

Name of Faculty: Basic & Applied Science

Name of the College/Institute/Department/School: School of Basic & Applied Sciences

Name of the Programme: B.Sc. /B.Sc. (Hons) Chemistry /B.Sc. (Hons) with Research in Chemistry

Programme Type (UG/PG): UG

Duration: (6/8 Semesters)

First Y	ear - Semester –											
Course Catego ry	Course Code	Course Title	Nature of Course	No. of Credi	(Co	ching ntact week)	Evaluation Scheme (Marks)		Minimum Passing (Marks)			
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML101	Basics of Analytical Chemistry	L	2	2	1	30	20	50	-	8	20
MM	SCC43MML102	Basics of Organic Chemistry	L	2	2	-	30	20	50	-	8	20
MM	SCC43MMP101	Chemistry Lab Course-I	P	2	-	4	30	20	50	-	8	20
OE	MGM43OEL10X	*Open Elective - I	L	2	2	1	30	20	50	-	8	20
OE	MGMXXOEL10X	*Open Elective - II	L	2	2	-	30	20	50	-	8	20
VSC	SCC43VSL101	\$Vocational Skill course-I	L	2	2	-	30	20	50	-	8	20
SEC	SCC43SEP101	\$ Skill Enhancement course-I (Lab)	P	2	-	4	30	20	50	-	8	20
AEC	MGM54AEL10X	*Ability Enhancement Course-I	L	2	2	Ī	30	20	50	-	8	20
VEC	MGMXXVEL10X	*Value Education course-I	L	2	2	ı	30	20	50	-	8	20
IKS	SCC43IKL101	Development of science Ancient to Mordern	L	2	2	-	30	20	50	-	8	20
CC	MGMXXCCP10X	*Co-curricular course-I	P	2	-	4	30	20	50	-	8	20
		Total		22	16	12	-	-	550	-	-	-

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

^{*}To be chosen from university baskets

^{\$} To be chosen from department basket



First Yea	r- Semester II											
Course Category	Course Code	Course Title	Nature of Course	No. of Credits	(Conta	ching act hrs/ eek)	Evaluatio	n Scheme (N	Marks)	Minimur	n Passing (M	Iarks)
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML103	Basics of Inorganic Chemistry	L	2	2	-	30	20	50	-	8	20
MM	SCC43MML104	Basics of Physical Chemistry	L	2	2	i	30	20	50	-	8	20
MM	SCC43MMP102	Chemistry Lab Course-II	P	2	-	4	30	20	50	-	8	20
MI		*Minor Course	L	2	2	-	30	20	50	-	8	20
OE	MGMXXOE10X	*Open Elective - III	L	2	2	-	30	20	50	-	8	20
OE	MGMXXOEL10X	*Open Elective - IV	L	2	2	-	30	20	50	-	8	20
VSC	SCC43VSL102	\$Vocational Skill course- II	L	2	2	-	30	20	50	-	8	20
SEC	SCC43SEP102	\$ Skill Enhancement course-II (Lab)	P	2	-	4	30	20	50	-	8	20
AEC	MGM54AEL10X	*Ability Enhancement Course-II	L	2	2	-	30	20	50	-	8	20
VEC	MGMXXVEL10X	*Value Education course- II	L	2	2	1	30	20	50	-	8	20
CC	MGMXXCCP10X	*Co-curricular course-II	P	2	-	4	30	20	50	-	8	20
		Total		22	16	12	-	•	550	-		-

Note:

Nature of Course:L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Level 4.5 Award of UG certificate with 44 credits and an additional 4-creditscoreNSQF course / internship OR continue with major and minor

^{*}To be chosen from university baskets

^{\$} To be chosen from department basket



<u>List of Options to select from Bucket of Courses provided in various categories:</u>

Major	
Chemistry	

Minor options	Computational Mathematics	Basic food Sciences and Processing
Within Faculty of Basic and	Data Analytics	Nutraceutical Foods
Applied Sciences	Cyber Security	
Applied Sciences	Bioinformatics	

