

YEAR	ODD SEMESTER					EVEN SEMESTER								
	SN	COURSE CODE	COURSE TITLE	L	T	P	Total Credits	SN	COURSE CODE	COURSE TITLE	L	T	P	Total Credits
FIRST	1	BSCH111	INORGANIC CHEMISTRY-I	3	1	0	4	1	BSCH112	INORGANIC CHEMISTRY-II	3	1	0	4
	2	BSCH113	ORGANIC CHEMISTRY-I	3	1	0	4	2	BSCH114	ORGANIC CHEMISTRY-II	3	1	0	4
	3	BSCH117	PHYSICAL CHEMISTRY-I	3	1	0	4	3	BSCH118	PHYSICAL CHEMISTRY-II	3	1	0	4
	4	BSMA141	MATHEMATICS-I	3	1	0	4	4	BSEL101	COMMUNICATION SKILLS	4	0	0	4
	5	BSCH125	ENVIRONMENTAL STUDIES	3	0	0	3	5	BSPH120	PHYSICS-I	3	1	0	4
	6	BSCA131	INTRODUCTION TO COMPUTERS & IT, OFFICE AUTOMATION	3	1	0	4	6	BSCH152	INORGANIC CHEMISTRY-II LAB	0	0	2	1
	7	BSCH151	INORGANIC CHEMISTRY-I LAB	0	0	2	1	7	BSCH164	ORGANIC CHEMISTRY-II LAB	0	0	2	1
	8	BSCH153	ORGANIC CHEMISTRY-I LAB	0	0	2	1	8	BSCH156	PHYSICAL CHEMISTRY-II LAB	0	0	2	1
	9	BSCH155	PHYSICAL CHEMISTRY-I LAB	0	0	2	1	9	BSPH158	PHYSICS-I LAB	0	0	2	1
	10	BSCS157	C PROGRAMMING LAB	0	0	2	1	10	BSEL171	COMMUNICATION SKILLS LAB	0	0	2	1
	11	BSMA131	DATA PRESENTATION FOR SCIENCES	0	0	2	1							
	<b>TOTAL</b>					<b>TOTAL</b>								
						<b>28</b>								<b>25</b>


SECOND	1	BSCH211	INORGANIC CHEMISTRY-III	3	1	0	4	1	BSCH212	INORGANIC CHEMISTRY-IV	3	1	0	4
	2	BSCH213	ORGANIC CHEMISTRY-III	3	1	0	4	2	BSCH214	ORGANIC CHEMISTRY-IV	3	1	0	4
	3	BSCH215	PHYSICAL CHEMISTRY-III	3	1	0	4	3	BSCH226	PHYSICAL CHEMISTRY-IV	3	1	0	4
	4	BSPH217	PHYSICS-II	3	1	0	4	4	BSCH218	ANALYTICAL CHEMISTRY	3	1	0	4
	5	BSEL217	PERSONALITY DEVELOPMENT AND COMMUNICATION SKILLS	3	0	0	3	5	BSMA142	MATHEMATICS-II	3	1	0	4
	6	BSCH251	INORGANIC CHEMISTRY-III LAB	0	0	3	1.5	6	BSCH252	INORGANIC CHEMISTRY-IV LAB	0	0	3	1.5
	7	BSCH253	ORGANIC CHEMISTRY-III LAB	0	0	3	1.5	7	BSCH254	ORGANIC CHEMISTRY-IV LAB	0	0	3	1.5
	8	BSCH255	PHYSICAL CHEMISTRY-III LAB	0	0	3	1.5	8	BSCH256	PHYSICAL CHEMISTRY-IV LAB	0	0	3	1.5
	9	BSPH257	PHYSICS-II LAB	0	0	2	1	9	BSCH258	ANALYTICAL CHEMISTRY LAB	0	0	2	1
		<b>TOTAL</b>					<b>TOTAL</b>							
						<b>24.5</b>								<b>25.5</b>

