and significances of canal system	07	
3	Phylum Coelenterata: General Characters	01	
4	Type study: Metridium: a) Habits and habitat, External features b) Gastro-vascular cavity c) Mesenteries d) Corals and Coral reefs	06	
Teaching Plan for Practical (First Semester)		**Class : B.Sc Part I**	
Sr. No.	**Life and diversity of Non-Chordata**	**Lectures Available (87)**	**Lectures Utilized**
	Observation, classification up to classes and sketching of following animals		
01	Phylum Protozoa	6	
02	Phylum Porifera	6	
03	Phylum Coelenterate	6	
04	Phylum Helminth	3	
05	Phylum Annelida	6	
06	Phylum Arthropoda	9	
07	Phylum Mollusca	9	
10	Phylum Echinodermata	6	
11	Phylum Hemichordata	3	
12	Permanent slide study	9	
13	Anatomical study through computer aided techniques, video clippings,	12	

	photographs and other available resources		
14	Mountings	12	
Teaching Plan for Theory (Second Semester)		**Class : B Sc. Part I**	
Sr. No.	**Life and diversity of Chordata and concept of evolution**	**Lectures Available**	**Lectures Utilized**
	(unit-II class-Amphibia and Reptilia)	**14**	
	Amphibia (Type Study-*Rana tigrina*)	**07**	
01	Habits and Habitat	01	
02	Respiratory organs	02	
03	Circulatory system	01	
04	Structure of Heart	01	
05	Major Arteries and vein	01	
06	urinogenital system,	01	
07	parental care in amphibia	01	
	Reptiles (Type study- *Calotes versicolor*)	**07**	
01	Habit and Habitat	01	
02	Circulatory system	02	
03	Structure of Heart	01	
04	Major Arteries and vein	01	
05	Types of Snake venom and antivenom	02	
Teaching Plan for practical (Second Semester)		**Class : B Sc .I**	
Sr. No.	**Life and diversity of chordata and concept of evolution**	**Lectures Available (90)**	**Lectures Utilized**
A	**Taxonomy of Chordata**		
1	General characters and classification of phylum chordata	01	
2	General characters and classification up to order of the following chordate as per availability in the laboratory from the major orders	01	
A	Protochordata		
B	Agnatha	03	
C	Pisces	06	
D	Amphibia	06	
E	Reptilia	06	
F	Aves	06	
G	Mammalia	06	
B	**Dissection**		
1	Dissection-afferent and efferent branchial vessels, cranial nerves, internal ear of scoliodon	06	

2	Dissection- Digestive system, Arterial system, venous system, reproductive system of rat	06	
3	Permanent micro-preparation- a. Fish scales b. Ampullae of Lorenzini. C. Eyeball muscles	06	
4	Observation of air bladder in air breathing fish	03	
C	**Osteology**		
1	Rabbit, Varanus (excluding loose bones of skull)	06	
E	**Evolution**		
1	Study of fossils, including living fossils	03	
2	Study of evidences of evolution. I) Analogues and homologues organs	03	
3	Study of Mesozoic Reptiles (By models/Charts)	03	
4	Mimicry- coloration in animals	03	
5	Beak and leg modification with reference to parrot, woodpeacker, kingfisher, heron, duck, sparrow or pigeon, hawk or kite, owl.	06	
F	**Histological slides**		
I	amphioxus- T.S. Oral Hood, pharynx and tail.	03	
II	Frog- T.S. Lung, Stomach, Kidney, intestine	03	
III	Rat: T.S. liver, pancreas, ovary, testis, pituitary, thyroid, Adrenal	06	

Teaching Plan for Theory (Third Semester)		**Class : B Sc. Part II**	
Sr. No.	Cell Biology and Developmental Biology	**Lectures Available (31)**	**Lectures Utilized**
	(unit-II – Nucleus and Chromosome)	**16**	
01	General organization of Eukaryotic chromosomes.	03	
02	Nucleosome; Solenoid model.	03	
03	Types of Chromosomes based on position of centromere.	04	
04	Giant chromosomes- Polytene and Lampbrush Chromosome.	04	
05	Functions of Chromosomes	02	
	Unit -III Cell Organelles	**(15)**	
01	Endoplasmic reticulum: Ultrastructure, Types and Functions..	03	

02	Golgi complex: Ultrastructure and Functions	03	
03	Ribosome: Types (70S and 80S), Ultrastructure (Stoffler and Wittmann's model only); functions.	03	
04	Lysosomes: Polymorphism, Ultrastructure, and functions.	03	
05	Mitochondria: Ultrastructure and functions.	03	
Teaching Plan for Practical (Third Semester):		**Class: B Sc. Part II (CBCS)**	
I	**Cell Biology**	**93**	
1	Use, care and maintenance of microscope.	**3**	
2	Study of different cell types by permanent slides/ICT Tools/Charts (Endothelium, Neuronal, Epithelia, Connective Tissue)	9	
3	Demonstration of mitochondria by using vital staining.	6	
4	Preparation of Polytene chromosome in Chironomus or Drosophila larva.	9	
5	Preparation of various stages of mitosis.	9	
6	Preparation of various stages of meiosis from suitable material.	6	
II	**Developmental Biology:**		
1	Study of stages of gametogenesis in rat/frog, (Permanent Stained Slides).	6	
2	Study of different of types of animal eggs.	6	
3	Study of developmental stages (Life Cycle) of Cockroach, Housefly, Mosquito, Butterfly, Moth, Frog (Any Four).	6	
4	Study of developmental stages of Lymnaea.	6	
5	Developmental stages of frog: Cleavage, blastula, gastrula, neurula, and tadpoles through available resources.	6	
6	Study of chick embryo at different hours of incubation by permanent slides.	9	
7	Study of different types of placentas with suitable histological slides or visual diagrams.	6	
8	Record Checking and certification	6	

Teaching Plan for Theory (Fourth Semester)		Class : B Sc. Part II	
Sr. No.	**Advanced Genetics and Animal Ecology** **UNIT 3 : Sex determination**	Lectures Available Total(28) (14)	Lectures Utilized
01	Discovery of sex chromosome	01	
02	Sex determination in animal	03	
03	Genetic disorder	03	
04	Non-disjunction	02	
05	Biochemical genetics	03	
06	Inheritance of sex-linked genes in man	02	
	Unit- V Ecology	14	
01	concept and scope		
02	Abiotic factors	07	
	a)Water B) Temperature c) Homeotherms and poikilotherms d)Dormancy e) Dormancy in different Group of animals h) Hibernation g) Aestivation h) Diapauses i) Light		
03	Biotic factors	07	
	a)Interspecific and intraspecific association b)Commensalism c) Mutualism d) Predation e) Parasitim f) Antagonism		

Teaching Plan for Practical (Forth Semester)		**Class: B.Sc. Part III**	
Sr. No.	**Advanced genetics and animal Ecology**	**Available lecture (93)**	**Lectures Utilized**
A)	**Genetic Experiment**		
1	Recording of Mendelian traits in man	6	
2	Detection of monohybrid cross with the help of plastic beads	6	
3	Detection of dihybrid cross with the help of plastic beads	6	
4	Culturing drosophila using standard methods	6	

5	Drosophila - male and female identification, Mutant forms of Drosophila (from pictures)	6	
6	Demonstration of Barr bodies from buccal epithelium or leucocyte.	6	
7	Preparation of human karyotypes with the help of ICT/suitable tools.	6	
8	Study of syndromes with the help of ICT tools/Photo slides- Turner's syndrome, Klinefelter's syndrome, Down's syndrome	6	
9	Detection of syndrome from karyotype (Turner's syndrome, Klinefelter's syndrome, Down's syndrome).	6	
10	Study of human genetic traits and application of Hardy-Weinberg Principle to them – Baldness, length of index and ring Finger, attached and free earlobes, rolling of tongue, Widow's peak.	6	
B)	a) **Ecology**		
1	Estimation of pH in water sample	6	
2	Estimation of Dissolved oxygen, salinity, free CO2, total hardness in water sample.	6	
3	Adaptations of aquatic and terrestrial animals based on study of museum specimens such as rocky, sandy, muddy-shore, flying and burrowing animals.	6	
4	Preparation of checklist of producers and consumers of local ecosystems and construction of a food web diagram based on field visit.	6	
5	Mounting and identification of zooplankton.	6	
C)	**General: -**		
1	Study of a natural ecosystem and field report of the visit	3	

Teaching Plan for Theory (Fifth Semester)		**Class : B. Sc. Part III**	
Sr. No.	**Animal Physiology And Economic Zoology**	**Lectures Available (15)**	**Lectures Utilized**
	Unit-II Muscle Physiology:		
1	Types of Muscles:	2	

	striated, non-striated and cardiac muscles		
2	Striated muscle: a) E.M. Structure b) Chemical Composition	4	
3	Neuromuscular junction.	2	
4	Mechanism of muscle contraction by Sliding filament theory	3	
5	a) Physical and Chemical changes during muscle contraction: i) muscle twitch, tetanus ii) isometric and isotonic contraction iii) summation of Stimuli, all or none law, iv) Fatigue.	3	
6	Rigor mortis.	1	
Teaching Plan for Practicals (Fifth Semester)		**Class : B.Sc. Part III**	
	Animal physiology and Economic zoology	**42**	
1	Detection of blood group in human being	3	
2	Differential count of blood	3	
3	Estimation of hemoglobin percentage with the help of haemometer.	3	
4	R. B. C. Count	3	
5	W. B. C. count	3	
6	Preparation of haemin crystals	3	
7	Measurement of blood pressure	3	
8	Action of salivary amylase on starch	3	
9	Qualitative detection of nitrogenous waste products (Ammonia, urea, uric acid) in given sample.	3	
10	Demonstration of kymograph unit, Respirometer through available resources.	3	
11	Observation and identification of Insect Pests of local crops, and predator insects.	3	
12	Life cycle of honey bee, Lac Insect, silk moth	3	
13	Histological slides of major organs of respiratory system, circulatory system, Nervous system, Different type of muscles, endocrine gland, testis and ovary.	3	

14	Study of locally available fishes, Indian major carp, common carp and Exotic Carp	3	
Teaching Plan for Theory (Sixth Semester)		**Class : B. Sc. III**	
Sr. No.	**Biotechnology: Genetic Engineering Unit-VI: Immunology**	**Lectures Available(15)**	**Lectures Utilized**
01	Introduction to immune system	02	
02	Innate and adaptive immunity	02	
03	Types and production of immune cells	02	
04	Complement system	02	
05	Humoral immunity: Antigen and haptens	02	
06	Antibody: Types, function and production	03	
07	Immunological techniques	02	
Teaching Plan for Practicals (Sixth Semester)		**Class : B. Sc. III**	
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
	MOLECULAR BIOLOGY & BIOTECHNOLOGY	**45**	
1	Micro technique scope and importance	3	
2	Preparation of fixative- alcohol, acetone, formalin, Bouin's fluid, Cornoy fluid, Formal sublimate	3	
3	Collection of various tissues/ organs from slaughter house for micro-technique	3	
4	Preparation of Alcohol grades, dehydration and clearing of tissues	3	
5	Use and care of Oven	3	
6	Embedding and block making, trimming of block.	3	
7	Use and care of different types of Microtomes	3	
8	Honing and stropping Knives	3	
9	Section cutting and spreading	3	
10	Preparation of various stains-Borax carmine Acetocarmine, Aceto-orcein, Haematoxyline, eosin	3	
11	Staining of the sections, (Double staining), Mounting	3	
12	Camera Lucida. Use and Drawings	3	

13	Oculomicrometer scale/ similar micro-measurements use	3	
14	Introduction to models of PCR, Southern blotting through available resources	3	
15	Vital Staining of mitochondria by using Janus, Green B stain	3	
16	Extraction of DNA by using salt, detergent and enzymes from natural sources from any animal tissue / plant material	3	

Dr. M.S. Hingankar

Departmental Academic Calendar (2023-2024)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023	As per ordinance No. 02/1997, 04/1997 and 18/1998	--
03	Induction Program for FirstYear Students	11/07/2023	14/07/2023	04
04	Teaching Days (Odd Semesters)	15/07/2023	07/11/2023	**90**
05	First Term Vacation	08/11/2023	27/11/2023	20
06	University Exam Winter 2023 (Odd semesters)	08/11/2023	30/12/2023	39
07	Second Session	28/11/2023	27/04/2024	121
08	Noninstructional Days	01/01/2024	04/01/2024	04
09	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	**90**
10	University Exam Summer 2024 (Even Semesters)	29/04/2024	10/06/2024	35
11	Second Term Vacation	29/04/2024	10/06/2024	43
12	Commencement of next Academic session 2024-2025	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharram	Saturday, 29th July, 2023
02	Independence Day	Tuesday, 15th August, 2023
03	Parsi New Year	Wednesday, 16th August, 2023
04	Raksha Bandhan	Wednesday, 30th August, 2023
05	Shri Ganesh Chaturthi	Tuesday, 19th September, 2023
06	Gouri Poojan	Friday, 23nd September, 2023
07	Anant Chaturdashi/Eid-a-Milad	Thursday, 28th September, 2023

Time Table: 2023-2024

Faculty: Science

Subject: ZOOLOGY

Name of Faculty: Dr. Madhuri S. Hingankar

Period	PRACTICAL	1	2	3	4	PRACTICAL
Day / Time	08.00 to 10.24	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:23	2:30 to 4.54
MON	III (Pr.)		III (Th.)			
TUE				III (Th.)		III (Pr.)
WED	I (Pr.)		II (Th)			
THUS	I (Pr.)			II (Th.)		
FRI						II (Pr.)
		7.30 to 8.18	8.18 to 9.06	9.06 to 9.54 am	Practical 10.04 - 12.28 pm	Practical 12.28 to 2.52 pm
SAT				I (Th.)	II (Pr.)	

Allotted Workload

Subject: Zoology

Year: 2023-24

Sr. No.	Class	No. of periods per week	
		Lectures (L)	Practical (P)
1	B. Sc I	01	06
2	B. Sc II	02	06
3	B. Sc III	02	03

Total Workload per week (L+P): 05 (L) + 15(P) = 20 (16 hrs.)

Teaching Periods Available per month during the session 2023-2024

Faculty: Science
Subject: Zoology

Name of Faculty: Dr. Madhuri S. Hingankar

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	JULY-23	AUG-23	SEPT-23	OCT-23	NOV-23	Total	JAN-24	FEB-24	MAR-24	APR-24	Total
B Sc. I	Theory	02	04	05	04	01	**16**	04	04	05	04	**17**
	Practical	12	24	21	24	06	**87**	21	27	24	18	**90**
B. Sc. II	Theory	04	08	07	08	02	**29**	07	09	08	06	**30**
	Practical	12	24	27	24	06	**93**	21	24	24	24	**93**
B.Sc. III	Theory	05	08	07	08	02	**30**	08	07	07	07	**29**
	Practical	06	12	09	12	03	**42**	12	12	12	09	**45**

Teaching Plan for Theory (First Semester):		**Class: B. Sc. Part I (CBCS)**	
Sr. No.	**Topics to be covered**	**Lectures Available**	**Lectures Utilized**
	Life And Diversity of Nonchordates	**16**	
	Unit IV Phylum Annelida & Arthropoda		
1	Phylum Annelida: General Characters.	1	
2	Type study: Leech: a) External features b) Digestive system c) Reproductive system	4	
3	Phylum Arthropoda: General Characters.	1	

4	Type study: Cockroach: a) Habits and habitat b) Digestive system, c) Excretory system d) Respiratory system, e) Reproductive system.	5	
5	Unit Test	1	
6	Module:	4	
Teaching Plan for Practical (First Semester):		**Class: B. Sc Part I (CBCS)**	
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
	Life And Diversity of Nonchordates	**87**	
1	**Observation, classification up to classes and sketching of following animals**		
	Phylum Protozoa	6	
	Phylum Porifera	6	
	Phylum Coelenterata	6	
	Phylum Helminthes	3	
	Phylum Annelida	6	
	Phylum Arthropoda	9	
	Phylum Mollusca	9	
	Phylum Echinodermata	6	
	Phylum Hemichordata	3	
2	Permanent slide study	9	
3	Anatomical study through computer aided techniques, video clippings, photographs and other available resources	12	
4	Mountings	12	
Teaching Plan for Theory (Second Semester):		**Class: B. Sc. Part I (CBCS)**	
Sr. No.	**Topics to be covered**	**Lectures Available**	**Lectures Utilized**
	LIFE AND DIVERSITY OF CHORDATE AND CONCEPT OF EVOLUTION	**17**	
	Unit-I Phylum Chordata		
1	Origin of Chordata.	2	
2	Protochordates: Type study: Amphioxus: a) Habits and habitat, External Characters, b) Digestive system and feeding, c) Excretory organs, gonads, d) Affinities of Amphioxus.	4	
3	Affinities of Agnatha	1	
4	Series Picses: Type study: Scoliodon sarrokawah (Dogfish) a) Habits and habitat, External Character b) Respiratory system: respiratory organ and mechanism of respiration,	5	

	c) circulatory System: Structure and working of Heart, d) Lateral line receptors,		
5	Migration in fishes: Types, causes and significance.	2	
6	Unit test	1	
7	Module	2	
Teaching Plan for practical (Second Semester):		**Class: B Sc. Part I (CBCS)**	
Sr. No.	**Topics to be covered**	**Lectures Available**	**Lectures Utilized**
	LIFE AND DIVERSITY OF CHORDATE AND CONCEPT OF EVOLUTION	**87**	
A	**Taxonomy of Chordate**		
1	General characters and classification of phylum chordate	3	
2	General characters and classification up to order of the following chordate as per availability in the laboratory from the major orders		
A	Protochordata	3	
B	Agnatha	3	
C	Pisces	3	
D	Amphibia	3	
E	Reptilia	3	
F	Aves	3	
G	Mammalia	3	
B	**Dissections:**		
	1. Dissection - afferent and efferent branchial vessels, cranial nerves, internal ear of Scoliodon	6	
	2. Dissection - Digestive system, Arterial system, venous system, reproductive system of rat.	6	
	3. Permanent micro-preparations. a. Fish scales. b. Ampullae of Lorenzini. c. Eyeball muscles.	6	
	4. Observations of air bladder in air breathing fishes.	6	
C	**Osteology-** Rabbit and Varanus excluding loose bones of skull	12	
D	**Evolution**		
1	Study of fossils, including living fossils	3	
2	Study of evidences of evolution	3	
3	analogous and homologous organ	3	
4	Study of Mesozoic Reptiles (By models /charts)	3	
5	Mimicry- coloration in animals	3	
6	Beak and leg modification with reference to Parrot, Woodpecker, Kingfisher, Heron, Duck, Sparrow or Pigeon, Hawk or Kite, Owl.	6	
E	**Histological slides: - Amphioxus, Frog, Rat**		

