

DEPARTMENT OF CHEMISTRY MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE (MAMO) COLLEGE

[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

CURRICULUM FOR CERTIFICATE COURSE CERCHOO9: ENVIRONMENTAL CHEMISTRY

OFFERED DURING THE
ACADEMIC YEAR 2020-21
[APPROVED BY ACADEMIC COMMITTEE, MAMO COLLEGE]



MANASSERY, MUKKAM POST, KOZHIKODE, KERALA, INDIA, 673 602. EMAIL: MAMOCOLLEGE@GMAIL.COM



OFFICE: 0495-2297319 PRINCIPAL: 0495-2295121



www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

	CONTENTS	
1	INSTITUTIONAL VISION, MISSION & OBJECTIVES	3
2.	VISION, MISSION, OBJECTIVES & CORE VALUES OF THE DEPARTMENT	4
3.	B.Sc POLYMER CHEMISTRY: PEOs	5
4.	B.Sc POLYMER CHEMISTRY: PSOs	6
5.	B.Sc POLYMER CHEMISTRY: POs	7
6.	CERCH009: COURSE CURRICULUM	9
	6.1. COURSE LEVEL	10
	6.2. PREREQUISITE	10
	6.3. COURSE INTAKE & ADMISSION	10
	6.4. COURSE COORDINATOR	10
	6.5. COURSE PREAMBLE	10
	6.6. DURATION	10
	6.7. CURRICULUM FOCUS	11
	6.8. COURSE OBJECTIVES	11
	6.9. SKILL EXPECTED	11
	6.10. COURSE OUTCOMES	11
	6.11. MAPPING OF COs WITH PO AND PSOs	12
	6.12. MODULE-WISE COURSE CONTENTS	12
	6.13. DELIVERY MODE	14
	6.14. DELIVERY SCHEDULE	14
	6.15. DETAILED COURSE DELIVERY PLAN	14
	6.16. ASSESSMENT COMPONENTS	16
	6.17. COURSE EVALUATION & GRADING	17
	6.18. GRIEVANCE REDRESSAL	17
	6.19. ISSUANCE OF CERTIFICATES	18





Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



www.mamocollege.org

ORPHANAGE COLLEGE
P.O. MANASSERY, MUKKAM - 673602

COORDINATOR
ACADEMIC COMMITTEE
MUHAMMED ABDURAHIMAN MEMORIAL



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

VISION, MISSION & OBJECTIVES



VISION: Build Scientifically Oriented, Intellectually Accomplished, Morally Upright and Socially Committed youth who can play a constructive role in Nation Building.



MISSION: Intellectual, social and economic empowerment of the youth in general and women, minorities, orphans and the destitute in particular by providing quality, value-based higher-education.



OBJECTIVES: Pursuit of Excellence, Harnessing technology, Thrust on value-based education, Nurturing Excellence and Moulding the youth for Nation Building



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

VISION, MISSION, OBJECTIVES & CORE VALUES OF THE DEPARTMENT



VISION: To be a recognized model for educating students, prepared to compete in and contribute to the ever-changing, technology-centred world.



MISSION: To encourage in the broadest and most liberal manner towards the advances in Chemistry through education by providing students with quality education.



OBJECTIVES: (a) To provide a broad foundation in Chemistry that stresses scientific reasoning and analytical problem solving with molecular perspective. (b) To provide students with skills required to perform laboratory experiments and data analysis. (c) Provide programmes that meet the educational and technical demands of the subdisciplines. (d) Value-based training for ethical Conscience. (e) Inculcate critical and analytical thinking. (f) Apply fundamental chemical principles to gather and explain data.



CORE VALUES: Innovation, Excellence, Ethical Consciousness, Service Mindedness, Professionalism and Global Outlook.



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com

www.mamocollege.org

COORDINATOR
ACADEMIC COMMITTEE
MUHAMMED ABDURAHIMAN MEMORIAL
ORPHANAGE COLLEGE
P.O. MANASSERY, MUKKAM - 673602



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

B.Sc. POLYMER CHEMISTRY: PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

After 4 to 5 years of graduation, the career and professional accomplishments attained by the B.Sc Polymer Chemistry Graduates would reflect that the programme really prepared the graduates to deal with the real world, where they could apply and use the skills and knowledge they have learned to good use.

Specifically, the graduate would be able to:



PEO1: Acquire the fundamental principles of Science and

Chemistry with modern experimental and

computational skills.



PEO2: Ability to handle problems of practical relevance to

society while complying with economical, ethical

and safety factors.



PEO3: Demonstrate professional excellence, ethics, soft

skills and leadership qualities.



PEO4: Have sufficient breadth of understanding to enable

continued professional development and lifelong

learning throughout their career.