	Faculty of Engineering and Technology	Faculty of Social Sciences & Humanities	Faculty of Design	Faculty of Management and Commerce	Interdisciplinary Faculty	Performing Arts
	Drone Technology	Filmmaking	Product Design	Financial Management	Officiating and Coaching	Theatre Arts
Minor	ІоТ	Photography	Visual Communication	E-Commerce	Sports Management	Dance
options from	Remote Sensing	Psychology	Contemporary Arts	International Business Management	Sports Journalism	Music
Other	EV Technology	Economics	Interior Design	Hospitality Mgmt	Sport Psychology	Folk Art
Faculty	Drone Technology	English	Fashion Technology	Travel and Tourism		
	Robotics Technology					
	Chemical Technology					
	AI&ML					



Secon	d Year - Semeste	er III										
Cour se Categ ory	Course Code	Course Title	Nature of Course	No. of Credi	(Co	ching ntact week)	Evaluation Scheme (Marks)		Minimum Passing (Marks)			
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML205	Principles of Inorganic Chemistry-I	L	2	2	-	30	20	50	-	8	20
MM	SCC43MML206	Principles of Organic Chemistry-I	L	2	2	-	30	20	50	-	8	20
MM	SCC43MML207	Principles of Physical Chemistry-I	L	2	2	-	30	20	50	-	8	20
MM	SCC43MMP203	Chemistry Lab Course-III	P	2	-	4	30	20	50	-	8	20
MI		*Minor Course	L	4	4	-	60	40	100	-	16	40
OE	MGM43OE20X	*Open Elective - V	L	2	2	-	30	20	50	-	8	20
VSC	SCC43VEL203	\$Vocational Skill course- III	L	2	2	-	30	20	50	-	8	20
AEC	MGM54AEL20X	*Modern Indian Language-II	L	2	2	-	30	20	50	-	8	20
FP	SCC43FPJ201	Field Project-I	J	2	-	4	30	20	50	-	8	20
CC	MGMXXCCP20X	*Co – curricular course-III	P	2	-	4	30	20	50	-	8	20
		Total		22	14	16	-	-	550	-	-	-

Note:

*To be chosen from university baskets

\$ To be chosen from department basket

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,



Second	Year - Semester	IV										
Course Catego ry	Course Code	Course Title	Natu re of Cour se	No. of Credi ts	(Co	ching ntact week)	Evaluation Scheme (Marks)			Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML208	Principles of Inorganic Chemistry-II	L	2	2	-	30	20	50	-	8	20
MM	SCC43MML209	Principles of Organic Chemistry-II	L	2	2	-	30	20	50	-	8	20
MM	SCC43MML210	Principles of Physical Chemistry-II	L	2	2	-	30	20	50	-	8	20
MM	SCC43MMP204	Chemistry Lab Course-IV	P	2	-	4	30	20	50	-	8	20
MI		*Minor Course	L	4	4	-	60	40	100	-	16	40
OE	MGM43OE20X	*Open Elective - VI	L	2	2	-	30	20	50	-	8	20
SEC	SCC43SEP203	\$ Skill Enhancement course-III (Lab)	P	2	-	4	30	20	50	-	8	20
AEC	MGM54AEL20X	*Modern Indian Language-I	L	2	2	1	30	20	50	-	8	20
СЕР	SCC43CEJ201	Community engagement and service	J	2	1	4	30	20	50	-	8	20
CC	MGMXXCCP20X	*Co – curricular course-IV	P	2	-	4	30	20	50	-	8	20
	Total					12	-	-	550	-	-	-

Note:

\$ To be chosen from department basket

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Level 5.0 Award of UG Diplomawith 88 credits and an additional 4-creditscoreNSQF course / internship OR continue with major and minor