	T.S, Oral hood, Pharynx, Tail T.S. lung, Stomach, Kidney, T.S. Intestine, T.S. Liver, Pancreas, Ovary, Testis, Pituitary, Thyroid, Adrenal	6	
Teaching Plan for Theory (Third Semester):		**Class: B Sc. Part II (CBCS)**	
Sr. No.	**Topics to be covered**	**Lectures Available**	**Lectures Utilized**
	CELL BIOLOGY AND DEVELOPMENTAL BIOLOGY	**29**	
	Unit-I: Plasma Membrane Structure & Function	**1**	
1	Sandwich Model, Unit Membrane Model & Fluid-Mosaic Model	2	
2	Function of Plasma Membrane: a) Transport Across Membrane b) Active Transport c) Passive Transport d) Facilitated Transport	3	
3	i) Exocytosis, ii) Endocytosis, iii) Phagocytosis & iv) Pinocytosis	2	
4	Structure of Nucleus and nucleolus.	2	
5	Chromatin: Euchromatin and Heterochromatin.	2	
	Unit-V:		
1	Cleavage, Blastulation and gastrulation up to the formation of three germ layers in Frog.	3	
2	Fate map in frog.	1	
3	Cleavage, Blastulation and gastrulation up to the formation of three germ layers in chick.	3	
4	Development of Extra embryonic membranes in chick.	2	
5	Significance of Extra embryonic membranes in chick.	1	
6	Unit Test: I & II	2	
7	Module	3	
8	Revision	2	
Teaching Plan for Practical (Third Semester):		**Class: B Sc. Part II (CBCS)**	
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
I)	**Cell Biology**	**93**	
1	Use, care and maintenance of microscope.	**3**	
2	Study of different cell types by permanent slides/ICT Tools/Charts (Endothelium, Neuronal, Epithelia, Connective Tissue)	9	
3	Demonstration of mitochondria by using vital staining.	6	
4	Preparation of Polytene chromosome in Chironomus or Drosophila larva.	9	
5	Preparation of various stages of mitosis.	9	
6	Preparation of various stages of meiosis from suitable material.	6	
II)	**Developmental Biology:**		

1	Study of stages of gametogenesis in rat/frog, (Permanent Stained Slides).	6	
2	Study of different of types of animal eggs.	6	
3	Study of developmental stages (Life Cycle) of Cockroach, Housefly, Mosquito, Butterfly, Moth, Frog (Any Four).	6	
4	Study of developmental stages of Lymnaea.	6	
5	Developmental stages of frog: Cleavage, blastula, gastrula, neurula, and tadpoles through available resources.	6	
6	Study of chick embryo at different hours of incubation by permanent slides.	9	
7	Study of different types of placentas with suitable histological slides or visual diagrams.	6	
8	Record Checking and certification	6	

Teaching Plan for Theory (Fourth Semester): Class: B Sc. Part II (CBCS)

Sr. No.	Topics to be covered	Lectures Available	Lectures Utilized
	GENETICS AND ECOLOGY	**30**	
	Unit- I: Introduction	**1**	
1	Laws of dominance.	1	
2	Law of segregation.	1	
3	Law of independent assortment.	2	
4	Interactions of genes: Supplementary factor, complementary factor, duplicates factor.	3	
5	inhibitory factors and lethal factors-dominant and recessive.	3	
6	UNIT TEST	1	
	Unit- VI: Introduction	1	
1	Autotrophs and heterotrophs.	1	
2	Food chain, Food web and Ecological pyramids (Number, Energy and Biomass)	3	
3	Terrestrial ecosystem: Classification and types of Biomes.	3	
4	Aquatic ecosystem: Characteristics, Fresh water ecosystem (Lentic and Lotic) and Marine ecosystem.	3	
5	Ecotone and Edge Effect.	1	
6	UNIT TEST	1	
7	Modules	3	
8	Revision	2	

Teaching Plan for Practical (Fourth Semester): Class: B. Sc Part II (CBCS)

Sr. No.	Topics to be covered	Lectures available	Lectures Utilized
	ADVANCED GENETICS AND ANIMAL ECOLOGY	**93**	
A)	**Genetic Experiment**		
1	Recording of Mendelian traits in man	6	

2	Detection of monohybrid cross with the help of plastic beads	6	
3	Detection of dihybrid cross with the help of plastic beads	6	
4	Culturing drosophila using standard methods	6	
5	Drosophila - male and female identification, Mutant forms of Drosophila (from pictures)	6	
6	Demonstration of Barr bodies from buccal epithelium or leucocyte.	6	
7	Preparation of human karyotypes with the help of ICT/suitable tools.	6	
8	Study of syndromes with the help of ICT tools/Photo slides- Turner's syndrome, Klinefelter's syndrome, Down's syndrome	6	
9	Detection of syndrome from karyotype (Turner's syndrome, Klinefelter's syndrome, Down's syndrome).	6	
10	Study of human genetic traits and application of Hardy-Weinberg Principle to them – Baldness, length of index and ring Finger, attached and free earlobes, rolling of tongue, Widow's peak.	6	
B)	**Ecology**		
1	Estimation of pH in water sample	6	
2	Estimation of Dissolved oxygen, salinity, free CO2, total hardness in water sample.	6	
3	Adaptations of aquatic and terrestrial animals based on study of museum specimens such as rocky, sandy, muddy-shore, flying and burrowing animals.	6	
4	Preparation of checklist of producers and consumers of local ecosystems and construction of a food web diagram based on field visit.	6	
5	Mounting and identification of zooplankton.	6	
C)	**General: -**		
1	Study of a natural ecosystem and field report of the visit	3	

Teaching Plan for Theory (Fifth Semester):		**Class: B. Sc. Part III**	
Sr. No.	**Topics to be covered**	**Lectures Available**	**Lectures Utilized**
	ANIMAL PHYSIOLOGY AND ECONOMIC ZOOLOGY	**30**	
A	**Unit IV Reproductive Physiology:**	1	
1	Estrous and menstrual cycle	2	
2	hormonal control of reproduction in males	1	
3	hormonal control of reproduction in females	1	
4	Structure of mammalian Placenta.	1	
5	Physiology of mammalian Placenta.	2	
B	**Homeostasis and conservative regulation:**	1	

1	Osmoregulation and ionic regulation in aquatic animals.	1	
2	Osmoregulation in terrestrial animals Ammonotelism, ureotelism & uricotelism.	1	
3	Thermoregulation in Poikilotherms and Homeotherms.	1	
4	Revision And UNIT TEST	2	
	UNIT-V Agricultural Zoology:	1	
1	Economic importance of Insects	1	
2	Beneficial insects: Spider, Mantis, Ladybugs, Damsel bug, Mealybug destroyer, Soldier beetle, Green lacewing, Syrphid fly, Tachinid fly, Ichneumon wasp and Trichogramma wasp.	2	
3	Harmful Insects Stirred food grain pests, their injuries and control	2	
4	Pests of, Cotton, Sugarcane and Jowar. Damage and Control	2	
5	Economic importance of Rodents, Snakes, Owls and Bats.	2	
6	Apiculture	1	
7	Sericulture	1	
8	Revision and Unit Test	2	
9	Seminars	2	

Teaching Plan for Practical (Fifth Semester) **Class: B.Sc. Part III**

Sr. No.	Topics to be covered	Lectures Available	Lectures Utilized
	Animal physiology and Economic zoology	**42**	
1	Detection of blood group in human being	3	
2	Differential count of blood	3	
3	Estimation of hemoglobin percentage with the help of haemometer.	3	
4	R. B. C. Count	3	
5	W. B. C. count	3	
6	Preparation of haemin crystals	3	
7	Measurement of blood pressure	3	
8	Action of salivary amylase on starch	3	
9	Qualitative detection of nitrogenous waste products (Ammonia, urea, uric acid) in given sample.	3	
10	Demonstration of kymograph unit, Respirometer through available resources.	3	
11	Observation and identification of Insect Pests of local crops, and predator insects.	3	
12	Life cycle of honey bee, Lac Insect, silk moth	3	
13	Histological slides of major organs of respiratory system, circulatory system, Nervous system,	3	

	Different type of muscles, endocrine gland, testis and ovary.		
14	Study of locally available fishes, Indian major carp, common carp and Exotic Carp	3	
Teaching Plan for Theory (Sixth Semester):		**Class: B. Sc. III**	
Sr. No.	**Topics to be covered**	**Lectures Available**	**Lectures Utilized**
	MOLECULAR BIOLOGY & BIOTECHNOLOGY	**29**	
	Unit I: Concept of Genetic material-	**1**	
1	a) Definition b) Experiments to prove DNA as genetic material: i) Griffith's transformation experiments with bacteriophage infections. ii) Avery and co-workers Experiments. iii) Hershey and Chase experiment.	3	
2	Chemistry and types DNA (A, B, Z)	2	
3	Mitochondrial DNA	2	
4	Chemistry types and function of RNA: mRNA, tRNA and rRNA and Non-Genetic RNA.	3	
5	Revision and UNIT TEST	2	
	Unit V: Biotechnology	1	
1	Genetic Engineering	1	
2	Recombinant DNA technology and gene cloning-enzymes in Recombinant DNA technology,	2	
3	Splicing and cloning of genes,	1	
4	vectors (plasmid and phage vectors),	1	
5	Gene transfer.	1	
6	Somatic cell hybridization,	2	
7	Hybridoma technology,	1	
8	Monoclonal antibodies.	1	
9	Practical applications and suspected hazards of biotechnology and genetic engineering in animals.	1	
10	Revision and UNIT TEST	2	
11	Seminars	2	
Teaching Plan for Practical (Sixth Semester)		**Class : B. Sc. Part III**	
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
	MOLECULAR BIOLOGY & BIOTECHNOLOGY	**45**	
1	Micro technique scope and importance	3	
2	Preparation of fixative- alcohol, acetone, formalin, Bouin's fluid, Cornoy fluid, Formal sublimate	3	
3	Collection of various tissues/ organs from slaughter house for micro-technique	3	
4	Preparation of Alcohol grades, dehydration and clearing of tissues		
5	Use and care of Oven	3	
6	Embedding and block making, trimming of block.	3	

7	Use and care of different types of Microtomes	3	
8	Honing and stropping Knives	3	
9	Section cutting and spreading	3	
10	Preparation of various stains-Borax carmine Acetocarmine, Aceto-orcein, Haematoxyline, eosin	3	
11	Staining of the sections, (Double staining), Mounting	3	
12	Camera Lucida. Use and Drawings	3	
13	Oculomicrometer scale/ similar micro-measurements use	3	
14	Introduction to models of PCR, Southern blotting through available resources	3	
15	Vital Staining of mitochondria by using Janus, Green B stain	3	
16	Extraction of DNA by using salt, detergent and enzymes from natural sources from any animal tissue / plant material	3	

Dr. S.A. Tayade

ARTS & COMMERCE COLLEGE

WARVAT BAKAL DIST- BULDANA

DEPARTMENT OF ZOOLOGY

FACULTY- MISS S. A. TAYADE

DEPRTMENTAL ACADEMIC CALENDAR 2023-24

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Departmental Academic Calendar (2023-2024)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023	As per ordinance No. 02/1997, 04/1997 and 18/1998	--
03	Induction Program for First Year Students	11/07/2023	14/07/2023	04
04	Teaching Days (Odd Semesters)	15/07/2023	07/11/2023	**90**
05	First Term Vacation	08/11/2023	27/11/2023	20
06	University Exam Winter 2023 (Odd semesters)	08/11/2023	30/12/2023	39
07	Second Session	28/11/2023	27/04/2024	121
08	Noninstructional Days	01/01/2024	04/01/2024	04
09	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	**90**

10	University Exam Summer 2024 (Even Semesters)	29/04/2024	10/06/2024	35
11	Second Term Vacation	29/04/2024	10/06/2024	43
12	Commencement of next Academic session 2024-2025	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharram	Saturday, 29th July, 2023
02	Independence Day	Tuesday, 15th August, 2023
03	Parsi New Year	Wednesday, 16th August, 2023
04	Raksha Bandhan	Wednesday, 30th August, 2023
05	Shri Ganesh Chaturthi	Tuesday, 19th September, 2023
06	Gouri Poojan	Friday, 23nd September, 2023
07	Anant Chaturdashi/Eid-a-Milad	Thursday, 28th September, 2023
08	Mahatma Gandhi Jayanti	Monday, 02nd October, 2023
09	Dasara	Tuesday, 24th October, 2023
10	Christmas	Monday, 25th December, 2023
11	Republic Day	Friday, 26th January, 2024
12	Chhatrapati Shivaji Maharaj Jayanti	Monday, 19th February, 2024
13	Mahashivratri	Friday, 08th March, 2024
14	Holi (Second Day)	Monday, 25th March, 2024
15	Good Friday	Friday, 29th March, 2024
16	Gudhi Padwa	Tuesday, 09th April, 2024
17	Ramzan Eid (Eid-Al-Fitr)	Thursday, 11th April,2024
18	Shriram Navami	Wednesday, 17nd April,2024

Time Table

Faculty : SCIENCE **Subject : ZOOLOGY**

NAME OF FACULTY: MISS SONALI ANIL TAYADE

Period	Practical	1	2	3	4	Practical
Day / Time	8.20 to 11	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	1:34 to 2:22	2:30 to 5:10
MON	-	-	-	-	-	III (P)
TUE	-	II (T)	-	-	-	-
WED	I(P)	III (T)	-	-	-	-
THUS	-	I (T)	-	-	-	I (P)
FRI	II (P)	-	I (T)	-	-	-

Teaching Periods Available per month during the session 2023-24

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	July 23	Aug 23	Sep 23	Oct 23	Nov 23	Total	Jan 24	FEB-24	MAR-24	APR-24	Total
B Sc. I	Theory	04	09	07	08	02	**30**	06	09	07	07	**29**
	Practical	12	24	21	24	06	**87**	21	27	24	18	**90**
B. Sc. II	Theory	04	08	08	08	02	**30**	08	08	09	07	**32**
	Practical	12	24	27	24	6	**93**	21	24	24	25	**93**
B.Sc. III	Theory	02	03	04	04	01	**14**	04	04	04	03	**15**
	Practical	09	12	12	12	03	**48**	12	09	09	12	**42**

Faculty : SCIENCE
ZOOLOGY

Subject :

NAME OF FACULTY : MISS SONALI ANIL TAYADE

Teaching Plan for Theory (First Semester)		**Class : B Sc Part I**	
Sr. No.	Topic to be covered	Lectures Available (30)	Lectures Utilized
	UNIT 1 : Classification of Non Chordata and Phylum Protozoa	**15**	
01	Classification of Non-Chordata	02	
02	Phylum Protozoa : General characters	02	
03	Type Study : Plasmodium vivax : Structure, Life Cycle	07	
04	Parasitic protozoan and human diseases: Malaria, Amoebiasis	04	
	UNIT 5	**15**	

05	Phylum Mollusca: General characters	O2	
06	Type Study: *Pila globusa*	06	
07	Phylum Echinodermata: General characters	01	
08	Type Study: *Asterias*	06	
Teaching Plan for Practical (First Semester)		**Class : B Sc Part I (CBCS)**	
Sr. No.	Topic to be covered	Lectures Available (87)	Lectures Utilized
1	Observation, classification up to classes and sketching of following animals		
	Phylum Protozoa	06	
	Phylum Porifera	06	
	Phylum Colenterata	06	
	Phylum Helminths	03	
	Phylum Annelida	06	
	Phylum Arthopoda	09	
	Phylum Mollusca	09	
	Phyum Echinodermata	06	
	Phylum Hemichordata	03	
2	Permanent slide study	12	
3	Anatomical study through computer aided techniques, video clippings, photographs and other available resources	12	
4	Mountings	12	
Teaching Plan for Theory (Second Semester)		**Class : B Sc Part I**	
Sr. No.	**Topic to be covered**	**Lectures Available (29)**	**Lectures Utilized**
	UNIT 4	**14**	
01	Evolution meaning and scope	02	
02	Indirect evidences of evolution	05	
02	Direct evidences of evolution	07	
	UNIT 5	**15**	
01	Evolutionary processes	04	
02	Speciation	03	
03	Modern concept of organic evolution	02	
04	Population genetics	06	
Teaching Plan for Practical (Second Semester)		**Class : B Sc Part I**	
Sr. No.	**Topic to be covered**	**Lectures Available (90)**	**Lectures Utilized**
A	**Taxonomy of Chordata**		
1	General characters and classification of phylum chordata	03	
2	General characters and classification up to order of the following chordate as per availability in the laboratory from the major orders	03	
A	Protochordata		