THIRD	1	BSCH301	INORGANIC CHEMISTRY-V	3	1	0	4	1	BSCH302	INORGANIC CHEMISTRY-VI	3	1	0	4
	2	BSCH313	ORGANIC CHEMISTRY-V	3	1	0	4	2	BSCH304	ORGANIC CHEMISTRY-VI	3	1	0	4
	3	BSCH305	PHYSICAL CHEMISTRY-V	3	1	0	4	3	BSCH306	PHYSICAL CHEMISTRY-VI	3	1	0	4
	4	BSCH311	BIOCHEMISTRY AND POLYMER CHEMISTRY	4	0	0	4	4		ELECTIVE	4	0	0	4
	5		ELECTIVE	4	0	0	4	5	BSCH352	INORGANIC CHEMISTRY-VI LAB	0	0	3	1.5
	6	BSCH351	INORGANIC CHEMISTRY-V LAB	0	0	3	1.5	6	BSCH354	ORGANIC CHEMISTRY-VI LAB	0	0	3	1.5
	7	BSCH353	ORGANIC CHEMISTRY-V LAB	0	0	3	1.5	7	BSCH356	PHYSICAL CHEMISTRY-VI LAB	0	0	3	1.5
	8	BSCH355	PHYSICAL CHEMISTRY-V LAB	0	0	3	1.5	8	BSCH358	RESEARCH PROJECT	0	0	0	5
	9	BSDM301A	DISASTER MANAGEMENT	3	0	0	3							
		<b>TOTAL</b>					<b>TOTAL</b>							
						<b>27.5</b>								<b>25.5</b>

Removed in 2019  
BSCH306 SEMINAR 1

ELECTIVE ODD SEMESTER					ELECTIVE EVEN SEMESTER								
1	BSCH315	CHEMISTRY OF FUELS AND PESTICIDES	4	0	0	4	1	BSCH312	ENVIRONMENTAL AND GREEN CHEMISTRY	4	0	0	4
2	BSPH313	BASICS OF NANO SCIENCES-I	4	0	0	4	2	BSPH326	BASICS OF NANO SCIENCES-II	4	0	0	4
3	BSPY307	PHARMACEUTICAL MEDICINAL CHEMISTRY-I	4	0	0	4	3	BSPY310	PHARMACEUTICAL MEDICINAL CHEMISTRY-II	4	0	0	4

TOTAL CREDITS [C] 155

  
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YEA	ODD SEMESTER				EVEN SEMESTER			
	S.No.	COURSE CODE	COURSE TITLE	Total Credits	S.No.	COURSE CODE	COURSE TITLE	Total Credits
FIRST	1	BSCH111 A	ATOMIC STRUCTURE AND CHEMICAL BONDING	5	1	BSCH112A	PERIODIC PROPERTIES AND s-BLOCKS ELEMENTS	5
	2	BSCH113A	GENERAL ORGANIC CHEMISTRY AND CHEMISTRY OF HYDROCARBONS	4	2	BSCH114A	HALOGENATED HYDROCARBONS AND OXYGEN CONTAINING FUNCTIONAL GROUPS	5
	3	BSCH117A	STATES OF MATTER	5	3	BSCH118A	CHEMICAL THERMODYNAMICS	5
	4	BSCH125A	ENVIRONMENTAL STUDIES	3	4	BSEL101A	COMMUNICATION SKILLS	5
	5	BSCS102A	INFORMATION TECHNOLOGY FUNDAMENTALS	4	5		OPEN ELECTIVE -II	4
	6		OPEN ELECTIVE -I	4				
	<b>TOTAL</b>				<b>25</b>	<b>TOTAL</b>		
SECOND	1	BSCH211A	CHEMISTRY OF p-BLOCK ELEMENTS AND HALOGENS	5	1	BSCH212A	CRYSTAL DEFECTS AND COORDINATION COMPOUNDS	5
	2	BSCH213A	CHEMISTRY OF CARBONYL COMPOUNDS	5	2	BSCH214A	AMINES AND HETEROCYCLIC COMPOUNDS	5
	3	BSCH215A	IONIC AND ELECTROCHEMICAL EQUILIBRIA	5	3	BSCH226 A	CHEMICAL KINETICS AND COLLOIDAL CHEMISTRY	5
	4	BSCH237A	GREEN CHEMISTRY	5	4	BSCH218A	ANALYTICAL CHEMISTRY	5
	5		DISCIPLINE ELECTIVE-I	2	5		DISCIPLINE ELECTIVE-II	2
	<b>TOTAL</b>				<b>22</b>	<b>TOTAL</b>		
THIRD	1	BSCH301A	CHEMISTRY OF d-BLOCK ELEMENTS	5	1	BSCH302A	CHEMISTRY OF f-BLOCK ELEMENTS AND ORGANOMETALLICS	5
	2	BSCH313A	CARBOHYDRATES, AMINOACIDS AND ALKALOIDS	5	2	BSCH304A	SPECTROSCOPY	5
	3	BSCH305A	PHASE DIAGRAM AND ELECTRICAL CONDUCTANCE	5	3	BSCH306A	QUANTUM AND PHOTOCHEMISTRY	5
	4	BSCH311A	BIOCHEMISTRY	4	4	BSCH338A	NOVEL MATERIALS	4
	5		DISCIPLINE ELECTIVE-III	2	4	BSCH358A	RESEARCH PROJECT	6
	<b>TOTAL</b>				<b>21</b>	<b>TOTAL</b>		