COORDINATOR
ACADEMIC COMMITTEE
MUHAMMED ABDURAHIMAN MEMORIAL
ORPHANAGE COLLEGE
P.O. MANASSERY, MUKKAM - 673602



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com







[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

B.Sc POLYMER CHEMISTRY: PROGRAMME SPECIFIC OUTCOME (PSOs)

On successful completion of a Bachelor Degree in Polymer Chemistry, the graduates would be able to:

PSO1: Gain the knowledge of Chemistry through theory and hands-on training.

PSO2: To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.

PSO3: To familiarize with the emerging areas of Chemistry and their applications and to apprise the students of its relevance in future studies.

PSO4: Understand good laboratory practices and safety.

PSO5: To be conversant with the applications of Chemistry in day-to-day life.



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com

Office: 0495-2297319 Principal: 0495-2295121 www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

B.Sc POLYMER CHEMISTRY: PROGRAMME OUTCOMES (POs)

The students graduating from B.Sc Polymer Chemistry Programme should be able to:

PO1: Demonstrate, solve and an understanding of major concepts in all Disciplines of chemistry problems.

PO2: Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.

PO3: Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.

PO4: Find out the green route for chemical reaction for sustainable development.

PO5: To inculcate the scientific temperament in the students and outside the scientific community.

PO6: Use modern techniques, recent equipment and software for leaning Chemistry.



COORDINATOR
ACADEMIC COMMITTEE
MUHAMMED ABDURAHIMAN MEMORIAL
ORPHANAGE COLLEGE
P.O. MANASSERY, MUKKAM - 673602

Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com







[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Gradel

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009



PO7: To demonstrate professional and ethical attitude with

enormous responsibility to serve the society.

PO8: To apply contextual knowledge and modern tools of

chemistry research for solving problems.

PO9: An understanding of professional, ethical, legal,

security, social issues and responsibility.

PO10: Be acquainted with the contemporary issues latest

trends in technological development and thereby innovate new ideas and solutions to existing

problems.



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



www.mamocollege.org

COORDINATOR ACADEMIC COMMITTEE MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE COLLEGE P.O. MANASSERY, MUKKAM - 673602



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

CERTIFICATE COURSE

CERCH009: ENVIRONMENTAL CHEMISTRY

COURSE CURRICULUM

Course Name	Environmental Chemistry			
Course Code	CERCH009			
Year	2020-21			
Course Designer	Ms. Juvairiya P			
Couse Duration	30 Hrs.			
Course Schedule	November to February			
Maximum Students Intake	60 Students			



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

1. COURSE LEVEL

Advanced, skill-oriented certificate programme.

2. PREREQUISITE

None.

3. COURSE INTAKE & ADMISSION

Maximum 60 students will be given admission to the course based on First-Come-First-Serve basis. All the students of the MAMO College are eligible for free enrolment for the course. The enrolment notification will be issued for the course well in advance of the commencement of the course.

4. COURSE COORDINATOR

Ms. Juvairiya P, Assistant Professor, Department of Chemistry

5. COURSE PREAMBLE

An Environment is everything that is around us, which includes both living and non-living things such as soil, water, animals and plants, which adapt themselves to their surroundings. It is nature's gift that helps in nourishing life on the earth. The environment plays an important role in the existence of life on the planet earth. The word Environment is derived from the French word "Environ" which meaning "surrounding.".

6. DURATION

Total Duration: 30 Hrs. [Contact Hrs. 21 Hrs Course Works: 6 and Assessment

Works: 3]



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

7. CURRICULUM FOCUS

Enhance the employability of the learners through curriculum enrichment for additional skill development.

8. COURSE OBJECTIVES

Learners are expected to

- a) Understand the environment deeply.
- b) To develop a socially and environmentally responsible person.

9. SKILL EXPECTED

On the successful completion of the course, learners will be able to:

- a) Gain knowledge about the environment, sustainability, development and the maintenance of the resources of the environment
- b) Develop action plan to protect the environment.

10. COURSE OUTCOMES

Upon the successful completion of the course, learners will be able to:

CO No	Course Outcome(CO)	Skill/Knowledge Attainment Level Based on Revised Bloom's Taxonomy
CO1	To develop a socially responsible society	Apply
CO2	Create an environmentally friendly culture for the coming generations	Create
CO3	Basic knowledge on pollution and activities for reducing the pollution	Understand



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com

Office: 0495-2297319 Principal: 0495-2295121 www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

CO No	Course Outcome(CO)	Skill/Knowledge Attainment Level Based on Revised Bloom's Taxonomy
CO4	Encourage to use natural energy resources and develop a culture to conserve the natural resources	Understand
CO5	Role of individual in the protection of our environment	Analyze