B	Agnatha	03	
C	Pisces	06	
D	Amphibia	06	
E	Reptilia	06	
F	Aves	06	
G	Mammalia	06	
B	**Dissection**		
1	Dissection-afferent and efferent branchial vessels, cranial nerves, internal ear of scoliodon	06	
2	Dissection- Digestive system, Arterial system, venous system, reproductive system of rat	06	
3	Permanent micro-preparation- a. Fish scales b. Ampullae of Lorenzini. C. Eyeball muscles	06	
4	Observation of air bladder in air breathing fish	03	
C	**Osteology**		
1	Rabbit, Varanus (excluding loose bones of skull)	06	
E	**Evolution**		
1	Study of fossils, including living fossils	03	
2	Study of evidences of evolution. I) Analogues and homologues organs	03	
3	Study of Mesozoic Reptiles (By models/Charts)	03	
4	Mimicry- coloration in animals	03	
5	Beak and leg modification with reference to parrot, woodpeacker, kingfisher, heron, duck, sparrow or pigeon, hawk or kite, owl.	03	
F	**Histological slides**		
I	amphioxus- T.S. Oral Hood, pharynx and tail.	03	
II	Frog- T.S. Lung, Stomach, Kidney, intestine	03	
III	Rat: T.S. liver, pancreas, ovary, testis, pituitary, thyroid, Adrenal	03	

Teaching Plan for Theory (Third Semester)		**Class : B Sc Part II**	
	Topic to be covered	Lectures Available (30)	
	UNIT 6	**15**	
1	Placentation in Mammals : Types and functions of Placenta	04	
2	Parthenogenesis : Types and Significance	04	
3	Regeneration in invertebrates	02	
4	Regeneration in vertebrates	02	
4	Elementary idea of sources, types and use of stem cells	03	
	UNIT 4	**15**	
1	Mitosis and its significance	O4	
2	Meiosis and its significance	04	
3	Gametogenesis: Spermatogenesis and oogenesis	04	

4	Fertilization: Types and fertilization	01	
5	Mechanism of Fertilization	02	
Teaching Plan for Practical (Third Semester)		**Class : B Sc Part II**	
	Topic to be covered	**Lectures Available (93)**	**Lectures Utilized**
I	**Cell Biology**		
1	Use, care and maintenance of microscope	03	
2	Study of different cell types by permanent slides/ICT Tooles/ charts (Endothelium, Neuronal, Epithelia, Connetive tissue)	09	
3	Demonstration of Mitochondria by using vital staining	06	
4	Preparation of Polytene chromosome in Chironomus or Drosophila Larva.	09	
5	Preparation of Various stages of mitosis	09	
6	Preparation of various stages of meiosis from suitable material	06	
II	**Developmental Biology**		
1	Study of stages of gametogenesis in Rat/Frog (Permanent stained slides)	06	
2	Study of different types of animal eggs	06	
3	Study of developmental stages (life cycle) of Cockroach, housefly, mosquito, butterfly, moth, frog (Any four)	06	
4	Study of developmental stages of Lymnaea	06	
5	Developmental stages of Frog: Cleavage, blastula, gastrula, neurula and tadpoles through available resources	06	
6	Study of chick embryo at different hours of incubation by permanent slides.	09	
7	Study of different types of placenta with suitable histological slides or visual diagrams.	06	
8	Record checking and certification	06	
Teaching Plan for Theory (Fourth Semester)		**Class : B Sc Part II**	
Sr. No.	**Topic to be covered**	**Lectures Available (32)**	**Lectures Utilized**
	UNIT 2 : Linkage	*16*	
01	Linkage : Types of linkage, linkage group, arrangement of linked genes and significance of linkage	*04*	
02	Crossing Over- Types	*04*	
03	Mechanism of Crossing over	*01*	
04	Theories of crossing over	*02*	
05	Factors influencing the crossing over and significance of crossing over	*02*	

06	Multiple alleles in relation to eye colour in Drosophila, blood group in man, Erythroblastosis foetalis	*03*	
	UNIT 4 : Genetic screening and parental diagnosis	**16**	
01	Prenatal test, carrier, Chronic villus sampling, Amniocentesis	03	
02	Gene probe and DNA Analysis	04	
02	Genes and human heredity: Inheritance of eye colour, inheritance of skin colour, Recessive genes and consanguineous marriages	04	
03	Genetic counseling: Risk of marriages in affected family, Birth control measures (Male and Female)	03	
04	Kinds of twines	02	

Teaching Plan for Practical (Fourth Semester)		**Class : B Sc Part II**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Advanced Genetics and Animal Ecology	**93**	
A	**Genetic Experiment**		
1	Recording of mendelian traits in man	06	
2	Detection of monohybrid cross with the help of plastic beads	06	
3	Detection of dihybrid cross with the help of plastic beads.	06	
4	Culturing drosophila using standard methods	06	
5	Drosophila- male and female identification, mutant forms of drosophila (from picture)	06	
6	Demonstration of bar bodies from buccal epithelium or leucocyte.	06	
7	Preparation of human karyotypes with the help of ICT / suitable tools.	06	
8	Study of syndrome with the help of ICT tooles/ photoslides - turner syndrome, klienfelters syndrome, downs syndrome	06	
9	Detection of syndrome from karyotype (turner syndrome, klienfelters syndrome, downs syndrome)	06	
10	Study of following human genetic traits and application of hardy Weinberg principle to them- Baldness, length of index and ring finger, attached and free earlobes, rolling of tongue, PTC test and other notable traits	06	
B	**Ecology**		
1	Estimation of pH in water sample	06	
2	Estimation of Dissolved oxygen, salinity, free CO2, total hardness in water sample	06	

3	Adaptation of aquatic and terrestrial animals based on study of museum specimens such as museum specimens such as rocky, sandy, muddy- shore, flying and burrowing animals	06	
4	Preparation of checklist of producers and consumers of local ecosystems and construction of a food web diagram based on field visit.	06	
5	Mounting and identification of zooplankton	06	
C	**General**		
1	Visit to a national park or sanctuaries and submission of report	03	

Teaching Plan for Theory (Fifth Semester)		**Class : B Sc Part III**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	UNIT 1- Respiration and circulation	**14**	
1	Respiration - Structure of respiratory organs	02	
2	Mechanism of respiration, neurophysiological control of respiration	02	
3	Respiratory pigment	01	
4	transport of gases	O2	
5	Blood	02	
6	Coagulation of blood, blood group, ABO system and Rh-factor	03	
7	Heart	02	

Teaching Plan for Practical (Fifth Semester)		**Class : B Sc Part III**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Animal physiology and Economic Zoology	**48**	
01	Detection of blood group in human being	3	
02	Differential count of blood	3	
03	Estimation of hemoglobin percentage with the help of haemometer.	3	
04	R. B. C. Count	3	
05	W. B. C. count	3	
06	Preparation of haemin crystals	3	
07	Measurement of blood pressure	3	
08	Action of salivary amylase on starch	3	
09	Qualitative detection of nitrogenous waste products (Ammonia urea, uric acid) in given sample.	3	
10	Demonstration of kymograph unit, Respirometer through available resources.	3	
11	Observation and identification of Insect Pests of local crops, and predator insects.	3	
12	Life cycle of honey bee, Lac Insect, silk moth	3	

13	Histological slides of major organs of respiratory system, circulatory system, Nervous system, Different type of muscles, endocrine gland, testis and ovary.	9	
14	Study of locally available fishes, Indian major carp, common carp and Exotic Carp	3	
Teaching Plan for Theory (Sixth Semester)			**Class : B Sc III**
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	UNIT 2 : DNA Replication	**15**	
01	Types of replication	02	
02	Semi conservative method	02	
03	Experiment by Messelson and Stahl	01	
04	Concept of gene	01	
05	One gene one enzyme hypothesis	02	
06	One gene one Polypeptide theory	02	
07	A brief account of concept and action of cistron split genes, overlapping genes and jumping genes	03	
08	Genetic diseases : Spinocerebellar ataxia	02	
Teaching Plan for Practical (Sixth Semester)			**Class : B Sc III**
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Molecular Biology and Biotechnology	**42**	
01	Micro technique scope and importance	03	
02	Preparation of fixative- alcohol, acetone, formalin, Bouin's fluid, Cornoy fluid, Formal sublimate		
03	Collection of various tissues/ organs from slaughter house for micro-technique	03	
04	Preparation of Alcohol grades, dehydration and clearing of tissues		
05	Use and care of Oven	03	
06	Embedding and block making, trimming of block.	03	
07	Use and care of different types of Microtome	03	
08	Honing and stropping Knives	03	
09	Section cutting and spreading	03	
10	Preparation of various stains-Borax carmine Acetocarmine, Aceto-orcein, Haematoxyline, eosin	03	
11	Staining of the sections, (Double staining), Mounting	03	
12	Camera Lucida. Use and Drawings	03	
13	Oculomicrometer scale/ similar micro-measurements use	03	
14	Introduction to models of PCR, Southern blotting through available resources	03	
15	Vital Staining of mitochondria by using Janus, Green B stain	03	

16	Extraction of DNA by using salt, detergent and enzymes from natural sources from any animal tissue / plant material	03	

Mr. S. D. Deshmukh

Available Teaching Periods during the Months of 2023-24

SDD		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	JUL-2023	AUG-2023	SEP-2023	OCT-2023	NOV-2023	Total	JAN-2024	FEB-2024	MAR-2024	APR - 2024	Total
BSc-I	Theory	04	08	07	08	02	**29**	08	07	07	07	**29**
	Practical	18	33	33	36	-	**120**	33	39	36	27	**135**
BSc –II	Theory	-	-	-	-	-	-	-	-	-	-	-
	Practical	12	24	30	24	06	**96**	15	24	24	24	**87**
BSc- III	Theory	04	08	09	08	02	**31**	07	08	08	08	**31**
	Practical	09	12	09	12	03	**42**	12	12	12	09	**44**

Personal Time Table
2023-24

Faculty: Science Subject: ZOOLOGY

Name of Faculty: **Mr. S. D. Deshmukh**

Period	Practical	1	2	3	Recess	4	Practical
Day / Time	08.00 to 10.24	11:00 to 11:48	11:48 to 12:36	12:36 to 1:24	10min.	1:34 to 2:22	2:30 to 4.54
MON		I (Th)					
TUE			I (Th)				**III (Pr.)**
WED	**I (Pr.)**						**I (Pr.)**
THUS	**I (Pr.)**						
FRI				III (Th.)			**II (Pr.)**
		7.30 to 8.18	8.18 to 9.06	9.06 to 9.54 am		Practical 10.04 - 12.28 pm	Practical 12.28 to 2.52 pm
SAT		III (Th.)				**II (Pr.)**	

Allotted Workload

Subject: Zoology Year: 2023-24

Sr. No.	Class	No. of periods per week	
		Lectures (L)	Practical (P)
1	B. Sc I	02	09
2	B. Sc II	00	06
3	B. Sc III	02	03
	Total	04	18

* Total Workload per week (L+P): 04 (L) + 18(P) = 22 (17 hrs. and 36 min.)

Teaching Plan for 2023-24

Teaching Plan for Theory (First Semester)		Class : B. Sc. Part I	
Sr. No.	Topics to be covered	Lectures Available	Lectures Utilized
	Life And Diversity Of Non chordates	**29**	26
1	**Unit III Platyhelminthes**		
	Type study: Fasciola hepatica: Habits and habitat, External features,		
	Excretory System		
	Reproductive system		
	Life cycle		
	Phylum Aschelminthes: General Characters.		
	Type study, Ascaris lumbricoides: Habits and habitat, External features,		
	Digestive and Excretory system		
	Reproductive system		
	Life cycle		
2	**Unit VI :**Phylum: Hemichordata :		
	Phylum: Hemichordata : General characters, Body organization of Balanoglossus		
	Affinities of Balanoglossus with Non-Chordata and Chordata.		
	Parasitic adaptation in Helminthes, Morphological and Physiological		
	Larval forms and their significance Amphiblastula, Planula, Trochophore, Bipinnaria, Brachiolaria.		
Teaching Plan for Practical (First Semester)		**Class : B. Sc Part I**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Life And Diversity ofNon-chordates	**120**	
1	Observation, classification up to classes and sketching of following animals		
	Phylum Protozoa		
	Phylum Porifera		
	Phylum Coelenterata		
	Phylum Helminthes		
	Phylum Annelida		
	Phylum Arthropoda		
	Phylum Mollusca		
	Phylum Echinodermata		
	Phylum Hemichordata		
2	Permanent slide study		

3	Anatomical study through computer aided techniques, video clippings, photographs and other available resources		
4	Mountings		
Teaching Plan for Theory (Second Semester)		**Class: B. Sc. Part I**	
Sr. No.	Topics to be covered	Lectures Available	Lectures Utilized
	Life and diversity of Animals (Chordata) and concept of Evolution	29	26
	UNIT-III		
1	**Class Aves:** Type study: Pigeon -*Columba livia,* Habits and habitat, external characters,.		
	Respiratory system		
	Urinogenital system		
	flight adaptation		
	Migration in birds		
2	Class: Mammalia: Primitive mammals: Salient features of Prototheria and Metatheria		
	Aquatic mammals, Flying mammals		
	Adaptive radiation in Mammals.		
	UNIT-VI		
	Evolution of Man-brief accounts of Parapithecus, Dryopithecus, Parapithecus, Australopithecus, Homoerectus, Neanderthal man, Cro-magnon man and modern man.		
	Evolution of heart and aortic arches		
	Animal adaptation: Desert, Aquatic and Terrestrial.		
Teaching Plan for practical (Second Semester)		**Class: B Sc. Part I**	
Sr. No.	Topics to be covered	Lectures Available	Lectures Utilized
1	**General characters and Classification up to orders of the following chordates or as per the availability in the laboratory from the major orders, (Specimens or Models)**	**135**	
	Protochordata : Herdmania, DoliolumSalpa, Amphioxus		
	Agnatha: Petromyzon, Myxine		
	Pisces: Scoliodon, Torpedo, Acipenser, Exocoetus. Hippocampus		
	Amphibia: Ichthyophis, Salamander, Bufo, Hyla.		
	Reptilia: Varanus, Phrynosoma, Chameleon, Cobra, krait, Russell's viper, Typhlops, Hydrophis		
	Aves: Duck, Woodpecker, Kingfisher, Parrot.		
	Mammalia: Mongoose, Squirrel. Manis. Bat,monkey.		
2	**Dissections**		
	Afferent and efferent branchial vessels, cranial nerves, internal ear of scoliodon.		
	Digestive system, Arterial system, venous system, reproductive system of rat.		

	Permanent micro-preparations .a. Fish scales. b. Ampullae of Lorenzini. c. Eyeball muscles.		
	Observations of air bladder in air breathing fishes.		
3	**Osteology**		
	Rabbit, Varanus (excluding loose bones of skull).		
4	**Evolution**		
	Study of fossils, including living fossils.		
	Study of Evidences of evolution: Analogous and Homologous organs.		
	Study of Mesozoic Reptiles (By Models/Charts).		
	Mimicry, coloration in animals.		
	Beak and Leg modifications with reference to: Parrot, Woodpecker, Kingfisher, Heron, Duck, Sparrow/Pigeon Hawk/Kite, Owl.		

Teaching Plan for Practical (Third Semester)		**Class: B Sc. Part II**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
I)	**Cell Biology:**	96	
1.	Use, care and maintenance of microscope.		
2.	Study of different cell types by permanent slides/ICT Tools/Charts (Endothelium, Neuronal, Epithelia, Connective Tissue)		
3.	Demonstration of mitochondria by using vital staining.		
4.	Preparation of Polytene chromosome in *Chironomus*or *Drosophila* larva		
5.	Preparation of various stages of mitosis.		
6.	Preparation of various stages of meiosis from suitable material.		
II)	**Developmental Biology**		
1.	Study of stages of gametogenesis in rat/frog, (Permanent Stained Slides).		
2	Study of different of types of animal eggs.		
3	Study of developmental stages (Life Cycle) of Cockroach, Housefly, Mosquito, Butterfly, Moth, Frog (Any Four).		
4	Study of developmental stages of *Lymnaea*.		
5	Developmental stages of frog: Cleavage, blastula, gastrula, neurula, and tadpoles through available resources.		
6	Study of chick embryo at different hours of incubation by permanent slides.		
7	Study of different types of placenta with suitable histological slides or visual diagrams.		
	Genetics and Ecology	**Class: B. Sc Part II**	

Teaching Plan for Practical (Fourth Semester)			
Sr. No.	Topics to be covered	Lectures available	Lectures Utilized
A)	**Genetics Experiments**:	**87**	
1	Recording of Mendelian traits in man.		