^{*}To be chosen from university baskets



Third	Year – Semester	-V (B. Sc. Chemistry)										
Course Catego ry	Course Code	Course Title	Natu re of Cour se	No. of Credi ts	(Co	ching ntact week)	Evaluation	Evaluation Scheme (Marks)		Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML311	Fundamentals of Spectroscopy	L	3	3	ı	60	40	100	-	16	40
MM	SCC43MML312	Organic Synthesis	L	3	3	-	60	40	100	-	16	40
MM	SCC43MMP305	Chemistry Lab Course-V	P	2	-	4	30	20	50	-	8	20
MM	SCC43MMP306	Chemistry Lab Course-VI	P	2	-	4	30	20	50	-	8	20
		Major Elective-I										
	SCC43MEL301	Heterocyclic Chemistry										
ME	SCC43MEL302	Surface & Magneto Chemistry	L	3	3	-	60	40	100	-	16	40
	SCC43MEL303	Bioinorganic Chemistry										
ME	SCC43MEP301	Chemistry Lab Course-VII (ME-I)	P	1	-	2	30	20	50	-	8	20
MI		*Minor Course	L	4	4	-	60	40	100	-	16	40
VSC	SCC43VSL304	\$Vocational Skill course-IV	L	2	2	-	30	20	50	-	8	20
FP	SCC43FPJ302	Field Project-II	J	2	-	4	30	20	50	-	8	20
		Total	•	22	14	16	-	-	650	-	-	-

Note:

\$ To be chosen from department basket

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

^{*}To be chosen from university baskets



Third	Year – Semester	-VI (B. Sc. Chemistry)										
Course Catego ry	Course Code	Course Title	Natu re of Cour se	No. of Credi ts	(Cor	ching ntact week)	Evaluatio	Evaluation Scheme (Marks)		Minimum Passing (Marks)		
					L	P	Internal	Extern al	Total	Intern al	External	Total
MM	SCC43MML313	Coordination Chemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MML314	Polymer Chemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MMP307	Chemistry Lab Course-VIII	P	2	-	4	30	20	50	-	8	20
MM	SCC43MMP308	Chemistry Lab Course-IX	P	2	-	4	30	20	50	-	8	20
		Major Elective-II										
	SCC43MEL304	Electroanalytical Techniques										
ME	SCC43MEL305	Material Chemistry	L	3	3	-	60	40	100	-	16	40
	SCC43MEL306	Computational & Quantum Chemistry										
ME	SCC43MEP302	Chemistry Lab Course-X (ME-II)	P	1	-	2	30	20	50	-	8	20
MI		*Minor Course	L	4	4	-	60	40	100	-	16	40
OJT	SCC43JTI301	On Job Training/Internship	I	4	-	8	60	40	100	-	16	40
		Total	•	22	13	18	-	-	650	-	-	-

Note:

\$ To be chosen from department basket

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancement course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Level 5.5 Award of UG Degree (B.Sc. Chemistry) with 132 credits and OR continues with major and minor

^{*}To be chosen from university baskets



Course Catego ry	Course Code	Course Title	Nature of Course	No. of Credits	Teac (Con hr we	·s/	Evaluation Scheme (Marks)		Minimum Passing (Marks)			
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML415	Group Theory & Coordination Chemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MML416	Organic Reaction Mechanism & Stereochemistry	L	3	3	-	60	40	100	1	16	40
MM	SCC43MML417	Thermodynamics & Electrochemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MMP409	Chemistry Lab Course-XI	P	2	-	4	30	20	50	-	8	20
MM	SCC43MMP410	Chemistry Lab Course-XII	P	2	-	4	30	20	50	-	8	20
MM	SCC43MMP411	Chemistry Lab Course- XIII	P	1	-	2	30	20	50	-	8	20
ME	SCC43MEL407 SCC43MEL408 SCC43MEL409	Major Elective-III Chromatographic Methods of Analysis Material Chemistry Computational & Quantum Chemistry	L	3	3	-	60	40	100	-	16	40
ME	SCC43MEP403	Chemistry Lab Course- XIV (ME-III)	P	1	-	2	30	20	50	-	8	20
RM	SCC43RML401	Research Methodology	L	4	4	-	60	40	100	-	16	40
	Total				15	14	-	-	700	-	-	-