## Electives (Choose any one from each)

DISCIPLINE ELECTIVE - I				OPEN ELECTIVE-I			
BSCH239A	FERTILIZER CHEMISTRY		2	BSPH120A	CONDENSED MATTER PHYSICS		4
BSCH241A	INORGANIC MATERIALS FOR INDUSTRIAL USE		2	BSMA141A	FUNDAMENTALS OF CALCULUS		4
<b>DISCIPLINE ELECTIVE - II</b>				IIT101A	HARNESSING THE POWER OF WEB AS A KNOWLEDGE DEVICE		4
BSCH240A	CHEMISTRY OF FUELS		2	<b>OPEN ELECTIVE- II</b>			
BSCH242A	PESTICIDES		2	BSPH217A	APPLICATIONS OF MATERIALS		4
<b>DISCIPLINE ELECTIVE- III</b>				BSMA142A	ESSENTIALS OF MATHEMATICS		4
BSCH339A	NUCLEAR CHEMISTRY		2	IIT104A	UNDERSTANDING THE POWER OF DATA		4
BSCH341A	COSMETICS AND PERFUMES		2				
<b>Total Credits [C] = 139</b>							

Student can choose two non credit courses (2 hours per week), one in odd semester and one in even semester during the entire duration of Programme from the pool of courses provided by the university.

  
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**B.Sc. (H) Chem.**

**2022-2025 (Scheme of Studies as per Choice-Based Credit System and Learning Outcome-Based Curriculum Framework)**

YEAR	ODD SEMESTER												EVEN SEMESTER											
	S.No.	TYPE OF COURSE	COURSE CODE	COURSE TITLE	L	T	P	C	CR	TOTAL	S.No.	TYPE OF COURSE	COURSE CODE	COURSE TITLE	L	T								
FIRST	1	C1	BSCH106A	INORGANIC CHEMISTRY-I	3	1	0	4		4	1	C3	BSCH102A	PHYSICAL CHEMISTRY-I	3	1								
	2		BSCH156A	INORGANIC CHEMISTRY-I PRACTICALS	0	0	4	2		4	2		BSCH152A	PHYSICAL CHEMISTRY-I PRACTICALS	0	0								
	3	C2	BSCH103A	ORGANIC CHEMISTRY-I	3	1	0	4		4	3	C4	BSCH108A	ORGANIC CHEMISTRY-II	3	1								
	4		BSCH153A	ORGANIC CHEMISTRY-I PRACTICALS	0	0	4	2		4	4		BSCH158A	ORGANIC CHEMISTRY-II PRACTICALS	0	0								
	5	AEC-I	UCES 125A	ENVIRONMENTAL STUDIES	3	0	0	3		3	5	AEC-II	UCCS 155A	COMMUNICATION SKILLS	4	0								
	6		UCDM 301A	DISASTER MANAGEMENT	3			3		3	6	SEC-II	ETCS104A	INTRODUCTION TO COMPUTER SCIENCE AND PROGRAMMING IN PYTHON	3	1								
	7	SEC-I	BSCH132A	FERMENTATION SCIENCE AND TECHNOLOGY	2	0	0	2		2	7	SEC-II	ETCS150A	INTRODUCTION TO COMPUTER SCIENCE AND PROGRAMMING IN PYTHON LAB	0	0								
	8	SEC-II	BSCH109A	HERBAL TECHNOLOGY	2	0	0	2		2	8	SEC-IV	BSCH110A	INTRODUCTION TO PROJECT I	2	0								
	9	GEC-I		GENERIC ELECTIVE-I	4	0	0	4		4	9	GEC-II		4	0									
	TOTAL										26		30											
	SECOND	1	C5	BSCH201A	PHYSICAL CHEMISTRY-II	3	1	0	4		4	1	C8	BSCH202A	PHYSICAL CHEMISTRY-III	3	1							
2			BSCH251A	PHYSICAL CHEMISTRY-II PRACTICALS	0	0	4	2		4	2		BSCH252A	PHYSICAL CHEMISTRY-III PRACTICALS	0	0								
3		C6	BSCH203A	ORGANIC CHEMISTRY-III	3	1	0	4		4	3	C9	BSCH206A	INORGANIC CHEMISTRY-II	3	1								
4			BSCH253A	ORGANIC CHEMISTRY-III PRACTICALS	0	0	4	2		3	4		BSCH254A	INORGANIC CHEMISTRY-II PRACTICALS	0	0								
5		C12	BSCH205A	ANALYTICAL TECHNIQUES OF CHEMISTRY	3	1	0	4		4	5	C10	BSCH208A	INTRODUCTION TO QUANTUM CHEMISTRY	3	1								
6			BSCH255A	ANALYTICAL TECHNIQUES OF CHEMISTRY PRACTICALS	0	0	4	2		3	6		BSCH256A	INTRODUCTION TO QUANTUM CHEMISTRY PRACTICALS	0	0								
7		GEC-III		GENERIC ELECTIVE COURSE-III	3	1	0	4		4	7	GEC-IV		GENERIC ELECTIVE COURSE-IV	3	1								
8		GEC-III		GENERIC ELECTIVE COURSE-III PRACTICALS	0	0	4	2		4	8	GEC-IV		GENERIC ELECTIVE COURSE-IV PRACTICALS	0	0								
9			ETCS109A	DATA ANALYSIS AND VISUALIZATION	2	0	0	2		2	9		BSMA274A	INTRODUCTION TO LATEX	0	0								
10			ETCS159A	DATA ANALYSIS AND VISUALIZATION LAB	0	0	2	1		2	10	VAC		VALUE ADDED COURSE	0	0								
11		MOOC		MOOC COURSE	0	0	0	2		0	11	INTERNSHIP	BSCH210A	INTERNSHIP in chemistry	0	0								
TOTAL										29		34												
1	C11	BSCH301A	INORGANIC CHEMISTRY-III	3	1	0	4		4	1	C13	BSCH301A	INORGANIC CHEMISTRY-III	4	0									