2	Detection of monohybrid cross with the help of plastic beads		
3	Detection of dihybrid cross with the help of plastic beads.		
4	Culturing *Drosophila* using standard methods.		
5	*Drosophila* – male and female identification, Mutant forms of *Drosophila* (from pictures)		
6	Demonstration of Barr body from buccal epithelium or leucocyte.		
7	Preparation of human karyotypes with the help of ICT/suitable tools.		
8	Study of syndromes with the help of ICT tools/Photo slides- Turner's syndrome, Klinefelter's syndrome, Down's syndrome		
9	Detection of syndrome from karyotype (Turner's syndrome, Klinefelter's syndrome, Down's syndrome).		
10	Study of human genetic traits and application of Hardy-Weinberg Principle to them – Baldness, length of index and ring Finger, attached and free earlobes, rolling of tongue, Widow's peak.		
Teaching Plan for Theory (Fifth Semester)		**Class: B. Sc. Part III**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	ANIMAL PHYSIOLOGY AND ECONOMIC ZOOLOGY	**31**	
	Unit-III Nerve Physiology:		
1	Neuron: E.M. Structure of nuron AndTypes :Myelinated and non-Myelinated nerve fibres.		
2	Conduction of Nerve impulse, Resting potential, initiation and propagation of action potential, Saltatory transmission,		
3	Neurotransmitters (Acetylcholine, dopamine, GABA, Serotonin, Epinephrine, Nor-Epinephrine),		
4	Synapse and synaptic transmission		
5	**Chemical co-ordination:** Endocrine system: Hormones and their physiological roles of- Pituitary, Thyroid, Parathyroid, Adrenal, Islets of Langerhan's,		

6	Hormonal disorders: Dwarfism, Gigantism, Acromegaly , Goiter, Myxoedema, Cretinism, Osteoporosis ,		
	Unit-VI Aquaculture		
1	Definition, scope, importance and present Status in India.		
2	Fresh water fish culture: types of fish ponds:Nursary, rearingand stocking, design and construction of fish pond, fertilizersused for fish development.		
3	Hatching Happas, Chinease Circular Hatchery, CIFE, Mumbai,		
4	hatching model, Induced breeding and hypophysation, Modern drugs used in fish breeding.		
5	Freshwater system: monoculture, polyculture, integrated aquaculture, cage culture, pen culture		
6	Fish products and byproducts: Fish liver Oil, Fish body oil, Fish manure, Fish leather		
7			
Teaching Plan for Practical (Fifth Semester)		**Class: B.Sc. Part III**	
Sr. No.	Topics to be covered	Lectures Available	Lectures Utilized
	Animal physiology and Economic zoology	42	
1	Detection of blood group in human being		
2	Differential count of blood		
3	Estimation of hemoglobin percentage with the help of haemometer.		
4	R. B. C. Count		
5	W. B. C. count		
6	Preparation of haemin crystals		
7	Measurement of blood pressure		
8	Action of salivary amylase on starch		
9	Qualitative detection of nitrogenous waste products (Ammonia, urea, uric acid) in given sample.		
10	Demonstration of kymograph unit, Respirometer through available resources.		
11	Observation and identification of Insect Pests of local crops, and predator insects.		
12	Life cycle of honey bee, Lac Insect, silk moth		
13	Histological slides of major organs of respiratory system, circulatory system, Nervous system, Different type of muscles, endocrine gland, testis and ovary.		
14	Study of locally available fishes, Indian major carp, common carp and Exotic Carp		
Teaching Plan for Theory (Sixth Semester)		**Class : B. Sc. III**	
Sr. No.	Topics to be covered	Lectures Available	Lectures Utilized

	MOLECULAR BIOLOGY & BIOTECHNOLOGY	31	
	Unit III		
1	Genetic code and its features,		
2	Protein synthesis transcription and processing of mRNA, translation-different Steps		
3	Gene regulation: (promoter and operator), Operon models, and Lac-operon model of E.Coli.		
4	Genetic regulation in Eukaryotes-Britten Davidson Model.		
	Unit IV		
1	Mutation: Definition-mutation theory of DeVries different types of mutations, - molecular basis of mutation: substitution and frameshift mutations, chromosomal aberrations structural (deletion, addition, inversion and Translocation), numerical (euploidy and aneuploidy).		
2	Natural and induced mutations-significance of mutations.		
3	DNA repair process.		
4	Polymerase chain reaction (PCR). Southern, Northern and Western blotting techniques, DNA finger printing.		

Teaching Plan for Practical (Sixth Semester)		**Class : B. Sc. Part III**	
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	MOLECULAR BIOLOGY & BIOTECHNOLOGY	44	
1	Micro technique scope and importance		
2	Preparation of fixative- alcohol, acetone, formalin, Bouin's fluid, Cornoy fluid, Formal sublimate		
3	Collection of various tissues/ organs from slaughter house for micro-technique		
4	Preparation of Alcohol grades, dehydration and clearing of tissues		
5	Use and care of Oven		
6	Embedding and block making, trimming of block.		
7	Use and care of different types of Microtome		
8	Honing and stropping Knives		
9	Section cutting and spreading		
10	Preparation of various stains-Borax carmine Acetocarmine, Aceto-orcein, Haematoxyline, eosin		
11	Staining of the sections, (Double staining), Mounting		
12	Camera Lucida. Use and Drawings		

13	Oculomicrometer scale/ similar micro-measurements use		
14	Introduction to models of PCR, Southern blotting through available resources		
15	Vital Staining of mitochondria by using Janus, Green B stain		
16	Extraction of DNA by using salt, detergent and enzymes from natural sources from any animal tissue / plant material		

Principal
Arts & Commerce College
Warvat Bakal Dist Buldhana

SATPUDA EDUCATION SOCIETY, JALGAON (JAMOD)'S

ARTS & COMMERCE COLLEGE

WARVAT BAKAL DIST- BULDANA

DEPARTMENT OF CHEMISTRY

DEPARTMENTAL ACADEMIC CALENDAR 2023-24

DR. V. D. INGALE

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023	Notification No.02/1997	-
03	Teaching Days (Odd Semesters)	15/07/20223	07/11/2023	90
04	Induction Program for FirstYear Students	11/07/2023	14/07/2023	04
05	First Term Vacation	08/11/2023	27/11/2023	20
06	Odd Semesters UniversityExam	08/11/2023	30/12/2023	39
07	Academic Session (Second Session)	23/01/2023	27/05/2023	98
08	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	90
09	Non-Instructional Day	01/01/2024	04/01/2024	04
10	Second Term Vacation	29/04/2024	10/06/2024	43
11	Even Semesters University Exam	29/04/2024	10/06/2024	35
12	Commencement of next Academic session	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharum	**Saturday,29 July, 2023**
02	Independence Day	Tuesday, 15 August, 2023
03	Parsi New Year	Wednesday, 16 August, 2023
04	Rakshabandhan	Wednesday, 30 August, 2023
05	Shri Ganesh Chaturthi	Tuesday, 19 September, 2023
06	Gouri Poojan	Friday, 22 September, 2023
07	Anant Chaturthi	Thursday, 28 September, 2023
08	Mahatma Gandhi Jayanti	Monday, 02 October, 2023
09	Dasara	Thursday, 24 October, 2023

Time Table for UG (Odd & Even Semester)

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						
THUS	III (P)C_1						
FRI	I (P) A_1			II (T)		I (P) A_2	
		7:30 to 8:18	8:18 to 9:06	9:06 to 9:54		10.04to 12.28	12.28 to 2.52
SAT			I (T)			I(P) A_1	I(P) A_2

Allotted Workload

Subject : CHEMISTRY

Year : 2023-2024

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	01	---	2×3=06	01
3	B.Sc III	02	---	2×3=06	02
4	**Total**	**04**	**---**	**24**	**04**

Total Workload per week (L+T+P) : 04 (L) + 24 (P) = 28 (22.4 Hrs.)

Allotted Workload

Subject : INORGANIC CHEMISTRY (M.Sc.) **Year : 2023-2024**

Sr. No.	Class	No. of periods per week			Unit Allotted
		Lectures	Tutorials	Practical	
1	M.Sc. I	02	---	---	02
2	**Total**	**02**	**---**	**--**	**02**

Teaching Periods Available per month during the session 2023-24

Faculty : SCIENCE Subject :

CHEMISTRY

		ODD SEMESTER						EVEN SEMESTER				
Class	Periods	JUL-23	AUG-23	SEP-23	OCT-23	NOV-23	Total	JAN-24	FEB-24	MAR-24	APR-24	Total
B.Sc I	Theory	02	04	05	04	01	**16**	04	04	05	03	16
	Practical	16	32	36	32	08	**124**	28	32	32	28	120
B.Sc II	Theory	02	04	04	04	01	**15**	03	04	03	04	14
	Practical	10	16	14	16	04	**60**	16	14	14	16	60

B.Sc III	Theory	05	08	07	08	02	**30**	08	07	07	08	30
	Practical	12	24	21	24	06	**87**	21	27	24	18	90

(Note: B. Sc-I & II Year 2T=1PR 45Min. & B.Sc.-III Year 3T=1PR 48 Min.)

Syllabus:

Teaching Plan for Theory (First Semester)	**Class : B.Sc Part I**		
Sr. No.	Topic to be covered	Lectures Available **16L**	Lectures Utilized
01	**Unit-VI**	**14**	
	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. 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 refractitivity 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. 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.	14	

	(iv) Gouy's balance method for determination of magnetic susceptibility. (v) Application of magnetic moment in the determination of molecular structure. (vi) Numerical		
	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
		186L	
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 dibanzal propanone).	15	
07	Preparation of p-nitroacetanilide from acetanilide.	16	
08	Determination of surface tension of a given liquid using Stalagmometer	16	
09	Determination of the parachor value of $-CH_2-$ group (methylene) using Stalagmometer	16	
10	Determination of coefficient of viscosity of aqueous solution of ethanol or polymer at room temperature.	16	
11	Determination of unknown percentage composition of given glycerol solution from standard 2%, 4%,6%,8% and 10% solutions of glycerol	16	
12	Determination of the heat of solution of KNO_3 (5% solution)	16	

Teaching Plan for Theory (Second Semester)	Class : B.Sc Part I		
Sr. No.	Topic to be covered	Lectures Available **16L**	Lectures Utilized
01	**UNIT-IV**		
	A) Phenols: Phenol - Synthesis from toluene, cumene and salicylic acid, Kolbe's carboxylation reaction, Fries rearrangement, Reimer-Tiemann reaction, bromination, acidity of phenol.	04	
	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). Styreneoxide - Synthesis from styrene, ring opening reactions with acid and alkali, reduction with LiAlH4.	10	
	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	02	

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, 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	**138**	

	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 KMnO4.	6	
	7) To determine strength of FAS by titration with KMnO4 using internal indicator.	6	
	8) Determination of temporary hardness of water sample.	6	
	9) Estimation of Zn^{++} ions by complexometric titration.	6	
	10) Prepare 0.1NH_2SO_4 solution and find out its exact normality using NaOH as anintermediate 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**	**15L**	

		14	
	A] Volumetric Analysis: **(a) 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, molality, mole fraction and percentage. (Simple numericals expected). **(b) Acid-Base titrations:-** Types of acid base titrations. pH variations during acid base titration. Acid base indicators. Modern theory (Quinoniod theory) of acid base indicators. Choice of suitable indicators for different acid base titrations. **(c) Redox Titrations:-**General principles involved in redox titrations (redox reactions, redox potentials, oxidant, reductant, oxidation number). Brief idea about use of $KMnO_4$, $K_2Cr_2O_7$ as oxidants in acidic medium in redox titrations. Use of I_2 in iodometry and iodimetry. Redox indicators-external and internal indicators. Use of starch as an indicator. Iodometric estimation of Cu (II).	08	
	B] Gravimetric Analysis: Definition. Theoretical principles underlying various steps involved in gravimetric analysis with reference to estimation of barium as barium sulphate. Coprecipitation and post precipitation. (Definition, types and factors affecting).	06	
	Unit Test	01	

Teaching Plan for Practical (Third Semester) **Class : B.Sc Part II**

Sr. No.	Topic to be covered	Lectures Available **180L**	Lectures Utilized
01	Exercise-1 Inorganic	**100**	
1	Estimation of Ba2+ as $BaSO_4$.	15	
2	Estimation of Fe3+ as Fe_2O_3 using china and silica crucible.	15	
3	Estimation of Ni^{2+} as Ni-DMG using sintered glass crucible.	15	
4	Estimation of copper (II) in commercial copper sulphate sample by iodometric titration.	15	
5	To determine the percentage of calcium carbonate in	15	

	precipitated chalk.		
6	To determine volumetrically the amounts of sodium carbonate and sodium hydroxide present together in the given solution	14	
7	Preparation of standard solution of an acid (oxalic acid) & a base (sodium bicarbonate) by weighing and calculation of concentrations in terms of strength, normality, molarity, molality, formality, % by weight, % by volume , ppm, ppb and mole fraction.	14	
8	Preparation of standard solution of hydrochloric acid by dilution and calculation of concentrations interms of strength, normality, molarity, molality, formality, % by weight, % by volume , ppm, ppb and mole fraction.	**20**	
	Exercise II: Physical Chemistry Experiments	6	
9	Determination of molecular weight of solute by Rast's method	7	
10	To determine activation energy of a reaction between K_2S_2O8 and KI.	7	
11	Determination of thermodynamic values ($\Delta S°$, $\Delta H°$, and $\Delta G°$) from the dissociation of a weak acid.	**60**	
12	To determine transition temperature of $MnCl_2.4H2O$.	8	
13	To study critical solution temperature (CST) of phenol water system.	8	
14	To determine the partition coefficient of CH_3COOH between H_2O and CCl4	6	
15	To determine the partition coefficient of Benzoic acid between H_2O and toluene.	6	

Teaching Plan for Theory (Fourth Semester) **Class : B.Sc Part II**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	**UNIT-VI**	***14L***	
	Photochemistry: Photochemical and thermal reactions. Lambert's law (Statement and derivation).Beer's law (Statement and derivation). Reasons for deviations from Beer's law. Laws of photochemistry- Grotthus-Draper law, Stark-	14	

	Einstein law.Quantum yield of photochemical reaction. Reasons for high and low quantum yields. Experimental determination of quantum yield. Photosensitized reactions. Kinetics of photochemical decomposition of HI. Fluorescence and Phosphorescence. Selection rule for electronic transitions. Internal conversion and Intersystem crossing. Explanation of Fluorescence and Phosphorescence on the basis of Joblonski Diagram. Chemiluminescence and Bioluminescence (with examples). Numerical		
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-1 Organic	**120**	
1	To prepare glucose from cane sugar.	20	
2	To determine the iodine value of the given Oil or Fat.	20	
3	Determination of equivalent weight of an organic acid.	20	
4	Determination of equivalent weight of an ester by saponification.	20	
5	Preparation of soap from oil or fat.	20	
6	Determination of properties of soaps (at least two samples) with respect to pH, Foam, interaction with oil, and hard water test.	20	
7	Isolation of casein from milk.	**60**	
8	Isolation of lactose from milk	6	
	Exercise II: Physical Chemistry Experiments.	6	
9	Determination of standard electrode potential of Cu/Cu+2 or Zn/Zn+2 electrodes potentiometrically.	6	
10	To determine dissociation constant of weak acid by conductometry.	6	
11	To determine dissociation constant of weak acid by	6	

	potentiometry.		
12	To determine dissociation constant of dibasic acid by pH-metry.	5	
13	To determine solubility and solubility product of sparingly soluble salts conductometrically.	5	
14	To study strong acid and strong base titration by pH-metry.	5	
15	To determine pH of a soil sample by pH-meter.	5	
16	To verify Beer's Lambart's law using KMnO4/K2Cr2O7.	5	
17	To determine solubility of benzoic acid at different temperature and heat of solution.	5	

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**	**30L**	
	UNIT-III	14L	
	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_6H_5Li and KOH	03	
	Organometallic compounds: Grignard reagents: Methyl magnesium bromide- Synthesis from methyl bromide (only reaction) Synthetic applications: 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.	04	
	Methyl lithium-Synthesis and reaction with water, formaldehyde, acetaldehyde, acetone, ethylene oxide and CO_2.	03	
04	**UNIT-IV**	14L	
	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.	05	

	Antimalarials: Synthesis of chloroquine from 4,7 dichloroquinoline and its uses		
	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.	04	
05	**UNIT TEST**	02	

Teaching Plan for Practical (Fifth Semester) **Class : B.Sc Part III**

Sr. No.	Topic to be covered	Lectures Available **87 L**	Lectures Utilized
01	**EXERCISE I: Inorganic Preparation (06)**	**18**	
	1. Preparation of tetraamminecopper (II)sulphate.	3	
	2. Preparation of hexaamminenickel (II)chloride.	3	
	3. Preparation of potassiumtrioxalate aluminate (III).	3	
	4. Preparation of Prussian blue.	3	
	5. Preparation of chrome alum.	3	
	6. Preparation of sodium thiosulphate and dithionite. (Comment on VB structure, magnetic properties and color of 1, 2 and 3 complexes)	3	
02	**EXERCISE II: Physical Chemistry Experiments (06)**	**69**	
	1. To determine strength of given HCl solution conductometrically.	10	
	2. To determine strength of given CH_3COOH solution conductometrically.	10	
	3. To determine strength of given HCl solution potentiometrically.	10	
	4. To determine strength of HCl and CH_3COOH in a given mixture conductometrically.	10	
	5. To determine redox potential of Fe^{+2}/Fe^{+3} system potentiometrically.	10	
	6. To determine molecular weight by Rast's method.	10	
	7. To determine specific rotation of optically active compound by Polarimeter.	09	

Teaching Plan for Theory (Sixth Semester) **Class : B.Sc Part III**

Sr. No.	Topic to be covered	Lectures Available **30L**	Lectures Utilized
01	**UNIT-II**	**14**	

	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**	
	Unit Test	**01**	
02	**UNIT-III**	**14L**	
	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, In-unsaturated aldehydes and ketones, aromatic compounds	07	
	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_2O, CO_2, C_2H_5OH, CH_3CHO, CH_3COOH and CH_3CONH_2.	07	
03	**UNIT TEST**	01	

Teaching Plan for Practical (Sixth Semester) **Class : B.Sc Part III**

Sr. No.	Topic to be covered	Lectures Available **180L**	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)**	**80**	
	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 $AgNO_3$.	10	
	4. To determine dissociation constant of dibasic acid by pH-metry.	10	
	5. To verify Beer's Lambart's law using $KMnO_4$ /$K_2Cr_2O_7$.	10	
	6. To determine pH of a soil sample by pH-meter.	10	
	7. To determine solubility and solubility product of sparingly soluble salts conductometrically.	10	
	8. To study strong acid and strong base titration by pH-metry. Distribution of Marks for Practical Examination	10	