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,



Course Catego ry	Course Code	Course Title	Nature of Course	No. of Credits		ching ntact week)	Evaluatio	n Scheme (M	Marks)	Minimun	n Passing (M	Iarks)
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML418	Inorganic Reaction Mechanism & Organotransition Metal Chemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MML419	Organic Reactions & Rearrangements	L	3	3	-	60	40	100	-	16	40
MM	SCC43MML420	Chemical Dynamics & Biophysical Chemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MMP412	Chemistry Lab Course-XV	P	2	-	4	30	20	50	-	8	20
MM	SCC43MMP413	Chemistry Lab Course- XVI	P	2	-	4	30	20	50	-	8	20
MM	SCC43MMP414	Chemistry Lab Course- XVII	P	1	-	2	30	20	50	ı	8	20
		Major Elective-IV										
	SCC43MEL410	Spectroscopic Methods of Analysis										
ME	SCC43MEL411	Pharmaceutical & Forensic Analysis	T	3	3	-	60	40	100	-	16	40
	SCC43MEL412	Food, Fertilizer & Pesticides Analysis										
ME	SCC43MEP404	Chemistry Lab Course- XVIII (ME-IV)	P	1	-	2	30	20	50	-	8	20
OJT	SCC43JTI402	On Job Training/Internship	I	4	-	8	60	40	100	-	16	40
	Total				12	20	-	-	700	-	-	-

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancemenst course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Level 6.0 Award of UG Honours Degree (B.Sc. Hons.Chemistry) with 176 Credits



Fourth	Year – Semeste	er-VII (B. Sc. Honours witl	h Resea	rch) Ch	emist	ry						
Course Catego ry	Course Code	Course Title	Natu re of Cour se	No. of Credits	Teac (Con hr wee	·s/	Evaluation	n Scheme (M	Marks)	Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML415	Group Theory & Coordination Chemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MML416	Organic Reaction Mechanism & Stereochemistry	L	3	3	ı	60	40	100	-	16	40
MM	SCC43MMP409	Chemistry Lab Course-XI	P	2	ı	4	30	20	50	-	8	20
MM	SCC43MMP410	Chemistry Lab Course-XII	P	2	-	4	30	20	50	-	8	20
ME	SCC43MEL407	Major Elective-III Chromatographic Methods of Analysis	Ţ	3	2		60	40	100		16	40
ME	SCC43MEL408	Material Chemistry	L	3	3	-	00	40	100	-	16	40
	SCC43MEL409	Computational & Quantum Chemistry	-									
ME	SCC43MEP403	Chemistry Lab Course-XIV (ME-III)	P	1	-	2	30	20	50	-	8	20
RM	SCC43RML401	Research Methodology	L	4	4	-	60	40	100	-	16	40
RP	SCC43RPJ401	Research Project-I	J	4	-	8	60	40	100	-	16	40
			22	12	20	-	-	650	-	-	-	

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,



Fourth Year – Semester-VIII(B. Sc. Honours with Research) Chemistry												
Course Catego ry	Course Code	Course Title	Nature of Course	No. of Credi		hing ntact rs/	Evaluation	n Scheme (M	Marks)	Minimum Passing (Marks)		
					L	P	Internal	External	Total	Internal	External	Total
MM	SCC43MML418	Inorganic Reaction Mechanism & Organotransition Metal Chemistry	L	3	3	-	60	40	100	-	16	40
MM	SCC43MML419	Organic Reactions & Rearrangements	L	3	3	-	60	40	100	-	16	40
MM	SCC43MMP412	Chemistry Lab Course-XV	P	2	-	4	30	20	50	-	8	20
MM	SCC43MMP413	Chemistry Lab Course-XVI	P	2	-	4	30	20	50	-	8	20
ME	SCC43MEL410 SCC43MEL411 SCC43MEL412	Major Elective-IV Spectroscopic Methods of Analysis Pharmaceutical & Forensic Analysis Food, Fertilizer & Pesticides Analysis	L	3	3	-	60	40	100	-	16	40
ME	SCC43MEP404	Chemistry Lab Course-XVIII (ME-IV)	P	1	-	2	30	20	50	-	8	20
RP	SCC43RPJ402	Research Project-II	J	8	-	16	60	40	100	-	16	40
	Total				09	26	-	-	550	-	-	-

Note:

Nature of Course: L- Lecture, P-Practical, S-Seminar, J-Project, I-Internship, D-Dissertation,

