



SEETHALAKSHMI RAMASWAMI COLLEGE
(AUTONOMOUS)
AFFILIATED TO BHARATHIDASAN UNIVERSITY
TIRUCHIRAPPALLI
Accredited with A+ by NAAC (4th Cycle)



SYLLABUS

CBCS-OBE–LOCF based Curriculum Structure



PG AND RESEARCH DEPARTMENT OF CHEMISTRY

UG PROGRAMME

(2024 onwards)

Guidelines for UG Curriculum Revision 2024-2025

The revised OBE-CBCS-LOCF Curriculum pattern for the Undergraduate programme to be implemented from 2024 onwards, is based on the recommendations of the apex bodies namely **TANSCHÉ, UGC, Bharathidasan University (Parent University) and NAAC in lieu of the National Education Policy.**

- As per the norms of UGC and Bharathidasan University, the sum total credits for UG programme is **140** including the domain specific **Group Project (3 credits)** which is to be completed by the students to orient them towards research activities.
- Apart from 140 credits, **12 extra credit courses** have been introduced with the **total credits of 20**, in order to promote diversified skills among students.
- A 30 hour **Course** entitled “**Communicative and Functional English**” has been introduced as a **mandatory** course, to enhance Communicative English.
- Three **Courses** on the titles “**Office Automation, Web Designing and Internet Concepts**” with 30 hours for each course have been introduced as **mandatory** courses for honing the technical skills.
- Students are given the provision of completing one **Online Course** as an **optional** course (**MOOC/SWAYAM/NPTEL**) for strengthening the domain specific knowledge.
- One **Community Outreach Activity** may be carried out as an **optional** course by students who are interested to earn extra credit to showcase their commitment towards society and to fulfill the social responsibility of the institution.
- A 30 hour **Certificate Course** on “**Indian Knowledge System**” has been introduced as a **mandatory** course to familiarize India’s knowledge contribution to the major disciplines, to fall in line with the **National Education Policy**.
- A discipline specific **Value Added Course** has been introduced as **mandatory** course as per **TANSCHÉ** requirements.
- Three Internships (**1 credit each**) are introduced of which **Internship–I (at the II Semester vacation)** is made **mandatory** for every student of UG programme to enhance the employability and entrepreneurship skills.
- A 30 hour **Course** titled “**Capacity Building for Enhancing Professional Skills**” (15 hours for the Professional Placement by the Union and 15 hours for Career Guidance Workshop by the respective Departments) has been introduced as a **mandatory** course to help the students acquire professional competency.



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B.Sc. Chemistry

CBCS-OBE-LOCF Curriculum Structure

(For students admitted from 2024 onwards)

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/ EXT	CIA	SE	TOT
I	I	Language-I		Course-I	6	3	EXT	25	75	100
	II	English-I		Course-I	6	3	EXT	25	75	100
	III	Core Course-I		Inorganic, Organic and Physical Chemistry-I	7	5	EXT	25	75	100
	III	Core Practical-I		Practical-I: Volumetric Analysis	3	-	INT	-	-	-
	III	First Allied Course-I		Offered by the Department of Physics	4	3	EXT	25	75	100
	III	First Allied Practical		Offered by the Department of Physics	2	-	INT	-	-	-
	IV	VBE		Value Based Education	2	2	EXT	25	75	100
Total					30	16				500
II	I	Language-II		Course-II	6	3	EXT	25	75	100
	II	English-II		Course-II	6	3	EXT	25	75	100
	III	Core Course-II		Inorganic, Organic and Physical Chemistry-II	7	6	EXT	25	75	100
	III	Core Practical-I		Practical-I: Volumetric Analysis	3	4	INT	40	60	100
	III	First Allied Course-II		Offered by the Department of Physics	4	3	EXT	25	75	100
	III	First Allied Practical		Offered by the Department of Physics	2	3	INT	40	60	100
	IV	EVS		Environmental Studies	2	2	EXT	25	75	100
	Total				30	24				700
		EXTRA CREDIT COURSE		Communicative and Functional English offered by Department of English (MANDATORY)	2	2	INT	100	-	100