Teaching Plan for Theory (First Semester) **Class : M.Sc Part I**

Sr. No.	Topic to be covered	Lectures Available 10L	Lectures Utilized
	Unit-IV Boron Cage compounds		
	A) Boron Hydride: IUPAC nomenclature, classification (closo, nido, arachno and klado),structure, bonding and topology of boranes, 4-digit coding (STYX rule and/or Lipsocomb rule) numbers for B2H6, B3H 8, B3H 9, B4H10, B5H 9, B5H11, B6H10, B6H12, B7H11, B8H12, B12H14 etc,polyhedral skeletal electron pair theory (WADE'S rule), Bronsted acidity	08	

	of higher boranes		
	B) Carboranes and Metallocarboranes: Classifications, nomenclatures, types, cage and geometry according to WADE'S rule	02	
1	**UNIT V**	Lectures Available	Lectures Utilized
	Metal carbonyl and nitrosyls	10L	
	A) Metal Carbonyl: Basic ideas (18 electron counting rule, hapticity, ligand contribution to electron counting including CO as a ligand), classification, preparation and uses of metal carbonyls, EAN rule, MO's of CO; nature of bonding in metal carbonyls, modes of ligation (bonding modes) by CO as a ligand (Terminal and bridging) bond order of CO and IR spectroscopy, Carbonyl clusters, types of carbonyl clusters, calculation of number of M-M bonds by WADES rule of metal carbonyl cluster.	07	
	B) Metal nitrosyls: Types, preparation and properties, Structure and use of sodium nitroprusside, structure and nature of metal-nitrosyl bond in metal nitrosyla, EAN rule	03	

Teaching Plan for Theory (Second Semester) **Class : M.Sc Part I**

1	**UNIT V**	Lectures Available	
	Reaction Mechanism of Transition Metal complexes-I	10L	Lectures Utilized
	Types of substitution reactions in transition metal complexes, attacking reagents electrophilic and nucleophilic, Energy profile diagram with terminology includes substrate, transition state or activated complex, Substitution reactions in octahedral complexes (SN1 and SN2), lability and inertness, interpretation of lability and inertness of transition metal complexes on the basis of VBT and CFT .Factors affecting the lability of a complex, Kinetics of substitution reactions in octahedral complexes: acid hydrolysis, factors affecting acid hydrolysis, base hydrolysis, conjugate base mechanism, direct & indirect evidences in favour of conjugate mechanism, anation reaction, reaction without metal ligand bond cleavage.	10	
2	**UNIT VI :**	10L	
	Reaction Mechanism of Transition Metal complexes-II		
	Substitution reaction in square planer complexes: the trans effect, trans-directing series, cis effect, steric effect, solvent effect, effect of leaving group, effect of charge, effect of nucleophile, effect of temperature. Trans effect theories, uses of trans-effect, mechanism of substitution reactions in Pt(II) complexes. Electron transfer reactions. Types of electron transfer reactions, conditions of electron transfer, and mechanism of one-electron transfer reactions, outer sphere and inner sphere mechanisms, two electron transfer reactions.	10	

Satpuda Education Society, jalgaon (Jamod)'s

ARTS & COMMERCE COLLEGE

WARVAT BAKAL DIST- BULDANA

Department of CHEMISTRY

DEPARTMENTAL ACADEMIC CALENDAR 2023-24

Mr. Nilesh S. Shelke

Departmental Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023	Notification No.02/1997	-
03	Teaching Days (Odd Semesters)	15/07/20223	07/11/2023	90
04	Induction Program for FirstYear Students	11/07/2023	14/07/2023	04
05	First Term Vacation	08/11/2023	27/11/2023	20
06	Odd Semesters UniversityExam	08/11/2023	30/12/2023	39
07	Academic Session (Second Session)	23/01/2023	27/05/2023	98
08	Teaching Days (Even Semesters)	05/01/2024	27/04/2024	90
09	Non-Instructional Day	01/01/2024	04/01/2024	04
10	Second Term Vacation	29/04/2024	10/06/2024	43
11	Even Semesters University Exam	29/04/2024	10/06/2024	35
12	Commencement of next Academic session	11/06/2024		

Sr. No.	Public Holiday	Day & Date
01	Moharum	**Saturday,29 July, 2023**
02	Independence Day	Tuesday, 15 August, 2023
03	Parsi New Year	Wednesday, 16 August, 2023
04	Rakshabandhan	Wednesday, 30 August, 2023
05	Shri Ganesh Chaturthi	Tuesday, 19 September, 2023
06	Gouri Poojan	Friday, 22 September, 2023
07	Anant Chaturthi	Thursday, 28 September, 2023
08	Mahatma Gandhi Jayanti	Monday, 02 October, 2023
09	Dasara	Thursday, 24 October, 2023

Time Table for UG (Odd & Even Semester)

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 (Pract) B_2	
TUE						II (Pract) B_2	
WED				III (Th)		III (Pract) C_2	
THUS		III (Th)				III (Pract) C_2	
FRI	I (Pract) A_1	I (Th)				I (Pract) A_2	
		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
SAT		II (Th)				I(Pract) A_1	I(Pract) A_2

Allotted Workload

Subject : CHEMISTRY

Year : 2023-2024

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	01	---	2×3=06	01
3	B.Sc III	02	---	2×3=06	02
4	**Total**	**04**	**---**	**24**	**04**

Total Workload per week (L+T+P) : 04 (L) + 24 (P) = 28 (22.4 Hrs.)

Time Table for PG (M.Sc.)

Allotted Workload

Subject: Analytical Chemistry (M.Sc.) **Year: 2023-2024**

Sr. No.	Class	No. of periods per week			Unit Allotted
		Lectures	Tutorials	Practical	
1	M.Sc. I	02	---	---	02
2	**Total**	**02**	**---**	**--**	**02**

Teaching Periods Available per month during the session 2023-24

Faculty: SCIENCE

Subject: CHEMISTRY

	ODD SEMESTER							EVEN SEMESTER				
Class	Periods	JUL-23	AUG-23	SEP-23	OCT-23	NOV-23	**Total**	JAN-24	FEB-24	MAR-24	APR-24	**Total**
B.Sc I	Theory	02	04	04	04	01	**15**	03	04	03	04	**14**
	Practical	24	48	54	48	12	**174**	42	48	48	48	**186**
B.Sc II	Theory	02	04	05	04	01	**16**	04	04	05	04	**17**
	Practical	12	24	21	24	06	**87**	24	21	21	21	**87**
B.Sc III	Theory	04	08	07	08	02	**29**	07	09	08	06	**30**
	Practical	12	24	21	24	06	**87**	21	27	24	18	**90**

Syllabus:

Teaching Plan for Theory (First Semester)	**Class : B.Sc Part I**		
Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Unit I: Periodicity of Elements	**15L**	
	Periodicity of Elements: 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 (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 properties. Diagonal relationships: Li with Mg, B with Al. Abnormal behavior of nitrogen.	**14L**	
	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
		174L	
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 dibanzal 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	12	
12	Determination of the heat of solution of KNO_3 (5% solution)	12	

Teaching Plan for Theory (Second Semester) **Class : B.Sc Part I**

Sr. No.	Topic to be covered	Lectures Available **14L**	Lectures Utilized
	Unit IV: Crystalline State	**13L**	
	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. 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 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 (Second Semester) **Class : B.Sc Part I**

Sr. No.	Topic to be covered	Lectures Available **186L**	Lectures Utilized
01	Exercise I: Organic Qualitative Analysis 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 .		
	1) Qualitative analysis of compound-1	27	
	2) Qualitative analysis of compound-2	27	
	3) Qualitative analysis of compound-3	27	
	4) Qualitative analysis of compound-4	27	
	5) Qualitative analysis of compound-5	27	
02	Exercise II: Volumetric Analysis		
	6) To determine the strength of oxalic acid by titration with KMnO4.	9	
	7) To determine strength of FAS by titration with KMnO4 using internal indicator.	9	
	8) Determination of temporary hardness of water sample.	6	
	9) Estimation of Zn^{++} ions by complexometric titration.	9	
	10) Prepare 0.1NH_2SO_4 solution and find out its exact normality using NaOH as anintermediate 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.		Lectures Available	Lectures Utilized

	Unit VI: Colligative Properties of Dilute Solutions	**16L**	
	Defination 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. Cotrell's method for determination of elevation of boiling point. 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.	**15L**	
	Unit Test	**01L**	

Teaching Plan for Practical (Third Semester) **Class : B.Sc Part II**

Sr. No.	Topic to be covered	Lectures Available **87L**	Lectures Utilized
01	Exercise-1 Inorganic		
1	Estimation of Ba2+ as $BaSO_4$.	09	
2	Estimation of Fe3+ as Fe_2O_3 using china and silica crucible.	09	
3	Estimation of Ni^{2+} as Ni-DMG using sintered glass crucible.	09	
4	Estimation of copper (II) in commercial copper sulphate sample by iodometric titration.	06	
5	To determine the percentage of calcium carbonate in precipitated chalk.	06	
6	To determine volumetrically the amounts of sodium carbonate and sodium hydroxide present together in the given solution	06	
7	Preparation of standard solution of an acid (oxalic acid) & a base (sodium bicarbonate) by weighing and calculation of concentrations in terms of strength, normality, molarity, molality, formality, % by weight, % by volume , ppm, ppb and mole fraction.	06	
8	Preparation of standard solution of hydrochloric acid by dilution and calculation of concentrations interms of strength, normality, molarity, molality, formality, % by weight, % by	06	

	volume, ppm, ppb and mole fraction.		
	Exercise II: Physical Chemistry Experiments		
9	Determination of molecular weight of solute by Rast's method	06	
10	To determine activation energy of a reaction between K_2S_2O8 and KI.	06	
11	Determination of thermodynamic values ($\Delta S°$, $\Delta H°$, and $\Delta G°$) from the dissociation of a weak acid.	06	
12	To determine transition temperature of $MnCl_2.4H2O$.	03	
13	To study critical solution temperature (CST) of phenol water system.	03	
14	To determine the partition coefficient of CH_3COOH between H_2O and CCl4	03	
15	To determine the partition coefficient of Benzoic acid between H_2O and toluene.	03	

Teaching Plan for Theory (Fourth Semester) **Class : B.Sc Part II**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	UNIT-IV: Aromatic Nitro Compound	***17L***	
	Nitrobenzene: Synthesis from benzene, Reduction of nitrobenzene in acidic, neutral and alkaline medium, Basicity and effect of substituents. Methods of preparation of aniline from nitrobenzene, Reactions: with acetyl and benzoyl chlorides, Br2 (aq) and Br2 (CS2), Carbylamine reaction, alkylation,Hoffmann's exhaustive methylation and its mechanism	08L	
	Preparation benzene diazonium chloride, Synthetic applications- Preparation of benzene,phenol, halobenzene,nitrobenzene,benzonitrile, coupling with phenol and aniline. Classification, Strecker and Gabrial phthalimide synthesis, Zwitterion structure, Isoelectric point, peptide synthesis, Structure determination of polypeptides by end group analysis. [	08L	
	UNIT TEST	01L	

Teaching Plan for Practical l (Fourth Semester) **Class : B.Sc Part II**

Sr. No.	Topic to be covered	Lectures Available **87L**	Lectures Utilized
01	Exercise-1 Organic		

1	To prepare glucose from cane sugar.	06	
2	To determine the iodine value of the given Oil or Fat.	06	
3	Determination of equivalent weight of an organic acid.	06	
4	Determination of equivalent weight of an ester by saponification.	06	
5	Preparation of soap from oil or fat.	06	
6	Determination of properties of soaps (at least two samples) with respect to pH, Foam, interaction withoil, and hard water test.	06	
7	Isolation of casein from milk.	03	
8	Isolation of lactose from milk	06	
	Exercise II: Physical Chemistry Experiments.		
9	Determination of standard electrode potential of Cu/Cu+2 or Zn/Zn+2 electrodes potentiometrically.	06	
10	To determine dissociation constant of weak acid by conductometry.	06	
11	To determine dissociation constant of weak acid by potentiometry.	06	
12	To determine dissociation constant of dibasic acid by pH-metry.	06	
13	To determine solubility and solubility product of sparingly soluble salts conductometrically.	06	
14	To study strong acid and strong base titration by pH-metry.	03	
15	To determine pH of a soil sample by pH-meter.	03	
16	To verify Beer's Lambart's law using KMnO4/K2Cr2O7.	06	
17	To determine solubility of benzoic acid at different temperature and heat of solution.		

Teaching Plan for Theory (Fifth Semester) **Class : B.Sc Part III**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	UNIT-V: Photochemistry	**14L**	

	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.	13L	
	Unit Test	01	
	UNIT-VI: Molecular Spectroscopy	**15L**	
	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), selection rule for vibrational transition. Vibrational energy levels of a simple harmonic oscillator.	07L	
	Zero point energy, position of a spectral line. Determination of force constant of a covalent bond. (v) 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. (vii) Numericals	07L	
05	**UNIT TEST**	01L	

Teaching Plan for Practical (Fifth Semester) **Class : B.Sc Part III**

Sr. No.	Topic to be covered	Lectures Available **87 L**	Lectures Utilized
01	**EXERCISE I: Inorganic Preparation**		
	1. Preparation of tetraamminecopper (II)sulphate.	3	
	2. Preparation of hexaamminenickel (II)chloride.	3	
	3. Preparation of potassiumtrioxalate aluminate (III).	3	

	4. Preparation of Prussian blue.	3	
	5. Preparation of chrome alum.	3	
	6. Preparation of sodium thiosulphate and dithionite. (Comment on VB structure, magnetic properties and color of 1, 2 and 3 complexes)	3	
02	**EXERCISE II: Physical Chemistry Experiments**		
	1. To determine strength of given HCl solution conductometrically.	10	
	2. To determine strength of given CH_3COOH solution conductometrically.	10	
	3. To determine strength of given HCl solution potentiometrically.	10	
	4. To determine strength of HCl and CH_3COOH in a given mixture conductometrically.	10	
	5. To determine redox potential of Fe^{+2}/Fe^{+3} system potentiometrically.	10	
	6. To determine molecular weight by Rast's method.	10	
	7. To determine specific rotation of optically active compound by Polarimeter.	09	

Teaching Plan for Theory (Sixth Semester) **Class : B.Sc Part III**

Sr. No.	Topic to be covered	Lectures Available **30L**	Lectures Utilized
	UNIT-I: Molecular Aspect of Metal Complex & Analytical chemistry	**15L**	
	Kinetic Aspects of Metal Complexes : Thermodynamic and kinetic stability of the complexes, factors affecting stability of complexes. Brief idea about substitution reactions, SN1 -dissociative and SN2 -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.	**07L**	
	Spectrophotometry and Colorimetry :- Concept of ëmax, 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).	**04L**	
	Definition and classification of chromatographic techniques. Principle of differential migration. Principle and technique of paper chromatography - ascending, descending and circular , Rf value and factors affecting Rf value	**03L**	
	Unit Test	**01L**	

	UNIT-V: Elementary Quantum Mechanics	**15L**	
	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). (iv) Application of Schrodinger wave equation to a particle in one- dimensional box and its extension to a three-dimensional box. Concept of atomic orbital. (v) Numericals.	14L	
	UNIT TEST	01	

Teaching Plan for Practical (Sixth Semester) **Class : B.Sc Part III**

Sr. No.	Topic to be covered	Lectures Available 90L	Lectures Utilized
01	**EXERCISE I: Organic Chemistry Preparation**		
	1. Estimation of formaldehyde.	06	
	2. Estimation of glycine.	06	
	3. Estimation of ascorbic acid (vitamine C).	06	
	4. Estimation of phenol by bromination method.	06	
	5. Estimation of aniline by bromination method.	06	
	6. Estimation of urea by hypobromite method.	03	
	7. Estimation of unsaturation by bromination method.	03	
	8. Determination of iodine value of oil.	03	
	9. Determination of equivalent weight of an ester by saponification.	03	
	10. Separation of a mixture of methyl orange and methylene blue by thin layer chromatography (using benzene).	03	
	11. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using benzene: petroleum ether = 3:1).	03	
	12. Separation of a mixture of dyes by thin layer chromatography (using cyclohexane:ethyl acetate = 8.5:1.5).	03	
	13. Separation of a mixture of 2,4-dinitro phenyls of acetaldehyde and benzaldehyde by thin layer chromatography (using toluene: petroleum ether).	03	

02	**EXERCISE II: Physical Chemistry Experiments**		
	1. To determine dissociation constant of weak acid by conductometry.	06	
	2. To determine dissociation constant of weak acid by potentiometry.	06	
	3. To study potentiometric titration of KCl and $AgNO_3$.	06	
	4. To determine dissociation constant of dibasic acid by pH-metry.	06	
	5. To verify Beer's Lambart's law using $KMnO_4$ /$K_2Cr_2O_7$.	03	
	6. To determine pH of a soil sample by pH-meter.	03	
	7. To determine solubility and solubility product of sparingly soluble salts conductometrically.	03	
	8. To study strong acid and strong base titration by pH-metry. Distribution of Marks for Practical Examination	03	

Teaching Plan for Theory (First Semester) **Class : M.Sc Part I**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
	Analytical Chemistry (CHE-104)	30L	
1	Unit-I: Spectrophotometry	15L	
	Principles of Spectrophotometry and Colorimetry, Beer's Law, Verification, and Deviations, Instrumentation: Single and Double Beam Spectrophotometers	04L	
	Sensitivity and Analytical Significance of Molar Extinction Coefficient and λmax, Quantitative Estimation: Comparison Method, Calibration Curve Method, and Standard Addition Method, Ringbom Plot and Sandell's Sensitivity	05L	
	Photometric Titrations and pK Determination of Indicators Simultaneous Determination in Binary Systems, Complex Composition: Job's and Mole Ratio Methods, Derivative Spectrophotometry, Numerical Problems	05L	
	Unit Test	01L	
	Unit-II: Fluorimetry and Phosphorimetry	15L	
	Origin of Fluorescence and Phosphorescence Spectra, Jablonski Diagram and Electronic Transitions, Activation and Deactivation Processes, Fluorescence Spectrum Characteristics Fluorescent and Phosphorescent Species, Photoluminescence and Molecular Structure, Factors Influencing Fluorescence and Phosphorescence	07L	