TOTAL REGISTRAR

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THIRD

2		BSCH351A	INORGANIC CHEMISTRY-III PRACTICALS	0	0	4	2	4
3	C7	BSCH303A	MOLECULAR SPECTROSCOPY AND PHOTOCHEMISTRY	3	1	0	4	4
4		BSCH353A	MOLECULAR SPECTROSCOPY AND PHOTOCHEMISTRY PRACTICALS	0	0	4	2	4
5	DSE-I		DISCIPLINE ELECTIVE COURSE-I	3	1	0	4	4
6	DSE-I		DISCIPLINE ELECTIVE COURSE-I PRACTICALS	0	0	4	2	4
7	DSE-II		DISCIPLINE ELECTIVE COURSE-II	3	1	4	4	4
8	DSE-II		DISCIPLINE ELECTIVE COURSE-II PRACTICALS	0	0	4	2	4
	VAC		VALUE ADDED COURSE	0	0	0	0	0
<b>TOTAL</b>							<b>24</b>	<b>32</b>

2		BSCH361A	BIOMOLECULES LAB	0	0			
3	C14	BSCH302A	CHEMISTRY OF MATERIALS	3	1			
4		BSCH352A	CHEMISTRY OF MATERIALS PRACTICALS	0	0			
5	DSE-III		DISCIPLINE ELECTIVE COURSE-III	3	1			
6	DSE-III		DISCIPLINE ELECTIVE COURSE-III PRACTICALS	0	0			
7	DSE-IV		DISCIPLINE ELECTIVE COURSE-IV	3	1			
8	DSE-IV		DISCIPLINE ELECTIVE COURSE-IV PRACTICALS	0	0			
9	BSCH358A	BSCH358A	RESEARCH PROJECT	0	0			
10								
<b>TOTAL</b>								

Electives (Choose any one from each)

