MAHATMA GANDHI UNIVERSITY, KERALA

Abstract

Bachelor of Science (Honours) Chemistry - Fourth Semester - Modifications to the Course Outcomes, Course Content and pattern for End Semester Evaluation - Approved - Orders Issued.

ACA 16

No. 407/ACA 16/2026/MGU Priyadarsini Hills,Dated: 13.01.2026

Read:-1. U.O.No.5797/AC A16/2024/MGU, dated.27.06.2024.

2. Minutes of the meeting of the Expert Committee on Chemistry (UG)

4. Orders of the Vice Chancellor under Section 10 (17), Chapter III of the Mahatma Gandhi University Act 1985, dated 09.01.2026.

ORDER

The syllabi of various Honours Under Graduate Programmes coming under The MGU-UGP (Honours) Regulations, 2024, have been approved vide paper read as (1) above and published on the website of the University.

The Expert Committee on Chemistry (UG), deliberated on modifying the **Course Outcomes, Course Content and the pattern for End Semester Evaluation** of the **DSC, DSE, SEC and VAC type courses in the Fourth Semester syllabus of Bachelor of Science (Honours) Chemistry programme** and has submitted recommendations, vide paper read as (2) above. **(Recommendations are attached as Annexure).**

Considering the urgency of the matter, sanction has been accorded by the Vice Chancellor, in exercise of the powers of the Academic Council vested upon him under Section 10(17), Chapter III of the Mahatma Gandhi University Act 1985, vide paper read as (3) above, to approve the aforementioned recommendations.

Hence, the **Course Outcomes**, **Course Content** and the **pattern for End Semester Evaluation** of the said courses in the **Fourth Semester syllabus of Bachelor of Science (Honours) Chemistry** programme stands modified to this extent.

Orders are issued accordingly.

SUDHA MENON J

ASSISTANT REGISTRAR III

(ACADEMIC)

For REGISTRAR

Copy To

1. PS to VC
2. PA to Registrar/CE
3. Convenor, Expert Committee, Chemistry (UG)
4. JR 2 (Admin)/DR 2, AR 3 (Academic)
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6. Tabulation/Academic Sections concerned
7. AC C1/AC C2 Sections
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Section Officer

Annexure

SEMESTER IV

Course Name: Organic Chemistry- 2
Course Code: MG4DSCCHE200

Course Outcomes

CO.No	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO.No (Modified)	Page No.
1	Evaluate reaction mechanisms of alcohols and phenols, predict products and mechanisms of their reactions, and compare their acidity, hydrogen bonding, and applications.	E	No Change	70
2	Evaluate the structure, applications, and reactivity of aldehydes and ketones; predict products and mechanisms of their reactions; and assess key reactions.			
3	Evaluate the structure, uses, and acidity of carboxylic acids and derivatives; assess the mechanisms of key reactions and predict the products of carboxylic acids and their derivatives.			
4	Analyse the functional groups and systematically record the observations. (Practical)	An, S	1,2,4,10	
5	Removed			

Course Content

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hours	CO No (Modified)	Page No.
1	**Alcohols**				71
	1.1	No Change	No Change	1	
	1.2				
	1.3				
	1.4				
2	**Aldehydes and Ketones**				71-72
	2.1	No Change	No Change	2	
	2.2				
	2.3				
	2.4				
3	**Carboxylic Acids and acid derivatives**				
	3.1	No Change	No Change	3	
	3.2				
	3.3				
	3.4				
	3.5				
4	**Organic Chemistry -2 Practicals**				
	4.1	No Change	No Change	4	
5	**Teacher Specific Content**				

Mode of Assessment

End Semester Evaluation (Modified) **Practicals** **Total Marks: 35** **Duration: 1 Hr**	**Page No.**
Lab report: 5 Marks Viva : 10 Marks Analysis and Procedure : 20 Marks	73