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/ EXT	CIA	SE	TOT
III	I	Language-III		Course-III	6	3	EXT	25	75	100
	II	English-III		Course-III	6	3	EXT	25	75	100
	III	Core Course-III		Inorganic, Organic and Physical Chemistry-III	6	6	EXT	25	75	100
	III	Core Practical-II		Practical-II:Semimicro Analysis	2	-	INT	-	-	-
	III	Second Allied Course-I		Offered by the Department of Mathematics/Botany	4+2 / 4	3	EXT	25	75	100
	III	Second Allied Practical		Offered by the Department of Botany	2	-	INT	-	-	-
	IV	NME-I*		Offered by other Departments	2	2	EXT	25	75	100
	IV	SBE-I		Chemistry of Commercial products	2	2	EXT	25	75	100
	Total				30	19				600
		EXTRA CREDIT COURSE		Internship-I(II Semester vacation) Online/Offline - Certificate, Report & Photo (MANDATORY)	-	1	INT	-	-	100
				Community Outreach Activity (II Semester vacation -Report, Photo & Feedback) (OPTIONAL)	-	1	INT	100	-	100

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/ EXT	CIA	SE	TOT
IV	I	Language-IV		Course-IV	6	3	EXT	25	75	100
	II	English-IV		Course-IV	6	3	EXT	25	75	100
	III	Core Course-IV		Inorganic, Organic and Physical Chemistry-IV	6	6	EXT	25	75	100
	III	Core Practical-II		Practical-II:Semimicro Analysis	2	4	INT	40	60	100
	III	Second Allied Course-II		Offered by the Department of Mathematics/Botany	4	3	EXT	25	75	100
	III	Second Allied Practical		Offered by the Department of Mathematics/Botany	2 / 2	3 / 3	INT	40	60	100
	IV	NME-II*		Offered by other Departments	2	2	EXT	25	75	100
	IV	SBE-II		Phytochemistry	2	2	EXT	25	75	100
	Total				30	26				800
		EXTRA CREDIT COURSE		Certificate Course (IKS)- Offered by other Departments (beyond class hours) (MANDATORY)	2	2	INT	25	75	100
			Office Automation (MANDATORY)	2	2	INT	25	75	100	
			Internship-II(III Semester vacation) Online/Offline -Certificate, Report & Photo (OPTIONAL)	-	1	INT	-	-	100	
* Offered by the Department to the students of other disciplines										

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/ EXT	CIA	SE	TOT
V	III	Core Course-V		Inorganic Chemistry	5	5	EXT	25	75	100
	III	Core Course-VI		Organic Chemistry-I	5	5	EXT	25	75	100
	III	Core Course-VII		Physical Chemistry-I	5	5	EXT	25	75	100
	III	Core Practical-III		Practical-III:Gravimetric Estimation and Organic Analysis	6	5	INT	40	60	100
	III	MBE-I		C and C++ Languages in Chemistry	5	4	EXT	25	75	100
	IV	SBE-III		Polymer Chemistry	2	2	EXT	25	75	100
	IV	SSD		Soft Skill Development	2	2	INT	25	75	100
				Total	30	28				700
		EXTRA CREDIT COURSE		Value Added Course- Offered to the same department (beyond class hours) (MANDATORY)	2	2	INT	25	75	100
				Web Designing (MANDATORY)	2	2	INT	25	75	100
				Internship-III (IV Semester vacation) Online/Offline-Certificate, Report & Photo (OPTIONAL)	-	1	INT	-	-	100
				Online Course (MOOC/ Swayam / NPTEL)- Before V Semester (OPTIONAL)	-	2	INT	-	-	100

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/ EXT	CIA	SE	TOT
VI	III	Core Course-VIII		Organic Chemistry-II	5	5	EXT	25	75	100
	III	Core Course-IX		Physical Chemistry-II	5	5	EXT	25	75	100
	III	Core Practical-IV		Practical-IV:Experimental Techniques in Physical Chemistry	6	4	INT	40	60	100
	III	MBE-II		Selected Topics in Inorganic Chemistry	5	4	EXT	25	75	100
	III	MBE-III		Biochemistry/ Pharmaceutical Chemistry	5	4	EXT	25	75	100
	III	Project		Group project	3	3	EXT	20	80	100
	V	GS		Gender Studies	1	1	INT	25	75	100
	V	Extension		Extension Activities (NSS/NCC/YRC/Sports and Exnora)	-	1	INT	-	-	100
	Total				30	27				800
	Grand Total				180	140				4100
		EXTRA CREDIT COURSE		Capacity Building for Enhancing Professional Skills- Offered by the Department (MANDATORY)	2	2	INT	-	-	100
				Internet Concepts (MANDATORY)	2	2	INT	25	75	100