DISCIPLINE SPECIFIC ELECTIVE - I								
	BSCH305A	MEDICINAL CHEMISTRY	3	1	0	4		
	BSCH355A	MEDICINAL CHEMISTRY PRACTICALS	0	0	4	2		
	BSCH307A	HETEROCYCLIC CHEMISTRY	3	1	0	4		
	BSCH357A	HETEROCYCLIC CHEMISTRY PRACTICALS	0	0	4	2		
DISCIPLINE SPECIFIC ELECTIVE - II								
	BSCH309A	ADVANCE MATERIAL	3	1	0	4		
	BSCH359A	ADVANCE MATERIAL PRACTICALS	0	0	4	2		
	BSCH321A	ORGANOMETALLIC CHEMISTRY	3	1	0	4		
	BSCH371A	BIOINORGANIC CHEMISTRY	0	0	4	2		
DISCIPLINE SPECIFIC ELECTIVE - III								
	BSCH304A	ENVIRONMENTAL CHEMISTRY	3	1	0	4		
	BSCH354A	ENVIRONMENTAL CHEMISTRY PRACTICALS	0	0	4	2		
	BSCH306A	ORGANIC SPECTROSCOPY	3	1	0	4		
	BSCH356A	ORGANIC SPECTROSCOPY PRACTICALS	0	0	4	2		
DISCIPLINE SPECIFIC ELECTIVE - IV								
	BSCH308A	INTRODUCTION OF	3	1	0	4		
	BSCH368A	INTRODUCTION AND	0	0	4	2		
	BSCH310A	MANUFACTURING PROCESSES OF CHEMISTRY	3	1	0	4		

GENERIC ELECTIVE COURSES				
	BSMA281A	BASICS OF MATHEMATICS-I	3	1
	BSMA283A	BASICS OF MATHEMATICS-I PRACTICALS	0	0
	BSPH221A	BASICS OF PHYSICS-I	3	1
	BSPH261A	BASICS OF PHYSICS-I PRACTICALS	0	0
	BSMA282A	BASICS OF MATHEMATICS-II	3	1
	BSMA284A	BASICS OF MATHEMATICS-II PRACTICALS	0	0
	BSPH222A	BASICS OF PHYSICS-II	3	1
	BSPH262A	BASICS OF PHYSICS-II PRACTICALS	0	0
	BSCH233A	LIFE SCIENCE/BIOLOGY-I	3	1
	BSCH273A	LIFE SCIENCE/BIOLOGY-I PRACTICALS	0	0
	BSCH234A	LIFE SCIENCE/BIOLOGY-II	3	1
	BSCH274A	LIFE SCIENCE/BIOLOGY-II PRACTICALS	0	0

<b>TOTAL CREDITS</b>	<b>163</b>
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BSCH360A	GREEN PROCESSES OF CHEMISTRY PRACTICALS	0	0	4	2
BSCH332A	POLYMER CHEMISTRY	3	1	0	4
BSCH372A	POLYMER CHEMISTRY PRACTICALS	0	0	4	2

**ABILITY ENHANCEMENT COURSES-I**

BSCH125A	ENVIRONMENTAL STUDIES	3	0	0	3
BSCH131A	RENEWABLE ENERGIES (SOLAR & BIOMASS)	3	1	0	4
BSCH133A	WATER REMEDIATION AND BIOTECHNOLOGY	3	1	0	4
BSCH135A	COOPERATION STUDIES PRACTICES	3	1	0	4

Student can choose available MOOCs recommended by Dean Academics and approved by Vice Chancellor of K. R. Mangalam University, from the list of MOOCs by SWAYAM Board in each semester.

Student has to do Internship of 25 days in 4th Semester, the university will provide NOC for the same.



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**K.R. MANGALAM UNIVERSITY**  
THE COMPLETE WORLD OF EDUCATION

**SCHOOL OF BASIC AND APPLIED SCIENCES**

**Bachelor of Science (H) Chemistry**

**B.Sc. (Hons.) Chemistry**

**Programme Code: 10**

**2018-21**

**Approved in the 17th Meeting of Academic Council Held on 29 June 2018**

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K.R. Mangalam University  
Sohna Road. Gurugram (Haryana)

**Dissertation based on Research project: Suitable Topics in Chemical Sciences**

## Presentation &amp; Viva-voce

1. Students will be divided among faculty members of the Department for the supervision of the research work.
2. In the first week of Semester V, each faculty member will assign a suitable research topic to the students from the selected topics in the areas of chemical sciences.
3. The student will work on the assigned research topic during semesters V and VI in regular consultation with his/her assigned teacher.
4. The student will write a dissertation based on the research work carried out during Semesters V and VI and prepare two copies to be submitted to the office of the Head of the Department duly signed by the student and the supervisor in the sixth week of VI semester or a date decided by the HOD of the department.
5. Before preparing power point presentation and submission of dissertation, each student has to deliver a seminar talk on his/ her research project work on a date fixed by HOD, necessary suggestions has to be incorporated in the final draft of dissertation.
6. The student will make a power point presentation based on the work carried out and mentioned in the dissertation to the board of examiners appointed by the University.