Course Name: Physical Chemistry- 1
Course Code: MG4DSCCHE201

Course Outcomes

CO.No	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO.No (Modified)	Page No.
1	Interpret the different properties of real gases and describe various terms involved in molecular motion	E	1,2	75
2	Utilize the concept of acids, bases and buffer solutions to calculate ionic product, pH and ionic strength.	A		
3	Interpret different phases coexist in phase diagram.	E		
4	Identify different types of solutions and apply colligative properties to molecular mass determination	S		
5	Make use of theoretical knowledge to execute experiments in phase equilibria, critical solution temperature and colligative properties.	S	1,2,10	
6	Removed			
7				

Course Content

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hours	CO No. (Modified)	Page No.
1	**GASEOUS STATE**				
	1.1	No Change	No Change	1	76
	1.2				
	1.3				
2	**IONIC EQUILIBRIA**				
	2.1	No Change	No Change	2	76
	2.2				
	2.3				
3 (a)	**PHASE EQUILIBRIA**				
	3.1	No Change	No	3	77

	3.2		Change		
	SOLUTIONS				
3 (b)	3.3	No Change	No Change	4	77
	3.4				
	3.5				
4	**Physical Chemistry- 1- Practicals**				
	4.1	No Change	No Change	5	77
5	**Teacher Specific Content**				

Mode of Assessment

End Semester Evaluation (Modified) **Practicals** **Total Marks: 35** **Duration: 1 Hr**	**Page No.**
Lab report: 5 Marks Viva : 10 Marks Analysis and Procedure : 20 Marks	78

Course Name: Polymer Chemistry
Course Code: MG4DSECHE200

Course Outcomes

CO.No	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO.No (Modified)	Page No.
1	Explain the fundamental concepts of polymers, their classifications and polymerization reactions.	U	1,2,3	80
2	Analyze various polymerization techniques, tacticity in polypropylene on its physical and mechanical characteristics and basic determinants of polymer properties	An		
3	Explain the structure, properties and applications of widely used commercially available polymers and vulcanization of natural rubber.	U		
4	Discuss the advanced level applications of polymers in biomedical and electronics	A		

	fields.			
5	Removed			
6				

Course Content

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hours	CO No. (Modified)	Page No.
1	**Introduction to Polymers and Polymerisation reactions**				81
	1.1	No Change	No Change	1	
	1.2				
	1.3				
	1.4				
2	**Polymerisation Techniques**				
	2.1	No Change	No Change	2	
	2.2				
	2.3				
3	**Chemistry of Commercial Polymers**				82
	3.1	No Change	No Change	3	
	3.2				
	3.3				
	3.4				
4	**Polymeric Materials for Special Applications**				
	4.1	No Change	No Change	4	
	4.2				
	4.3				
	4.4				
	4.5				
5	**Teacher Specific Content**				

Course Name: Food Chemistry
Course Code: MG4DSECHE201

Course Outcomes

CO.No	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO.No (Modified)	Page No.
1	Understand the types, functions, chemistry, safety concerns, and regulations of food additives used in the food industry.	U	1,2,3, 10	84
2	Apply the principles of food chemistry to analyse the functional, chemical, and physical changes in water, carbohydrates, lipids, and proteins during food processing and preservation.	A	1,2,3	
3	Analyse the role of enzymes, vitamins, and minerals in foods, evaluate their stability and bioavailability during processing, and apply food chemistry knowledge to address nutritional and societal needs.	An	1,2,3	
4	Analyse the chemical components, health benefits, and applications of major spices and wine, and evaluate issues related to adulteration and quality control.	An	1,2,3, 5,7, 10	

Course Content

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hours	CO No. (Modified)	Page No.
1	**Food Additives**				
	1.1	No Change	No Change	1	85
	1.2				
	1.3				
	1.4				
	1.5				
	1.6				
	1.7				
	1.8				
2	**Role of Water, Carbohydrates, Lipids and Proteins in Food**				
	2.1	No Change	No Change	2	85-86
	2.2				
	2.3				
	2.4				
3	**Enzymes, Vitamins and Minerals**				