Course Category: MM-Major Mandatory, ME-Major Elective, MI-Minor, OE-Generic / Open electives, VSC-Vocational skill course, SEC-Skill Enhancemenst course, AEC-Ability Enhancement course, IKS-Indian Knowledge system, VEC-Value Education course, OJT-On Job Training / Internship / Apprenticeship, FP-Field project, CEP-Community engagement and service, CC-Co – curricular course, RM-Research methodology, RP-Research project

Level 6.0 Award of Four Year UG Honours Degree B.Sc. (Honours with Research) Chemistry with 176 Credits



Minor offered in Chemistry: Analytical Chemistry (18 Cr)

- 1. Analytical Chemistry-I (2)
- 2. Analytical Chemistry-II (4)
- 3. Analytical Chemistry-III (4)
- 4. Analytical Chemistry-IV (4)
- 5. Analytical Chemistry-V (4)

Open Elective Course offered in Chemistry:

- 1. Polymer Chemistry
- 2. Chemistry of Nanomaterials
- 3. Principles of Spectroscopy
- 4. Green Chemistry and Biorefinery Techniques

\$Basket of (VSC) Vocational Skill Course offered in Chemistry:

- 1. Chemical Methods of Analysis
- 2. Chemistry of Materials
- 3. Green Chemistry
- 4. Thermal Methods of Analysis
- 5. Spectroscopic Methods of Analysis
- 6. Electroanalytical Techniques

\$Basket of (SEC) Skill Enhancement Course offered in Chemistry:

- 1. Extraction, Isolation and Purification Methods
- 2. Green Techniques for Organic synthesis
- 3. Ore, Alloy and Cosmetic Analysis
- 4. Food, Fertilizer and Pesticide Analysis
- 5. Pharmaceutical Analysis
- 6. Water & Soil Analysis



MGM University, School of Basic and Applied Science, BOARD OF STUDIES IN CHEMISTRY

Vocational Skill Course (VSC) offered in Chemistry:

(Three/Four Years UG Degree Program NEP-2020)

Effective from Academic Year-2023-2024

Sr. No	Course Category	Course Code	Course Title	Credits	Teaching (contact hrs/week)	
					L	P
1	VSC	SCC43VSL101	Chemical Methods of Analysis	2	2	-
2	VSC	SCC43VSL102	Chemistry of Materials	2	2	-
3	VSC	SCC43VSL103	Green Chemistry	2	2	-
4	VSC	SCC43VSL201	Chromatographic Methods of Analysis	2	2	-
5	VSC	SCC43VSL202	Spectroscopic Methods of Analysis	2	2	-
6	VSC	SCC43VSL301	Electroanalytical Techniques	2	2	-



MGM University, School of Basic and Applied Science, BOARD OF STUDIES IN CHEMISTRY

\$Skill Enhancement Course (SEC) offered in Chemistry:

(Three/Four Years UG Degree Program NEP-2020)

Effective from Academic Year-2023-2024

Sr. No	Course Category	Course Code	Course Title	Credits	Teaching (contact hrs/week)	
					L	P
1	SEC	SCC43SEP101	Extraction, Isolation and Purification Methods	2	-	4
2	SEC	SCC43SEP102	Pharmaceutical Analysis	2	-	4
3	SEC	SCC43SEP103	Water and Soil Analysis	2	-	4
4	SEC	SCC43SEP201	Ore, Alloy and Cosmetic Analysis	2	-	4
5	SEC	SCC43SEP202	Food, Fertilizer and Pesticide Analysis	2	-	4
6	SEC	SCC43SEP203	Green Techniques for Organic synthesis	2	-	4



MGM University, School of Basic and Applied Science, BOARD OF STUDIES IN CHEMISTRY

Open Elective Courses offered in Chemistry:

(Three/Four Years UG Degree Program NEP-2020)

Effective from Academic Year-2023-2024

Sr. No	Course Category	Course Code	Course Title			ching tact veek)
					L	P
1	OE	MGM43OE109	Polymer Chemistry	2	2	-
2	OE	MGM43OE130	Chemistry of Nanomaterials	2	2	-
3	OE	MGM43OE208	Principles of Spectroscopy	2	2	-
4	OE	MGM43OE234	Green Chemistry and Biorefinery Techniques	2	2	-