	Fluorescence Quenching, Mechanisms of Quenching, Quantum Yield Calculation.		
	Instrumentation for Fluorescence Measurement, Light Sources and Wavelength Selectors, Sampling Techniques, Detectors and Readout Devices Instrumentation for Phosphorescence Measurement 29 Sampling Procedures, Recording Techniques Applications of Fluorescence and Phosphorescence, Analytical Applications, Biochemical and Biomedical Applications, Environmental Monitoring, Material Science and Nanotechnology	07L	
	Unit Test	01L	

ARTS & COMMERCE COLLEGE, WARVAT BAKAL
DIST - BULDANA

ACADEMIC ACTION PLAN 2023-2024

Department of Chemistry

01	Name of the Department		Department of Chemistry
02	Name of faculty members with qualification		N.D.Dahake (M.Sc., SET, PhD.-Reg.), Dr. V. D. Ingale (M.Sc., PhD) K.P. Sabale (M.Sc., NET, PhD. - Reg.) N.S. Shelke (M.Sc., SET, PhD.-Reg.)
03	Refresher Course/ Orientation Program/ Short Term Course/ Any Others		04
04	Research Publication	i) Book Publication	02
		ii) Chapter in Book	04
		iii) Research Articles in UGC CARE listed Journal	04
		iv) Research Paper in conference/ seminar (Presentation)	04
		v) Research Paper in conference/ seminar proceeding (Publication)	04
		vi) Conference/ Seminar/ Workshop (To be attended)	04
		vii) Resource Person/ Chairperson	04
		viii) Ph. D registered/Ongoing/Awarded	NIL
		xv) Ph. D guide and no. of students registered /to be	NIL

		registered under	
		xvi) Minor/ Major Project	01
05	Conference/ Seminar/ Workshop (To be organized)		02
06	Collaboration		02
07	Consultancy		02
08	Extension Activities and Social Responsibility		02
09	Academic Activities to be organized (Guest lecture, class room seminar, contest, education tour, celebration of birth and death anniversary of national leaders, no. of visiting & guest faculties etc.)		01 Each
10	Innovative and Best Practices Best Practice should have: - • Name of the title of the practice. • Introduction • Objectives • Theme/ context • The practice • Evidence of success • Problems encountered and resources required		1.ICT tools in chemistry workshop 2.Industrial Visit
11	Any other if you wish to add		NIL
12	Curriculum Enrichment (Draft the letter to the concerned BoS of University)		NIL
13	Student Enrolment & Profile		

ARTS & COMMERCE COLLEGE

Warwat Bakal Dist.- Buldana

Department of Chemistry

Perspective Plan for Curriculum Implementation 2023-2024

	B.Sc.- Part I SEM I		
Sr. No.	**Unit**	**Available Lectures**	**Duration**
1	Periodicity of elements	14 Lectures	15/07/2023 to 07/11/2023
2	Acids and bases	14 Lectures	15/07/2023 to 07/11/2023
3	Basics of organic chemistry	14 Lectures	15/07/2023 to 07/11/2023
4	Aromatic hydrocarbons	14 Lectures	15/07/2023 to 07/11/2023
5	Gaseous state	14 Lectures	15/07/2023 to 07/11/2023
6	Liquid state	14 Lectures	15/07/2023 to 07/11/2023
	B.Sc.- Part II SEM III		
Sr. No.	**Unit**	**Available Lectures**	**Duration**
1	Ionic bonding	14 Lectures	15/07/2023 to 07/11/2023
2	VSEPR theory, MOT	14 Lectures	15/07/2023 to 07/11/2023
3	Haloalkanes and Haloarenes	14 Lectures	15/07/2023 to 07/11/2023
4	Phenols	14 Lectures	15/07/2023 to 07/11/2023
5	Crystalline state	14 Lectures	15/07/2023 to 07/11/2023
6	Chemical kinetics	14 Lectures	
	B.Sc.- Part III SEM V		
Sr. No.	**Unit**	**Available Lectures**	**Duration**
1	Coordination compounds -1	14 Lectures	15/07/2023 to 07/11/2023
2	Coordination compounds-2	14 Lectures	15/07/2023 to 07/11/2023
3	Heterocyclic compounds	14 Lectures	15/07/2023 to 07/11/2023
4	Dyes drugs and pesticides	14 Lectures	15/07/2023 to 07/11/2023
5	Photochemistry	14 Lectures	15/07/2023 to 07/11/2023
6	Molecular spectroscopy	14 Lectures	
	B.Sc.-Part I SEM II		
Sr. No.	**Unit**	**Available Lectures**	**Duration**
1	Polarization	14 Lectures	05/01/2024 to 27/04/2024
2	P- block elements & nonaqueous solvents	14 Lectures	05/01/2024 to 27/04/2024
3	Alkyl halides	14 Lectures	05/01/2024 to 27/04/2024
4	Phenols, ethers and epoxides	14 Lectures	05/01/2024 to 27/04/2024
5	Physical properties & molecular structure	14 Lectures	05/01/2024 to 27/04/2024
6	Chemical kinetics	14 Lectures	05/01/2024 to 27/04/2024
	B.Sc.- Part II SEM IV		
Sr. No.	**Unit**	**Available Lectures**	**Duration**
1	Chemistry of transition series elements	14 Lectures	05/01/2024 to 27/04/2024
2	Inner transition series elements	14 Lectures	05/01/2024 to 27/04/2024
3	Polynuclear hydrocarbons	14 Lectures	05/01/2024 to 27/04/2024
4	Aromatic nitro compounds	14 Lectures	05/01/2024 to 27/04/2024
5	Colligative properties of dilute solutions	14 Lectures	05/01/2024 to 27/04/2024
6	Crystalline state	14 Lectures	05/01/2024 to 27/04/2024
	B.Sc.-Part I SEM VI		
Sr. No.	**Unit**	**Available Lectures**	**Duration**
1	Kinetic aspects of metal complexes	14 Lectures	05/01/2024 to 27/04/2024
2	Organometallic chemistry	14 Lectures	05/01/2024 to 27/04/2024

3	Electronic spectroscopy & IR Spectroscopy	14 Lectures	05/01/2024 to 27/04/2024
4	NMR and mass spectroscopy	14 Lectures	05/01/2024 to 27/04/2024
5	Elementary quantum mechanics	14 Lectures	05/01/2024 to 27/04/2024
6	Electrochemistry and nuclear chemistry	14 Lectures	05/01/2024 to 27/04/2024

Perspective Plan for Co-curricular Activities 2023-2024

Sr. No.	Particulars	Date	Name of Teacher
01	Chemistry Study Circle Inauguration		Prof. N.D. Dahake
02	Industrial Visit UG		Prof. K.P. Sabale
03	National Science Day		Common to All Department
04	Chemical Plant Visit PG		Prof. N.M. Wankhade Prof. Manisha Bakal
06	Seminar Competition UG and PG		Prof. N.M. Wankhade Prof. Manisha Bakal Prof. Dr. V.D. Ingale
07	Workshop on ICT Tools in Chemistry		Prof. N.S. Shelke Prof. K.P. Sabale Prof. N.D. Dahake
08	AUCTA Workshop		Prof. N.S. Shelke Prof. N.D. Dahake Prof. K.P. Sabale Prof. Dr. V.D. Inagale Prof. N.M. Wankhade Prof. Manisha Bakal

ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Department of Chemistry

ACADEMIC CALENDER 2023-2024

1. Session- I: From Monday, 3rd July, 2023 to Tuesday, 7th November, 2023
2, Diwali Vacation: Wednesday, 8th November, 2023 to Monday, 27th November, 2023
3. Session-II: Tuesday, 28th November, 2023 to Saturday, 27th April, 2024
4. Summer Vacation: Monday, 29th April, 2024 to Monday, 10th June, 2024

Days available during Academic Year 2023-2024

Sr. No.	Activity	Commencement	Cessation	Total Days
1	First Session	Monday, 3rd July, 2023	Tuesday, 7th November, 2023	**104**
2	Teaching Days (First Session)	Saturday, 15th July, 2023	Tuesday, 7th November, 2023	**90**
3.	First Term Vacation	Wednesday, 8th November, 2023	Monday, 27th November, 2023	**20**
4.	Non-instructional days	Wednesday, 8th November, 2023	Saturday, 30th December, 2023	
5.	Second Session	Tuesday, 28th November, 2023	Saturday, 27th April, 2024	**121**
6.	Teaching Days (Second Session)	Friday, 5th January, 2024	Saturday, 27th April, 2024	**90**
7.	Preparation for Summer Examination/ Non Instructional Days	Monday, 1st January, 2024	Thursday, 4th January, 2024	**04**
8.	Second Term Vacation	Monday, 29th April, 2024	Monday, 10th June, 2024	**43**

ARTS & COMMERCE COLLEGE, WARVAT BAKAL

Department of Chemistry

Vide the SGB Amravati University Gazette, following Public Holidays are declared for 2023-2024

अ. क्र. (Sr.No.)	सण/सुट्या (Festivals/Holidays)	दिवस व दिनांक (Day & Date)
१.	मोहरम Moharum	शनिवार, दि. २९ जुलै, २०२३ Saturday, 29th July, 2023
२.	स्वातंत्र्य दिन Independence Day	मंगळवार, दि. १५ ऑगस्ट, २०२३ Tuesday, 15th August, 2023
३.	पारशी नूतनवर्ष (शहेनशाही) Parsi New Year (Shahenshahi)	बुधवार, दि. १६ ऑगस्ट, २०२३ Wednesday, 16th August, 2023
४.	रक्षाबंधन Rakshabandhan	बुधवार, दि. ३० ऑगस्ट, २०२३ Wednesday, 30th August, 2023
५.	श्रीगणेश चतुर्थी ShriGanesh Chaturthi	मंगळवार, दि. १९ सप्टेंबर, २०२३ Tuesday, 19th September, 2023
६.	गौरीपूजन Gouri Poojan	शुक्रवार, दि. २२ सप्टेंबर, २०२३ Friday, 22nd September, 2023
७.	अनंत चतुर्दशी/ईद-ए-मिलाद Anant Chaturdashi/Id-E-Milad	गुरूवार, दि. २८ सप्टेंबर, २०२३ Thursday, 28th September, 2023
८.	महात्मा गांधी जयंती Mahatma Gandhi Jayanti	सोमवार, दि. २ ऑक्टोबर, २०२३ Monday, 2nd October, 2023
९.	दसरा Dasara	मंगळवार, दि. २४ ऑक्टोबर, २०२३ Tuesday, 24th October, 2023
१०.	ख्रिसमस Christmas	सोमवार, दि. २५ डिसेंबर, २०२३ Monday, 25th December, 2023
११.	प्रजासत्ताक दिन Republic Day	शुक्रवार, दि. २६ जानेवारी, २०२४ Friday, 26th January, 2024
१२.	छत्रपती शिवाजी महाराज जयंती Chatrapati Shivaji Maharaj Jayanti	सोमवार, दि. १९ फेब्रुवारी, २०२४ Monday, 19th February, 2024
१३.	महाशिवरात्री Mahashivratri	शुक्रवार, दि. ८ मार्च, २०२४ Friday, 8th March, 2024
१४.	होळी (दुसरा दिवस) Holi (Second Day)	सोमवार, दि. २५ मार्च, २०२४ Monday, 25th March, 2024
१५.	गुड फ्रायडे Good Friday	शुक्रवार, दि. २९ मार्च, २०२४ Friday, 29th March, 2024
१६.	गुढीपाडवा Gudhi Padwa	मंगळवार , दि. ९ एप्रिल, २०२४ Tuesday, 9th April, 2024
१७.	रमझान ईद (ईद-उल-फितर) Ramzan Id (Id-Ul-Fitar)	गुरूवार , दि. ११ एप्रिल, २०२४ Thursday, 11th April, 2024
१८.	श्रीराम नवमी Shriram Navmi	बुधवार , दि. १७ एप्रिल, २०२४ Wednesday, 17th April, 2024

PROGRAMS SCHEDULE (2023-2024)

Sr. No.	Particulars	Date	Name of Teacher
01	Chemistry Study Circle Inauguration		Prof. N.D. Dahake
02	Industrial Visit UG		Prof. K.P. Sabale
03	National Science Day		Common to All Department
04	Chemical Plant Visit PG		Prof. N.M. Wankhade Prof. Manisha Bakal
06	Seminar Competition UG and PG		Prof. N.M. Wankhade Prof. Manisha Bakal Prof. Dr. V.D. Ingale
07	Workshop on ICT Tools in Chemistry		Prof. N.S. Shelke Prof. K.P. Sabale
08	AUCTA Workshop		Prof. N.D. Dahake Prof. N.S. Shelke Prof. K.P. Sabale Prof. Dr. V.D. Inagale Prof. N.M. Wankhade Prof. Manisha Bakal

Mr. N. D. Dahake
HOD

Time Table

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						T	P	P	P

Allotted Workload

Subject: Chemistry Year: 2023-2024

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

Total Workload per week (L+P): 07 (L) +24 (P) = 31 (L) (24.8 hrs.)

Available Teaching days in 2023-2024

Odd SEM teaching Days (90): 15/07/2023 to 07/11/2023 = 90
Even SEM Teaching Days (90): 05/01/2024 to 27/04/2024 = **90**

	JUL-23	AUG-23	SEP-23	OCT-23	NOV-23	JAN-24	FEB-24	MAR-24	APR-24
MON	03	04	04	04	01	04	03	03	04
TUE	02	04	04	04	01	04	04	04	04
WED	02	03	04	04	01	04	04	04	03
THUS	02	05	03	04	01	03	05	04	03
FRI	02	04	04	04	01	03	04	03	04
SAT	02	04	05	04	01	04	04	05	03
Total	13	24	23	24	06	22	24	25	21
	94					**82**			

Teaching Periods Available per month during the session 2023-2024

Faculty: Science **Subject: Chemistry**

Semester		Odd semester						Even semester				
Months		July	Aug	Sep	Oct	Nov	Total	Jan	Feb	Mar	Apr	Total
B.Sc.-1	Theory	05	08	08	08	02	31	08	07	07	08	30
	Practical	24	48	54	48	12	186	30	48	48	42	168
B.Sc.-2	Theory	04	08	07	08	02	29	07	09	08	06	30
	Practical	30	48	48	48	12	186	48	42	42	48	180
B.Sc.-3	Theory	02	04	05	04	01	16	04	04	05	03	16
	Practical	--	--	--	--	--	--	--	--	--	--	--
M.Sc. - 1	Theory	02	05	03	04	01	15	03	05	04	03	15
	Practical	--	--	--	--	--	--	--	--	--	--	--
M.Sc.-2	Theory	04	08	09	08	02	31	07	08	08	07	30
	Practical	--	--	--	--	--	--	--	--	--	--	--

1) Mr. Nityanand Devidas Dahake

Teaching Plan for Theory (First Semester) **Class: BSc Part-I**			
Sr. No.	**Topic to be covered**	**Lectures Available**	**Remark**
Unit -2 Acids and Bases, Non-aqueous Solvents			
	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.	30	
Unit – 3 Basics of Organic chemistry			
	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. 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. C) Structural isomers: Definition, classification, and examples.	30	

Teaching Plan for Practical (First Semester) **Class: BSc Part-I**			
Sr. No.	**Topic to be covered**	**Lectures Available**	**Remark**
	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 (Diazotization) 6. Base catalyzed Aldol Condensation (Synthesis of dibenzyl propanone). 7. Preparation of p-nitro acetanilide from acetanilide. 8. Determination of surface tension of a given liquid using Stalagmometer 9. Determination of the parachor value of -CH2- 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 KNO3 (5% solution)	186	
Teaching Plan for Theory (Third Semester) **Class: BSc Part-2**			
Sr. No.	**Topic to be covered**	**Lectures Available**	**Remark**
Unit-4 Stereochemistry			
	A) Optical isomerism: Isomerism, Types of isomerism, Stereoisomerism, Optical isomerism, asymmetric carbon atom, Element of symmetry, chirality (up to two carbon atoms), enantiomers, diastereoisomers, meso compounds, configuration, relative and absolute configurations, DL and RS nomenclature (for up to 2 chiral carbon atoms), racemization and resolution (by chemical method).	29	

	optical isomerism in allenes and biphenyls. B) Geometrical isomerism: Cis-trans & E-Z nomenclature (for up to two C=C systems) with examples and applications. C) Conformational isomerism: Conformational isomers, Newman & Sawhorse projection formulae, conformations of ethane, n-butane and cyclohexane, their energy level diagrams. conformation of cyclic systems mono-substituted cyclohexanes.		
Unit – 6 Thermodynamics and Phase equilibrium			
	A) Thermodynamics: First law of Thermodynamics and its limitations, Need of Second law. Carnot's heat engine, derivation of expression for the work done and efficiency of Carnot's engine. Statements of Second law of thermodynamics. Concept of Entropy, Physical significance of Entropy, Derivation of expression for the Entropy change for an ideal gas in terms of pressure, temperature and volume. Entropy changes for an ideal gas for isothermal, isoberic and isochoric processes, Entropy of fusion, sublimation, vapourization, transition and its calculations. Entropy changes for reversible and irreversible processes. Entropy changes as a criteria for spontaneity. Numerical. (B) Phase Equilibrium: Raoult's Law and it's limitations. Ideal and non-ideal solution. Classification of binary solutions of completely miscible liquids (I, II and III) on the basis of Raoult's Law. Phase diagrams of Phenol-Water, Triethylamine-Water and Nicotine-Water system. Nernst distribution law and its applications to association and dissociation of solute in one of the immiscible solvents. Process of extraction. Derivation of the formula for the amounts of the solute left unextracted after nth extraction. Numerical	29	
Teaching Plan for Practical (Third Semester) **Class: BSc Part-2**			
	Exercise-1 Inorganic 1) Estimation of Ba2+ as BaSO4. 2) Estimation of Fe3+ as Fe2O3 using china and silica crucible. 3) Estimation of Ni2+ as Ni-DMG using sintered glass crucible. 4) Estimation of copper (II) in commercial copper	186	

	sulphate sample by iodometric titration. 5) To determine the percentage of calcium carbonate in precipitated chalk. 6) To determine volumetrically the amounts of sodium carbonate and sodium hydroxide present together in the given solution 7) Preparation of standard solution of an acid (oxalic acid) & a base (sodium bicarbonate) by weighing and calculation of concentrations in terms of strength, normality, molarity, molality, formality, % by weight, % by volume, ppm, ppb and mole fraction. 8) Preparation of standard solution of hydrochloric acid by dilution and calculation of concentrations in terms of strength, normality, molarity, molality, formality, % by weight, % by volume, ppm, ppb and mole fraction. Exercise II: Physical Chemistry Experiments 9) Determination of molecular weight of solute by Rast's method 10) To determine activation energy of a reaction between K2S2O8 and KI. 11) Determination of thermodynamic values (ΔS°, ΔH°, and ΔG°) from the dissociation of a weak acid. 12) To determine transition temperature of MnCl2.4H2O. 13) To study critical solution temperature (CST) of phenol water system. 14) To determine the partition coefficient of CH3COOH between H2O and CCl4 15) To determine the partition coefficient of Benzoic acid between H2O and toluene.		