	3.1	No Change	No Change	3	86
	3.2				
	3.3				
	3.4				
4	**Herbs and Spices**				86
	4.1	No Change	No Change	4	
	4.2				
	4.3				
	4.4				
	4.5				
	4.6				
	4.7				
5	**Teacher Specific Content**				

Course Name: Basic Analytical and Cosmetic Chemistry
Course Code: MG4SECCHE200

Course Outcomes

CO.No	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO.No (Modified)	Page No.
1	Illustrate the chemistry behind hand care and nail preparation	U	1,3,10	88
2	Formulate a range of personal care and oral hygiene products, preparing them for roles in the cosmetic and pharmaceutical industries.	S	2,10	
3	Discuss the fundamentals of analytical chemistry. Develop skills for soil and water analysis	S	1,3	
4	Removed			

Course Content

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hours	CO No. (Modified)	Page No.
1	**Hand Care Products and Nail Preparation**				
	1.1	No Change	No Change	1	89
	1.2				

2	**Personal Hygiene Products and Oral Hygiene Products**				
	2.1	No Change	No Change	2	89
	2.2				
3	**Analytical Chemistry**				
	3.1	No Change	No Change	3	89-90
	3.2				
	3.3				
4	**Teacher Specific Content**				

Course Name: Basic Environmental Chemistry
Course Code: MG4VACCHE200

Course Outcomes

CO.No	Expected Course Outcome (Modified)	Learning Domains (Modified)	PO.No (Modified)	Page No.
1	Describe the layers of the environment, identify major greenhouse gases, and outline basic strategies for reducing greenhouse gas emissions.	U	1,2,3,6,7,8, 10	91
2	Analyse the causes and consequences of water and air pollution and apply basic purification and quality improvement methods to environmental protection.	An		
3	Analyse various renewable energy sources, assess their sustainability and conversion methods, and apply knowledge of sustainable materials and biomass energy for decarbonization and resource management.	An		
4	Removed			

Course Content

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hours	CO No. (Modified)	Page No.
1	**Introduction to the Environment**				92
	1.1	No Change	No Change	1	
	1.2				
	1.3				
2	**Air and Water Pollution**				
	2.1	No Change	No Change	2	
	2.2				

3	**Renewable Energy and Sustainability**				
	3.1	No Change	No Change	3	
	3.2				
	3.3				
4	**Teacher Specific Content**				

Course Name :Fundamentals of Physical Chemistry
Course Code: MG4DSCCHE202

Mode of Assessment

End Semester Evaluation (Modified) **Practicals** **Total Marks: 35** **Duration: 1 Hr**	**Page No.**
Lab report: 5 Marks Viva : 10 Marks Analysis and Procedure : 20 Marks	97

MODE OF ASSESSMENT

DSC TYPE COURSES

End Semester Evaluation : Theory (Modified)

Total Marks : 50 **Duration: 1.5 Hrs**

Course Code & Course Name	Type of Questions	Number of Questions to be Answered	Total Marks
MG4DSCCHE200: Organic Chemistry-2 MG4DSCCHE201: Physical Chemistry-1 MG4DSCCHE202- Fundamentals of Physical Chemistry	Multiple Choice Questions	10 out of 10	10 x 1 =10
	Short Answer Questions	4 out of 6	4 x 5 = 20
	Short Essay	2 out of 4	2 x 10 = 20

DSE TYPE COURSES

End Semester Evaluation : Theory (Modified)

Total Marks : 70 **Duration: 2 Hrs**

Course Code & Course Name	Type of Questions	Number of Questions to be Answered	Total Marks
MG4DSECHE200: Polymer Chemistry MG4DSECHE201: Food Chemistry	Very Short Answer Questions	10 out of 12	10 x 2 =20
	Short Answer Questions	6 out of 8	6 x 5 = 30
	Short Essay	2 out of 4	2 x 10 = 20