TOTAL DISTRIBUTION OF HOURS, CREDITS & MARKS FOR UG PROGRAMME			
SEMESTER	HOURS	CREDITS	TOTAL MARKS
I	30	16	500
II	30	24	700
III	30	19	600
IV	30	26	800
V	30	28	700
VI	30	27	800
TOTAL	180	140	4100

ALLIED COURSES OFFERED TO OTHER DEPARTMENTS

For Botany & Zoology Majors

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/EXT	CIA	SE	TOT
I	III	First Allied Course-I		Chemistry for Biologists-I	4	3	EXT	25	75	100
II	III	First Allied Course-II		Chemistry for Biologists-II	4	3	EXT	25	75	100
II	III	First Allied Practical		Practical: Volumetric analysis and Simple experimental techniques in Chemistry	2+2	3	INT	40	60	100

For Home Science Major

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/EXT	CIA	SE	TOT
I	III	First Allied Course-I		General Chemistry-I	4	3	EXT	25	75	100
II	III	First Allied Course-II		General Chemistry-II	4	3	EXT	25	75	100
II	III	First Allied Practical		Practical: Titrimetric and Analytical techniques in Chemistry	2+2	3	INT	40	60	100

For Physics Major

SEM	PART	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/EXT	CIA	SE	TOT
I	III	First Allied Course-I		Chemistry for Physicists-I	4	3	EXT	25	75	100
II	III	First Allied Course-II		Chemistry for Physicists-II	4	3	EXT	25	75	100
II	III	First Allied Practical		Practical: Volumetric and Analytical Experiments	2+2	3	INT	40	60	100

LIST OF MAJOR BASED ELECTIVE COURSES

SEM	GROUP	COURSE CODE	COURSE TITLE
V	I (Choose any one course)		(A) C and C++ Languages in Chemistry (B) Essential Topics in Chemistry (Optional)
VI	II (Choose any one course)		(A) Selected Topics in Inorganic Chemistry (B) Basics of Nano Chemistry (Optional)
	III (Choose any one course)		(A) Biochemistry (B) Pharmaceutical Chemistry

LIST OF SKILL BASED ELECTIVE COURSES

SEM	GROUP	COURSE CODE	COURSE TITLE
III	I (Choose any one course)		(A) Chemistry of Commercial products (B) Dyeing Techniques and Water Treatment (Optional)
IV	II (Choose any one course)		(A) Phyto chemistry (B) Forensic Science (Optional)
V	III (Choose any one course)		(A) Polymer Chemistry (B) Selected Topics in Chemistry (Optional)

NON MAJOR ELECTIVE COURSES OFFERED TO OTHER DEPARTMENTS

SEM	COURSE	COURSE CODE	COURSE TITLE
III	I		Material Chemistry
IV	II		Role of Chemistry in Daily Life

VALUE ADDED COURSE
Extra Credit Course for Skill Development

SEM	COURSE	COURSE CODE	COURSE TITLE
V	I		Chemistry for Competitive Examinations

CERTIFICATE COURSE OFFERED TO OTHER DEPARTMENTS

Extra Credit Course for Skill Development

SEM	COURSE	COURSE CODE	COURSE TITLE
IV	I		Chemistry of Metals and Dyes in Ancient and Modern India

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B.Sc. Chemistry
(CBCS System)
(For Students admitted from June 2024 onwards)

Subject	Number of Courses	Hours	Credit
Language	4	24	12
English	4	24	12
Core Course (6x5=30)+ (3x6=18)	9	51	48
Core Practical (3x4=12)+(1x5=5)	4	22	17
Allied Course: Physics Botany/Mathematics	4	16	12
Allied Practical: Physics Botany/Mathematics	2	8	6
Major Based Elective Course (3x4)	3	15	12
Skill Based Elective Course	3	6	6
Non Major Elective Course	2	4	4
Value Based Education	1	2	2
Environmental Studies	1	2	2
Soft Skill Development	1	2	2
Gender Studies	1	1	1
Extension Activities	1		1
Group Project	1	3	3
Total	41	180	140

B.Sc. Chemistry
(CBCS System)
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EXTRA CREDIT COURSES FOR SKILL DEVELOPMENT*