Teaching Plan for Theory (Fifth Semester)

Class: BSc Part-3

Sr. No.	Topic to be covered	Lectures Available	Remark
Unit-1 Cordination Compounds			
	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	16	

	coordination and its experimental verification on the basis of conductance data and formation of AgCl precipitate in case of cobalt ammines. 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 Ma4b2, Ma3b3, Ma2b2c2, Ma4bc, M(AA)2b2. Square planar complexes of the type Ma2b2 and Ma2bc. Optical isomerism in octahedral complexes of type Ma2b2c2, Mabcdef, M(AA)3, M(AA)2b2 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.		

Teaching Plan for Theory (Second Semester)

Class: BSc Part-1

Sr. No.	Topic to be covered	Lectures Available	Remark
Unit 2			
	A) VSEPR Theory: Various rules under VSEPR theory to explain molecular geometry (following examples may be taken to explain various rules- SnCl2, CH4, NH3, H2O, SF4, ClF3, XeF4, XeO3, PCl3. Limitations of VSEPR theoryB) 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 He2, H2, N2 and O2. Stability sequence of species of O2 i.e. O2, O2+, O22+, O2- and O22-. Paramagnetic nature of O2. MO structure of heteronuclear diatomic molecules viz. NO, HF and CO (Coulson's structure). Explanation of important properties of CO viz. – triple bond, almost	30	

	nonpolar nature, electron donor and acceptor behavior. Comparison of VB and MO theories.		
Unit 3			
	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 PCl5, CH3COOH and acetone, dehydrations using conc. H2SO4, ZnCl2 and phosphoric acid. Pinacol - Synthesis from acetone and α- diketone, Pinacol-Pinacolone rearrangement (mechanism). Glycerol - Synthesis from propylene and 3-chloropropylene, reactions with HNO3, HCl and Na, dehydration using KHSO4	30	

Teaching Plan for Practical (Second Semester)

Class: BSc Part-1

Sr. No.	Topic to be covered	Lectures Available	Remark
	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	168	

	vi) 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 6. To determine the strength of oxalic acid by titration with KMnO4. To determine strength of FAS by titration with KMnO4 using internal indicator. 8 Determination of temporary hardness of water sample. 9 To determine the strength of oxalic acid by titration with KMnO4. 10 To determine strength of FAS by titration with KMnO4 using internal indicator. 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 (Fourth Semester)

Class: BSc Part-2

Sr. No.	Topic to be covered	Lectures Available	Remark
Unit 1			
	A) Noble Gases-Inertness of noble gases. Compounds of noble gases-only structure and bonding in XeF2, XeF4, XeF6, XeO3, and XeO.B) Polarisation-Definition, polarising power, polarizability, effect of polarization on nature of bond. Fajan's rules of polarisation and its applications. **B)** General Principles of Metallurgy: Definition of metallurgy, steps in metallurgy. Ore dressing by gravity separation, froth floatation and electromagnetic separation. Calcination, roasting, smelting and refining of metals. Meaning of terms hydrometallurgy and pyrometallurgy.	30	
Unit-3			
	A) Soaps and DetergentsSoaps: -Introduction, Manufacture of soaps by i)Kettles process, ii) Hydrolyser process, Cleansing action of	30	

	soap.Synthetic Detergents: -Introduction, Synthetic detergent classification, i)Anionic detergent, ii) Cationic detergents, iii) Non-ionic detergents.Synthetic detergent versus soaps, Soft versus Hard detergents.B) Reactive methylene compounds: Malonic Ester: Synthesis from acetic acid, Synthetic applicationsSynthesis 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. 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).		

Teaching Plan for Practical (Fourth Semester)

Class: BSc Part-2

Sr. No.	Topic to be covered	Lectures Available	Remark
	Exercise-1 organic 1 To prepare glucose from cane sugar. 2 To determine the iodine value of the given Oil or Fat. 3 Determination of equivalent weight of an organic acid. 4 Determination of equivalent weight of an ester by saponification. 5 Preparation of soap from oil or fat. 6 Determination of properties of soaps (at least two samples) with respect to pH, Foam, interaction with oil, and hard water test. 7 Isolation of casein from milk. 8 Isolation of lactose from milk. **Exercise II: Physical Chemistry Experiments** 9 Determination of standard electrode potential of Cu/Cu+2 or Zn/Zn+2 electrodes potentiometrically. 10 To determine dissociation constant of weak acid by conductometry. 11 To determine dissociation constant of weak acid by potentiometry. 12 To determine dissociation constant of dibasic acid by pH-metry.	180	

	13 To determine solubility and solubility product of sparingly soluble salts conductometrically. 14 To study strong acid and strong base titration by pH-metry. 15 To determine pH of a soil sample by pH-meter. 16 To verify Beer's Lambart's law using KMnO4/K2Cr2O7. 17 To determine solubility of benzoic acid at different temperature and heat of solution.		

Teaching Plan for Theory (Sixth Semester)

Class: BSc Part-3

Sr. No.	Topic to be covered	Lectures Available	Remark
Unit 6			
	A] Electrochemistry: (i) Types of electrodes - Standard hydrogen electrode, Calomel electrode, Quinhydrone electrode and Glass electrode. Principle of Potentiometric titration. Study of acid-base, redox and precipitation titration. (ii) 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. (iii) Concentration cells - Types of concentration cells, concentration cell without transfer and determination of its emf. (iv) Numericals **B] Nuclear Chemistry:** (i) Shell model of a nucleus - Assumptions, evidences for existence of magic numbers, advantages and limitations. (ii) 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. (iii) Nuclear force and its explanation on the basis of Meson theory. (iv) Characteristics of nuclear reaction, difference between nuclear and chemical reactions. Calculation of Q value of a nuclear reaction. (v) Characteristics of nuclear fission reaction, fission yield. Fission reaction as an alternative source of energy. (vi) 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	16	

	source of energy. (vii) Applications of radio isotopes in industry, agriculture, medicines and bio-sciences with two examples each		
Teaching Plan for Theory (First Semester) **Class: MSc Part-1**			
Sr. No.	**Topic to be covered**	**Lectures Available**	**Remark**
Unit – V Basic Stereochemistry			
	Isomerism, Concept of chirality and molecular dissymmetry Enantiomeric relationships, diastereomeric relationships, Cahn-Ingold-Prelog System to describe configuration at chiral centers R and S, E and Z nomenclature, molecules with more than one chiral center, meso compounds, threo and erythro isomers, Homotopic, Enantiotopic, and Distereotopic Groups (Faces), method of resolution, optical purity, topicity of ligands, prochirality, Inter conversion of Newman, Sawhorse and Fischer projection.	15	
Teaching Plan for Theory (Second Semester) **Class: MSc Part-1**			
Sr. No.	**Topic to be covered**	**Lectures Available**	**Remark**
Unit-1 Molecular Rearrangement			
	Electron deficient carbon: Pinacol-Pinacolone, Semi-Pinacol Wagner- Meerwein, Tiffenev – Demjnov ring expansion, and Arndt-Eistert synthesis, Dienone-phenol rearrangement, Wolf rearrangement. **Electron deficient nitrogen**: Hofmann, Lossen, Curtius, Schmidt, Neber, Stieglitz and Beckmann rearrangements. **Base catalysed rearrangements**: Benzil-Benzilic acid, Favorskii, Sommlett-Hauser and Pummerer rearrangement, **Fragmentation reactions:** Electron push and pull requirement, Beckmann, Eschenmoser, Alicyclic-Grobb fragmentation.	**15**	

Teaching Plan for Theory (Third Semester) **Class: MSc Part-2**			
Sr. No.	**Topic to be covered**	**Lectures Available**	**Remark**
Unit-3			
	A) Ultraviolet and visible spectroscopy: Laws of photochemistry-Basic law of absorption-Beer-Lambert law, electronic absorption transitions-correlation of electronic structure with molecular structure-simple chromophore groups - effects of conjugation- effect of solvent on electronic transition, **B) Woodward -Fisher rules** for α, β unsaturated carbonyl compounds, dienes & aromatic systems with extended conjugation – Ultraviolet spectra of aromatic and heterocyclic compounds, Fieser-Kuhn rule, Steric effect in biphenyls. Instrumentation, Applications to organic and inorganic compounds	31	
Teaching Plan for Theory (Fourth Semester) **Class: MSc Part-2**			
Sr. No.	**Topic to be covered**	**Lectures Available**	**Remark**
Unit-3			
	A) Nuclear Magnetic Resonance Spectroscopy: **Recapitulation of basic principle and general terms**; equivalence and magnetic equivalence (Homotopic proton, Enantiotopic proton, Diastereotopic proton), shielding and deshielding, chemical shift, factors affecting chemical shifts, spin-spin coupling (n+1) rule, Factors affecting coupling constant; Karplus curve variation of coupling constant with dihedral angle., first order (interaction between two, three, four, and five nuclei) and non-first order spectra - classification of spin system like AX,AX_2,ABX,AMX,ABC,A_2B_2 etc. Hetero nuclear coupling in ^1HNMR – deuterium exchange. Simplification of complex spectra; high field spectra, nuclear magnetic double resonance; shift reagent; solvent effect, nuclear over Hauser effect [NOE]. Fourier transforms technique. Dynamic NMR to study	30	

	hindered rotation (DMF, DMA, biphenyls, annulenes); cyclohexane ring inversion. **B) Carbon-13 NMR spectroscopy:** - C-13 Nucleus, Chemical Shift and factor affecting $_{13}C$ NMR, Types of $_{13}C$ NMR Spectra: proton coupled (spin-spin splitting), Proton decoupled, Off resonance, DEPT, APT and NOE, Applications in organic chemistry.		

SATPUDA EDUCATION SOCIETY, JALGAON (JAMOD)'S

ARTS & COMMERCE COLLEGE

WARWAT- BAKAL DIST- BULDANA

DEPARTMENT OF CHEMISTRY

ACADEMIC CALENDAR

2023-24

Academic Calendar (2023-24)

Sr. No.	Activity	Commencement	Cessation	Total Days
01	**First Session**	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023	10/07/2023	06
03	Induction Program for First Year Students	11/07/2023	14/07/2023	04
04	**Teaching Days (Odd Semesters)**	15/07/2023	07/11/2023	**90**
05	First Term Vacation	08/11/2023	27/11/2023	20
06	Odd Semesters University Exam	08/11/2023	30/12/2023	39
08	**Second Session**	28/11/2023	27/04/2024	121
07	Non-instructional Day (For N.S.S., Gathering etc.)	01/01/2024	04/01/2023	04
09	**Teaching Days (Even Semesters)**	05/01/2024	27/04/2024	**90**
10	Even Semesters University Exam	29/04/2024	10/06/2024	35
11	Second Term Vacation	29/04/2024	10/06/2024	43
12	Commencement of next Academic session **2024-25**	**11/06/2024**		

Sr. No.	Public Holiday	Day & Date
01	Moharram	Saturday, 29th July, 2023
02	Independence Day	Tuesday, 15th August, 2023
03	Parsi New Year (Shahenshahi)	Wednesday, 16th August 2023
04	Raksha Bandhan	Wednesday, 30th August, 2023
05	Shri Ganesh Chaturthi	Tuesday, 19th September, 2023
06	Gouri Poojan	Friday, 22nd September, 2023
07	Anant Chaturdashi/Id-E-Milad	Thursday, 28th September, 2023
08	Mahatma Gandhi Jayanti	Monday, 2nd October, 2023
09	Dasara	Tuesday, 24th October, 2023
10	Christmas	Monday, 25th December, 2023
11	Republic Day	Friday, 26th January, 2024
12	Chatrapati Shivaji Maharaj Jayanti	Monday, 19th February, 2024
13	Mahashivratri	Friday, 8th March, 2024
14	Holi (Second Day)	Monday, 25th March, 2024
15	Good Friday	Friday, 29th March, 2024
16	Gudhi Padwa	Tuesday, 09th April, 2024
17	Ramzan Id (Id-Ul-Fitar)	Thursday, 11th April, 2024
18	Shriram Navmi	Wednesday, 17th April. 2024

Time Table: Odd Semester/ Even Semeser

Name: Mr. K P Sabale

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(T)		II(B_2)
UG	TUE	II(B_1)			II(T)		II(B_2)
UG	WED	III(C_1)		I(T)			
PG	WED					MSC-I	
UG	THUS	III(C_1)			I(T)		
UG	FRI	I(A_1)	III(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					BSc-I(P)(A_1)	--
PG	SAT		MSC-II				

Allotted Workload

Subject: CHEMISTRY Year: 2023-24

Sr. No.	Class	Allotted workload per week		
		Lectures	Practical	Paper Allotted
1	BSc-I	02	2 x 3 = 06	02
2	BSc-II	02	4 x 3 = 12	02

Teaching Periods Available per month during the session 2023-24 (Odd/Even Sem)

Faculty: SCIENCE **Subject:** CHEMISTRY

		ODD SEMESTER						EVEN SEMESTER				
Class ⇓	Periods ⟹	JUL-2023	AUG-2023	SEP-2023	OCT-2023	NOV2023	Total	JAN-2024	FEB-2024	MAR-2024	APR - 2024	Total
BSc-I	Theory	04	08	07	08	02	**29**	07	09	08	06	**30**
	Practical	04	08	09	08	02	**31**	07	08	08	08	**31**
BSc –II	Theory	05	08	07	08	02	**30**	08	07	07	07	**29**
	Practical	10	16	14	16	04	**60**	16	14	14	14	**58**
BSc- III	Theory	02	04	04	04	01	**15**	03	04	03	04	**14**
	Practical	04	08	07	08	02	**29**	07	09	08	06	**30**
MSc-I	Theory	02	03	04	04	01	**14**	04	04	04	03	**15**

Allotted Units 2023-24

Sr No	Unit Name					
	Class	**Odd Semester**	**Unit No**	**Class**	**Even Semester**	**Unit No**
1	BSc-1	Aromatic Compounds	IV	BSc-1	A) Ionic Bonding. B) Polarization. C)VBT	I
2	BSc-1	Gaseous State	V	BSc-1	Chemical Kinetics	VI
3	BSc-2	A) P-Block Element B) Chemistry of elements of transition series	II	BSc-2	A) Inner Transition Elements B) Extraction of Elements	II
4	BSc-2	A) Aldehydes & Ketones B) Carboxylic Acids	III	BSc-2	A) Electrochemistry-I B) Electrochemistry-II	V
5	BSc-3	Crystal Field theory & Electronic Spectra of transition Metal Complexes	II	BSc-3	A) NMR Spectroscopy B) Mass Spectroscopy	IV

6	MSc-I	Group Theory	III	MSc-1	Metal-Ligand Bonding	I
7	MSc-1	Symmetry & Group Theory		MSc-1		

Teaching Plan for Theory (First Semester)	**Class : BSc Part I CBCS**		
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
	Unit- IV Aromatic Compounds	**14**	14
Unit IV	**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. **B) Orientation effect:** Effect of substituent groups, Activating and deactivating group, Theory of reactivity and orientation on the basis of inductive and resonance effects. **A) Electrophilic aromatic substitution:** Halogenation, nitration, Sulphonation and Friedel Craft's alkylation/acylation with their mechanism.		
	Unit Test		
	Unit-V Gaseous State	**15**	15
Unit-V	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 Pc, Tc, Vc in terms of van der Waal's constant (a, b) Derivation of reduced equation of state, Law of corresponding state, Numerical.		
	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		
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 (Diazotization)		

6	Base catalyzed 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 I & Unit VI	**30**	
01	**Unit- I**	**15**	
	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. **B) Polarization:** Definition, polarizing power, polarizability, effect of polarization on nature of bond. Fajan's rules of polarization and its applications. **C)Valence bond theory:** Directional nature of covalent bond. Hybridization, types of hybridization to explain geometries of $BeCl_2$, BF_3, CH_4, PCl_5, SF_6 and IF_7		
	Unit Test		
02	**Unit-VI- Chemical Kinetics**	**15**	
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 $K_2S_2O_8$ 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	Lectures

		Available	Utilized
Exercise-1 Organic Qualitative Analysis		**26**	
	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 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	Determination of order of reaction of hydrolysis of methyl acetate by an acid.		
10	To study kinetics of saponification of ethyl acetate by NaOH.		