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## B.Sc.(H) Chemistry (2019-20 onwards)

<b>BSCH358A</b>	<b>Research Project</b>	L	T	P	C
<b>Version 1.0</b>		0	0	2	6
<b>Pre-requisites/Exposure</b>	Practical exposure				
<b>Co-requisites</b>	--				

### Course Objectives

1. To learn how to carry out literature survey
2. To be associated with an area of research/research project and contribute towards domain knowledge.
3. To learn the art of technical report writing
4. To learn the art of verbal communication with the help of modern presentation techniques.

### Course Outcomes

On completion of this course, the students will be able to

- CO1. Carry out the extensive literature survey.  
CO2. Learn to write and present technical reports/articles.  
CO3. Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.  
CO4. Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.

### Catalog Description

1. Students will be divided among faculty members of the Department for the supervision of the research work.
2. In the first week of Semester V, each faculty member will assign a suitable research topic to the students from the selected topics in the areas of chemical sciences.
3. The student will work on the assigned research topic during semesters V and VI in regular consultation with his/her assigned teacher.
4. The student will write a dissertation based on the research work carried out during Semesters V and VI and prepare two copies to be submitted to the office of the Head of the Department duly signed by the student and the supervisor in the sixth week of VI semester or a date decided by the HOD of the department.
5. Before preparing power point presentation and submission of dissertation, each student has to deliver a seminar talk on his/ her research project work on a date fixed by HOD, necessary suggestions has to be incorporated in the final draft of dissertation.
6. The student will make a power point presentation based on the work carried out and mentioned in the dissertation to the board of examiners appointed by the University.

**Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination**

**Examination Scheme:**

*JMD*

1

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*Meera*

DEAN

School of Basic & Applied Sciences (SBAS)  
K.R. Mangalam University  
Sohna road, Gurugram  
Haryana 122103

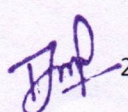


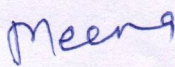
Components	Internal (Interaction of Student with Supervisor)	External			Total
		Relevance of topic (20)	Presentation (20)	viva (10)	
Weightage (%)	50	20	20	10	100

**Relationship between the Course Outcomes (COs) and Program Outcomes (POs)**

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Carry out the extensive literature survey.	PO1, PO3
CO2	Learn to write and present technical reports/articles.	PO1, PO5, PO8, PO9
CO3	Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.	PO2, PO3, PO4, PSO1, PSO4
CO4	Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.	PO5, PO6, PSO2 and PSO3

		Enhancement in Advanced Scientific knowledge about chemistry.	Development of critical, logical and innovative thinking	Demonstrate interdisciplinary approach	Learning of fundamental concepts and instrumentation techniques	Orientation towards research and development	Acquiring capability to work independently as well as a member of the diverse team	Understanding of impact of chemicals on the environment	Fostering communication skills	Ethical awareness and digital literacy	Capability to deal with professional responsibilities	Systematic and coherent understanding of theoretical and practical concepts	Appreciate the techniques for the qualitative and quantitative analysis	Learn problem solving approach	Apply principles of chemistry to address societal problems
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PSO 1	PSO 2	PSO 3	PSO 4

  
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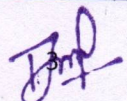
  
 DEAN  
 School of Basic & Applied Sciences (SBAS)  
 K.R. Mangalam Univ.  
 Sohna road, Gurugram  
 Haryana 122103

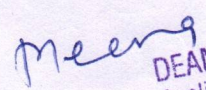
BSCH358 A	Research Project	3	3	3	3	3	3	3	3	3	3	3	2	3	3
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1=weakly mapped  
2= moderately mapped  
3=strongly mapped

Programme and Course Mapping															
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
CO1	3		3									1	2		
CO2	3				3			3	3						
CO3		3	3	3								3			3
CO4					3	3							2	3	
	1=lightly mapped				2= moderately mapped				3=strongly mapped						