Subject	Common/Subject Specific	Number of Courses	Credit
**Office Automation (MANDATORY)	Common to All	1	2
**Web Designing (MANDATORY)	Common to All	1	2
**Internet Concepts (MANDATORY)	Common to All	1	2
**Online Course (MOOC/SWAYAM/NPTEL)(OPTIONAL)	Subject Specific	1	2
Communicative and Functional English (MANDATORY)	Common to All	1	2
Community Outreach Activity (OPTIONAL)	Subject Specific	1	1
Certificate Course (IKS-Indian Knowledge System) (MANDATORY)	Subject Specific (offered to other departments)	1	2
Value Added Course (MANDATORY)	Subject Specific	1	2
Internship-I To be completed during II Semester Vacation (MANDATORY) Internship-II & III (OPTIONAL)	Subject Specific	3	3
Capacity Building for Enhancing Professional Skills (MANDATORY)	50%Common to All (Placement Training) 50% Subject Specific (Career Guidance workshop by the respective Departments)	1	2
TOTAL		12	20

*The extra credit courses have been introduced in the OBE-CBCS Curriculum pattern to be implemented from 2024 onwards based on the recommendations of the apex bodies namely **TANSCHÉ, UGC, Bharathidasan University (Parent University), NAAC in lieu of the National Education Policy.**

**Courses with Credit Transfer provision

**B.Sc. Chemistry
(CBCS System)**

EXTRA CREDIT COURSE FOR SKILL DEVELOPMENT

SEM	COURSE	COURSE CODE	COURSE TITLE	HRS	CRD	INT/EXT	CIA	SE	TOT
II	EXTRA CREDIT COURSES		Communicative and Functional English offered by Department of English(MANDATORY)	2	2	INT	100	-	100
III			Community Outreach Activity (II Semester vacation- Report, Photo & Feedback) (OPTIONAL)	-	1	INT	100	-	100
III			Internship-I(II Semester vacation)- Online/Offline-Certificate, Report & Photo (MANDATORY)	-	1	INT	-	-	100
IV			Certificate Course (IKS)- Offered to other Department (beyond class hours) (MANDATORY)	2	2	INT	25	75	100
IV			Internship-II(III Semester vacation)- Online/Offline-Certificate, Report & Photo (OPTIONAL)	-	1	INT	-	-	100
IV			Office Automation (MANDATORY)	2	2	INT	25	75	100
V			Value Added Course- Offered to the same department(beyond class hours) (MANDATORY)	2	2	INT	25	75	100
V			Internship-III(IV Semester vacation)- Online/Offline-Certificate, Report & Photo (OPTIONAL)	-	1	INT	-	-	100
V			Web Designing (MANDATORY)	2	2	INT	25	75	100
V			Online Course(MOOC/Swayam/NPTEL)- Before V Semester (OPTIONAL)	-	2	INT	-	-	100
VI			Capacity Building for Enhancing Professional Skills- Offered by the Department (MANDATORY)	2	2	INT	-	-	100
VI			Internet Concepts(MANDATORY)	2	2	INT	25	75	100
			TOTAL		20				1200

**B.Sc. Chemistry
(CBCS System)**

MANDATORY EXTRA CREDIT COURSE FOR SKILL DEVELOPMENT

SEM	COURSE CODE	COURSE TITLE	HRS	CRD	INT/EXT	CIA	SE	TOT
II		Communicative and Functional English offered by Department of English	2	2	INT	100	-	100
III		Internship-I(II Semester vacation) Online/Offline-Certificate, Report & Photo	-	1	INT	-	-	100
IV		Certificate Course (IKS)- Offered to other Department (beyond class hours)	2	2	INT	25	75	100
IV		Office Automation	2	2	INT	25	75	100
V		Value Added Course- Offered to the same department (beyond class hours)	2	2	INT	25	75	100
V		Web Designing	2	2	INT	25	75	100
VI		Capacity Building for Enhancing Professional Skills- Offered by the Department	2	2	INT	-	-	100
VI		Internet Concepts	2	2	INT	25	75	100
		TOTAL NUMBER OF COURSES 8	14	15				800

B.Sc. Chemistry
(CBCS System)
OPTIONAL EXTRA CREDIT COURSE FOR SKILL DEVELOPMENT*

SEM	COURSE CODE	COURSE TITLE	HRS	CRD	INT/EXT	CIA	SE	TOT
III		Community Outreach Activity(II Semester vacation- Report, Photo & Feedback)	-	1	INT	100	-	100
IV		Internship-II(III Semester vacation)- Online/Offline-Certificate, Report & Photo	-	1	INT	-	-	100
V		Internship-III(IV Semester vacation)- Online/Offline-Certificate, Report & Photo	-	1	INT	-	-	100
V		Online Course(MOOC/Swayam/NPTEL)- Before V Semester	-	2	INT	-	-	100
		TOTAL NUMBER OF COURSES	4	5				400