Teaching Plan for Theory (Third Semester) **Class : BSc Part II CBCS**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	**Unit -II P- Block Elements**	**15**	14
A]	P-Block Elements-Comparative study of 16th and 17th group elements with reference to electronic configuration, ionization energy and oxidation states. Oxidizing properties of halogens with reference to oxidation potential. Interhalogen compounds, structure and bonding's. Introduction to fluorocarbons. **B) 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 colour		
	Unit Test		

02	**Unit-III A) Aldehydes & Ketones**	**15**	14
	Introduction, Structure of carbonyl group, acidity of α hydrogen in carbonyl compounds. Preparation of aldehydes and ketones from appropriate alcohol, dihalide, alkyne. 2 Preparation of benzaldehyde from benzene (Gattermann-Koch synthesis/reaction) and toluene. Preparation of acetophenone from benzene and ethyl benzene. Chemical Reactions: Reaction with HCN, ROH, NaHSO3, NH2 - groups derivatives. Iodoform test, Reactions of aldehydes & /or ketones: Aldol condensations Reformatsky, Mannich, Perkin, Cannizaro's, Benzoin reaction with mechanism, Knoevenagel, Stobbe, Wittig reaction only. Clemmensen, Wolff-Kishner, MPV and LiAlH4 reductions. 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, PCl5, action of heat, oxidation and reduction. Benzoic acid: Preparation from toluene, benzyl alcohol, phenyl cyanide and benzamide. Reactions: Reaction with ethanol, PCl5 and ammonia. Salicylic acid: Preparation by Reimer-Tiemann reaction. Reactions: Reaction with CH3COCl, CH3OH and C6H5OH. Hell- Volhard -Zelinsky Reaction.		
	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: In-organic**	**58**	
A)	1 Estimation of Ba^{2+} as $BaSO_4$. 2 Estimation of Fe^{3+} as Fe_2O_3 using China dish and silica crucible. 3 Estimation of Ni2+ as Ni-DMG using sintered glass crucible. 4 Estimation of copper (II) in commercial copper sulphate sample by iodometric titration. 5 To determine the percentage of calcium carbonate in precipitated chalk. 6 To determine volumetrically the amounts of sodium carbonate and sodium hydroxide present together in the given solution 7 Preparation of standard solution of an acid (oxalic acid) & a base (sodium bicarbonate) by weighing and calculation of concentrations in terms of strength, normality, molarity, molality, formality, % by weight, % by volume, ppm, ppb and mole fraction. 8 Preparation of standard solution of hydrochloric acid by dilution and calculation of concentrations in terms of strength, normality, molarity, molality, formality, % by weight, % by volume , ppm, ppb and mole fraction.		
B)	**Exercise-II: Physical Chemistry experiments**		
	9 Determination of molecular weight of solute by Rast's method		

	10 To determine activation energy of a reaction between $K_2S_2O_8$ and KI. 11 Determination of thermodynamic values ($\Delta S°$, $\Delta H°$, and $\Delta G°$) from the dissociation of a weak acid. 12 To determine transition temperature of $MnCl_2.4H_2O$. 13 To study critical solution temperature (CST) of phenol water system. 14 To determine the partition coefficient of CH_3COOH between H_2O and CCl_4 15 To determine the partition coefficient of Benzoic acid between H_2O and toluene.		
Teaching Plan for Theory (Fourth Semester)		**Class : BSc Part II**	
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	**Unit- II**	***14***	
A]	**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. **B) 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).		
C]	**Unit Test**		
02	**Unit-V Electrochemistry**	**15**	
	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. Migration of ions under the influence of electric field. Transport number of ions. Determination of transport number by Hittorf's method and Moving boundary method. Kohlrausch's law of independent migration of ions. Determination of ⅄ and degree of dissociation a of a weak electrolyte. Determination of dissociation constant of weak electrolyte. Numerical. B) Electrochemistry-II pH of a solution and pH scale. Determination of pH of solution using Hydrogen, Quinhydrone and Glass electrodes. Advantages and Disadvantages of these electrodes. pH metric titrations. Determination of pKa of a weak acid by pH metric titration. Potentiometric titration. Advantages of Potentiometric titrations. Study of following potentiometric titrations- (a) Acid-Base (b) Redox (c) Precipitation. Numerical.		
	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: Organic**	48	
	1To prepare glucose from cane sugar. 2 To determine the iodine value of the given Oil or Fat. 3 Determination of equivalent weight of an organic acid. 4 Determination of equivalent weight of an ester by saponification. 5 Preparation of soap from oil or fat. 6 Determination of properties of soaps (at least two samples) with respect to pH, Foam, interaction with oil, and hard water test. 7 Isolation of casein from milk. 8 Isolation of lactose from milk.		
02	**Exercise II: Physical Chemistry Experiments**		
	9 Determination of standard electrode potential of Cu/Cu+2 or Zn/Zn+2 electrodes potentiometrically. 10 To determine dissociation constant of weak acid by conductometry. 11 To determine dissociation constant of weak acid by potentiometry. 12 To determine dissociation constant of dibasic acid by pH-metry. 13 To determine solubility and solubility product of sparingly soluble salts conductometrically. 14 To study strong acid and strong base titration by pH-metry. 15 To determine pH of a soil sample by pH-meter. 16 To verify Beer's Lambart's law using KMnO4/K2Cr2O7. 17 To determine solubility of benzoic acid at different temperature and heat of solution.		

Teaching Plan for Theory (Fifth Semester) **Class : BSc Part III**

Sr. No.	Topic to be covered	Lectures Available	Lectures Utilized
01	**Unit II**	15	14
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 Ä0 and pairing energy, distribution of electrons in t2g and eg 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**	
	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**		
	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 (Sixth Semester)	Class : BSc Part III		
Sr. No.	**Topic to be covered**	**Lectures Available**	**Lectures Utilized**
01	**Unit-IV NMR & Mass**	**14**	
A]	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. [8].		
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		
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**		
	1. Estimation of formaldehyde. **2.** Estimation of glycine. **3.** Estimation of ascorbic acid (vitamine 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).		
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 Lambart's law using $KMnO_4$ /$K_2Cr_2O_7$. **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		

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SATPUDAEDUCATION SOCIETY JALGAON

ARTS COMMERCECOLLEGE

WARVAT BAKAL DIST- BULDANA

DEPARTMENT OF POL-SCIENCE

DEPRTMENTAL ACADEMIC

CALENDAR-2023-2024

Departmental Academic Calendar- 2023-2024

Sr. No.	Activity	Commencement	Cessation	Total Days
01	First Session	03/07/2023	07/11/2023	104
02	Admission Process	03/07/2023	16/07/2023	14
03	**Teaching Days (Odd Semesters)**	15/07/2023	07/11/2023	**90**
04	Academic Session (Second Session)	03/07/2023	07/11/2023	104
05	Induction Program for First Year Students	11/07/2023	14/07/2023	04
06	FirstTermVacation	08/11/2023	27/11/2023	20
07	Odd Semesters UniversityExam	08/11/2023	30/12/2023	39
09	**Teaching Days (Even - Semester**	05/01/2023	27/04/2023	**90**
10	Second Term Vacation	29/04/2024	10/06/2024	43
11	Even Semesters UniversityExam	29/04/2024	10/06/2024	35
12	Commencement of Next Academic Session-2024-2025	11/06/2024		

PUBLIC HOLIDAY AS PER SGBAU CALENDER-2023-24

Sr. No.	Public Holiday	Day & Date
01	MOHARAM	SATURDAY 29th July 2023
02	INDEPENDENCE DAY	TUESDAY 15th August 2023
03	PARSI NEW YEAR	WEDNESDAY 16th August 2023
04	RAKSHA BANDHAN	WEDNESDAY 30th August 2023
05	SHRI GANESH CHATURTHI	TUESDAY 19th September 2023
06	GOURI PUJAN	FRIDAY 22nd September 2023
07	ANANT CHATURTHI	THURSDAY 28th September 2023
08	ID-E –MILAD	THURSDAY 28th September 2023
09	MAHATMA GANDHI JAYANTI	MONDAY 02nd October 2023
10	DASARA	THURSDAY 25th December 2023
11	CHRISTMAS	MONDAY 25th December 2023
12	REPUBLIC DAY	FRIDAY 26th January 2024
13	CHATRIPATI SHIVAJI MAHARAJ JAYANTI	MONDAY 19th February 2024
14	MAHASHIVRATRI	FRIDAY 08th March 2024
15	HOLI (SECOND DAY)	MONDAY 25th March 2024
16	GOOD FRIDAY	FRIDAY 29th March 2024
17	GUDHI PAWADA	THUSDAY 09th April 2024
18	RAMZAN ID	THURSDAY 11th March 2024
19	SHRIRAM NAVAMI	WEDNESDAY 17th April 2024
20		

Time Table -2023-24

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

Sub: Pol-Science **Year: 2023-2024**

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	-	----	
4	M.A I	02	----	-	
5	M.A.II	02			
	Total-	17			

Total Workload per week – 15 Period +

Teaching Periods Available per Month During the session 2023-2024

Faculty : Humanity **Subject : Pol-Science**

		ODD SEMESTER								EVEN SEMESTER						
Class	Periods	JULY-23	AUG -23	SEPT -23	OCT-23	NOV -23	Total	DEC -23	JAN-24	FEB -24	MAR -24	APR-24				Total
BA I	Theory	18	17	16	20	12	83	13	23	16	16	15	-	-		83
BA II	Theory	17	16	16	20	11	80	15	17	17	16	15	-	-		80
BA III	Theory	16	17	18	19	10	80	15	20	16	14	14	-	-		79

Teaching Plan for Theory Available Period During the Session 2023-24

B.A. Part-I (Semester-I)

Teaching Plan for Theory (First Semester) Class : B. A. Part - I (Indian Political System)				
Sr. No.	Unit	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit -I	1)Making of Indian Constitution-Constituent Assembly and its work 2) Salient Feature of Indian Constitution 3) Preamble –Text and Significance	18	
02	Unit -II	1)Fundamental Right and its Importance 2) Fundamental Duties 3) Directive Principal of State Policy	17	
03	Unit -III	1)President of India –Election Process ,Qualification ,Emoluments ,Term 2)Power and Function 3)Vice president-Election Qualification Power & Function	16	
04	Unit -IV	1)Prime Minister-Appointment Power & Function Role 2) Council of Minister 3)Formation and Role and Function	20	
05	Unit -V	1)Parliament-RajyaSabhaLoksabha 2)Judiciary –Supreme Court 3)Structure Jurisdiction Independent Judiciary	12	

Teaching Plan for Theory Available Period During the Session 2023-2024
B.A. Part-I (Semester-II)

Teaching Plan for Theory (Second Semester) Class : B.A. Part - I (Indian Political System)				
Sr. No.	Unit	Topic to be covered	Lecture Available	Lecture Utilized
01	Unit -I	1)Election Commission- Composition power & function 2)Election code of Conduct	13	
02	Unit -II	1)Governor-Appointment Power & Role 2)Chief Minister-Appointment Role and Function 3)Council of Minister-Formation Role and Function	23	
03	Unit -III	1)State Legislature 2)Legislative Assembly 3)Legislative Council 3)Power and duties of Speaker & Deputy Speaker	16	
04	Unit -IV	1)Judiciary –High Court –Structure and Jurisdiction 2)District Court 3)Structure and Jurisdiction	16	
05	Unit -V	1)Local Self Institution 2)Gram panchayat- composition function and power 3)Gram Sabha –composition power & importance	15	

Teaching Plan for Theory Available Period During the Session 2023-2024
B.A. Part-II (Semester-III)

Teaching Plan for Theory (Third Semester) Class : B. A. Part- II, (COMPARATIVE GOVT & POLITICS.)				
Sr. No.	Unit	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit -I	Meaning of Comparative Politics Institutional Approach Political System Approach	17	
02	Unit -II	Salient Feature of Constitution of Britain Power of the Crown Prime Minister-Appointment, Role and Function Cabinet – Structure and Function	16	
03	Unit -III	House of Lords- Composition ,Power and Function House of Commons-Composition, Power and Function Supreme Court- Composition , Power and Function	16	
04	Unit -IV	Salient Feature of the Constitution of USA 2. President –Election Process, Power and Function 3. Vice President– Election Process, Power and Function Cabinet – Structure and Function	20	
05	Unit - V	Senate- Composition, Power and Function House of Representative-- Composition ,Power and Function Supreme Court- Composition ,Power and Function	11	

Teaching Plan for Theory Available Period During the Session 2023-2024

B.A. Part-II (Semester-IV)

Teaching Plan for Theory (Forth Semester) Class :B. A. Part – II (COMPARATIVE GOVT & POLITICS.)				
Sr. No.	Unit	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit -I	**Constitution and Constitutionalism** 1. Constitution – Meaning and Definition	15	
		2. Constitutionalism - Meaning and Definition		
		3. Difference between Constitution & Constitutionalism		
02	Unit -II	**Constitution and Executive of China** 1. Salient Feature of the Constitution of China-1982	17	
		2. The President of China –Appointment Power and Function		
		3. State Council of China-Composition ,Power and Function		
03	Unit -III	**Legislative and Judiciary of China** 1. National People's Congress- Composition ,Power and Function	17	
		2. Standing Committee- Composition ,Power and Function		
		3. The Supremes' People Court- Composition, Power and Function 4. Role of Communist Party of China		
04	Unit - IV	Comparative Study of Constitution and Executive	16	
		1. Comparative Study of Constitution of UK and Constitution of USA 2. Comparative Study of Constitution of UK and Constitution of China		
		3. Comparative Study of Prime Minister of UK and President of USA		
05	Unit - V	. Comparative Study of House of Lord of UK and Senate of USA	15	
		. Comparative Study of Speaker of UK and Speaker of USA		
		. Comparative Study of Supreme Court of America and China's Supreme People's Court		

B.A. Part-III (Semester-V)

Teaching Plan for Theory (Fifth Semester) Class: B. A. Part - III (Modern Concept and Policy in Politics.)				
Sr. No.	Unit	Topic to be covered	Lectures Available	Lectures Utilized
01	Unit - I	1) Meaning of Leadership	16	
		2) Factor of Leadership		
		3) Role of Leadership		
02	Unit - II	1)Meaning and Nature of Indian –Reservation Policy	17	
		2)Reservation in Indian Parliament		
		3) Reservation and Politics in India		
03	Unit - III	1) Meaning and Nature of Nationalism	18	
		2) Factor of Nationalism		
		3)Present Status of Indian Nationalism		
04	Unit - IV	1) Meaning of Communalism	19	
		2) Role of Communalism in Indian Politics		
		3) Present status of Communalism in India		
05	Unit - V	1)Meaning and Definition of Terrorism	10	
		2) Kind of Terrorism		
		3) The Acts for Prevention of Terrorism in India		

Teaching Plan for Theory Available Period During the Session 2023-24
B.A. Part-III (Semester-VI)

Teaching Plan for Theory (Sixth Semester) Class : B. A. Part - III (Concept of Western and Indian Thinkers)				
Sr. No.	Unit	Topic to be covered	Lectures Available	Lectures Utilized
1	Unit-I	1)Concept of State 2)Aristotle –classification of state 3)M K Gandhi-concept of Ramrajya	15	
2	Unit-II	1)Walter Begot-concept of Democracy 2) AbharamLincoin-concept of Democracy 3)Dr B R Ambadkar-Parliamentry Democracy	20	
3	Unit-III	1)NiccaloMachaveli-concept of Nationalism 2)Swami Vivekananda-concept of Nationalism 3)V D Swarkar –concept of Nationalism	16	
4	Unit-VI	1)Karl Marx-concept of Socialism 2)Jawaharlal Nehru-concept of Socialism 3)Ram Manohar Lohiya-concept of Socialism	14	
5	Unit-V	1)David Easton-concept of Behaviouralism 2)Gabriel Almond-Concept of Post-Behaviorism 3) John Austin –concept of Sovereignty	14	

PROGRAMS SCHEDULE - 2023 - 2024

Sr. No.	Particulars	To be organized in
01	General Knowledge Exam Independence Day	AUGUST 2023
02	Study Circle Inauguration	SEPTEMBER 2023
03	Group Discussion	OCTOBER 2023 & MARCH 2024
04	Indian Constitutional Day	NOVEMBER 2023
05	District Level General Knowledge Exam	AUGUST2021
06	Indian Constitutional Day	NOVEMBER 2023

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Department of Sports and Physical Education

Sports Calendar 2023-2024

Sr. No.	Date	Event
1	17/07/2023	Information of sport teacher & other subject teachers
2	24/07/2023	Submition of inter-colligiate boys and girls entry form
3	15/08/2023	Clebrated independent day
3	29/08/2023	Celebrated sport day
4	1/10/2023	Intercollegiate cross country boys and girls tournament
5	06/10/2023-8/10/2023	Intercollegiate Hand Ball women selection trails
6	04/10/2023-06/10/2023	Inter colligate volleyball men tournament
7	6/10/2023-9/10/2023	Intercollegiate KHO-KHO women tournament
8	11/10/2023 to 13/10/2023	Intercollegiate kho kho women selection trails
9	14/10/2023to 16/10/2023	Inter colligate Kho Kho men tournament
10	16/10/2023 to 18/10/2023	Inter colligate Kabaddi men tournament
11	17/10/2023 to 19//10/2023	Inter colligate Cricket women selection trail men tournament
12	18/10/2023 to 20/10/2023	Inter colligate Kho Kho men selection tarils
13	20/10/2023 to 22/10/2023	Inter colligate Kabaddi men selection trails
14	4/11/2023 to 8/11/2023	West zone inter university kabbadi men tournament
15	17/11/2023 to 19/11/2023	Senior attya pattya boys- girls state championship
16	11/01/2024 to 18/01/2024	Inter class boys and staff cricket tourmanent
17	17/01/2024 to 18/01/2024	Senior Attya Pattya Boys- Gilrs Fedration cup Tournament
18	24/01/2024 to 27/01/2024	West zone inter-university Kho Kho women tournament
19	26/01/2024	Celebrated Republic day
20	27/1/2024-31/01/2024	SGBU Amravati Kho Kho Women And Kabbadi Men Coaching Camp
21	3/02/2024 to 07/02/2024	Maharashtra state inter university Krida mohostav Kho-kho women –Kabaddi men tournammnet

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