Unit	Research Project
Local	-
Regional	-
National	-
Global	-
Employability	Choice Based Credit System having field projects / research projects / internships ( 1.3.4) Courses on employability/ entrepreneurship/ skill development ( 1.1.3); Student centric methods, such as experiential learning, participative learning and problem-solving methodologies ( 2.3.1)
Entrepreneurship	Entrepreneurship; Team work/ Creativity by designing research problem
Skill Development	Disciplinary knowledge; Research related skills; scientific skills,
Professional Ethics	-
Gender	-
Human Values	-
Environment & Sustainability	-
SDG	Equal Access to TVET and Higher Education (SDG 4.3), Quality Education and skills for employability 4.4
NEP	Higher Education System through scientific temper (9.1.1) India's Higher Education System through scientific temper (9.1.1)Towards a More Holistic and Multidisciplinary Education opportunitiesfor cross-disciplinary and interdisciplinary thinking ( 11.6); strong culture of research and knowledge creation (17.6)
POE/4 <sup>th</sup> IR	Employability, Project, Hands on Experience, Entrepreneurship; Team work

  
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## B. Sc. (H) Chemistry (2022-23 onwards)

<b>BSCH210A</b>	<b>INTERNSHIP IN CHEMISTRY</b>	L	T	P	C
<b>Version 1.0</b>		0	0	0	2
<b>Pre-requisites/Exposure</b>	Practical exposure				
<b>Co-requisites</b>	--				

### Course Objectives

- To learn how to carry out literature surveys on the assigned topic.
- To be associated with an area of research/research project and contribute towards domain knowledge through hands on.
- To learn the art of technical report writing.
- To learn the art of verbal communication with the help of modern presentation techniques.

### Course Outcomes

On completion of this course, the students will be able to

- CO1. Carry out the extensive literature survey on the topic assigned by academicians and industry experts.
- CO2. Learn to write and present technical reports/articles.
- CO3. Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.
- CO4. Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.

### Catalog Description

- In the end of Semester IV, students will be asked to join research/academic organizations or industries to get hands on knowledge on the selected topics.
- The student will work on the assigned topic for 3-4 weeks in regular consultation with his/her assigned expert/guide.
- The student will write a report based on the work carried out during internship and prepare two copies to be submitted to the office of the Head of the Department duly signed by the student and the expert.
- The student will make a power point presentation based on the work carried out and mentioned in the report to the board of examiners appointed by the University in the fifth semester. The student will be evaluated based on a report and presentation.

**Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination**

**Examination Scheme:**

### Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Components	Internal (Interaction of Student with Supervisor)	External			Total
		Relevance of topic (20)	Presentation (20)	viva (10)	
Weightage (%)	50	20	20	10	100

### Mapping between COs and POs

Course Outcomes (COs)	Mapped Program
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*Meena*

		Outcomes
CO1	Carry out the extensive literature survey.	PO1, PO3
CO2	Learn to write and present technical reports/articles.	PO1, PO5, PO8, PO9
CO3	Learn to analyze various methods and techniques applicable to the topic to study and contribute to domain knowledge.	PO2, PO3, PO4, PSO1, PSO4
CO4	Learn to analyze/evaluate the result of the experiment carried out and present the results using data visualization methods.	PO5, PO6, PSO2 and PSO3

		Enhancement in Advanced Scientific	Development of critical, logical and	Demonstrate interdisciplinary approach	Learning of fundamental concepts and	Orientation towards research and	Acquiring capability to work	Understanding of impact of chemicals on	Fostering communication skills	Ethical awareness and digital literacy	Capability to deal with professional responsibilities	Systematic and coherent understanding of theoretical and practical concerns	Appreciate the techniques for the qualitative and quantitative analysis	Learn problem solving approach	Apply principles of chemistry to address societal problems
Course Code	Course Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4
BSCH210A	Internship in Chemistry	3	3	3	3	3	3		3	3		3	2	3	3

1=weakly mapped; 2= moderately mapped; 3=strongly mapped

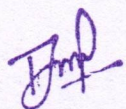
Programme and Course Mapping																
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4	
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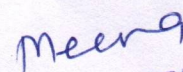
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Unit	Internship
Local	-
Regional	-
National	-
Global	-
Employability	Choice Based Credit System having field projects / research projects / internships ( 1.3.4) Courses on employability/ entrepreneurship/ skill development ( 1.1.3); Student centric methods, such as experiential learning, participative learning and problem-solving methodologies ( 2.3.1)
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