11. MAPPING OF COs WITH PSOs AND POs

COs	PO1	PO2	P03	P04	PO5	P06	PO7	P08	P09	PO10	PS01	PSO2	PSO3	PS04	PSO5
CO1	0	1	3	3	3	1	3	1	2	3	2	1	2	0	3
CO2	1	2	3	3	2	0	2	1	2	2	1	0	3	0	3
CO3	2	1	3	3	2	0	2	0	2	2	2	0	2	0	3
CO4	1	2	3	3	2	1	3	0	2	2	2	0	2	0	3
CO5	1	2	3	3	2	1	2	1	2	2	1	0	2	0	3
AVG	1	1.6	3	3	2.2	0.67	2.4	0.6	2.2	3	1.6	0.2	2.2	0	3

12. MODULE-WISE COURSE CONTENTS

MODULE 1: NATURAL ENVIRONMENT

MODULE DURATION: 8 Hrs. [Contact Hrs. 5 Hrs., Course Works: 2 and

Assessment Works: 1]



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com

www.mamocollege.org

COORDINATOR ACADEMIC COMMITTEE MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE COLLEGE P.O. MANASSERY, MUKKAM - 673602



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Gradel

DEPARTMENT OF CHEMISTRY CURRICULUM FOR CERTIFICATE COURSE - CERCH009

MODULE CONTENT: lithosphere- Oceanic lithosphere, Continental lithosphere. Hydrosphere. Atmosphere- troposphere, stratosphere, mesosphere, thermosphere, exosphere. Biosphere.

MODULE OUTCOME: On successful completion of the module learners can familiarize with the fundamentals of our environment and they can understand the different regions of atmosphere.

MODULE 2: NATURAL RESOURCES

MODULE DURATION: 10 Hrs. [Contact Hrs. 6 Hrs., Course Woks: 3 and Assessment Works: 2]

MODULE CONTENT: Forest resources, Water resources, Mineral resources, Food resources, Energy resources, Land resources, Role of an individual in conservation of natural resources.

MODULE OUTCOME: On successful completion of the module learners should understand thoroughly about the natural energy resources and how to preserve the natural energy resources.

MODULE 3: ENVIRONMENTAL POLLUTION

MODULE DURATION: 12 Hrs. [Contact Hrs. 5 Hrs., Course Works: 2 Hrs and Assessment Works: 4 Hrsl

MODULE CONTENT: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, nuclear hazards. Solid waste Management Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

MODULE OUTCOME: On successful completion of the module learners can familiarize with the different type of environment pollutions and how to control the pollution. Moreover they can understand the role each individual in maintaining our environment.

REFERENCES:

- 1. De A. K., Environmental Chemistry, Wiley Eastern Ltd.
- 2. Trivedi R. K. and P. K. Goel, *Introduction to Air Pollution*, Techno-Science Publication (TB).
- 3. Sharma B. K., 2001. Environmental Chemistry. Geol Publ. House, Meerut.
- 4. Cunningham, W. P. Cooper, T. H. Gorhani, E & Hepworth, M. T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.

13. DELIVERY MODE

The course employs multi-mode delivery mechanism including contact lecture, online videos, and online and offline course works.

14. DELIVERY SCHEDULE

November to February.

15. DETAILED COURSE DELIVERY PLAN

Hour	Delivery Mode and Activity	Topics to be Covered
1	Contact Hour - 1: Classroom Discussion	Introducing the Course
2	Contact Hour - 2	Lithosphere
3	Contact Hour - 3	Hydrosphere
4	Contact Hour - 4	Atmosphere
5	Contact Hour - 5	Biosphere



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com

Office: 0495-2297319 Principal: 0495-2295121 www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

Hour	Delivery Mode and Activity	Topics to be Covered			
6	Contact Hour - 6	Forest Resources			
7	Contact Hour - 7	Water Resources			
8	Contact Hour - 8	Mineral Resources			
9	Course Work – 1: Course Assignment	Course Assignment on Fundamentals of our Environment			
10	Course Work – 2: Course Assignment	Course Assignment on Different regions of the atmosphere			
11	Assessment Hour - 1	Assignment on Different regions of the Atmosphere.			
12	Course Work – 3: Course	Course Assignment on How to			
14	Assignment	preserve natural energy resources			
13	Assessment Hour - 2	Assignment on Natural Energy			
10	Assessment Hour - 2	Resources			
14	Contact Hour - 9	Energy Resources			
15	Contact Hour - 10	Land Resources			
16	Contact Hour - 11	Role of Individual Conservation Of Resources			
17	Contact Hour - 12	Air Pollution			
18	Contact Hour - 13	Water Pollution			
19	Course Work – 4: Course Assignment	Course Assignment on Pollution			
20	Course Work – 5: Course Assignment	Course Assignment on Prevention of Pollution			
21	Contact Hour - 14	Soil Pollution			
22	Contact Hour - 15	Noise Pollution			
23	Contact Hour - 16	Sum up of module 1,2&3			
24	Assessment Hour - 3	Assignment on Solid Waste Management			



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



Office: 0495-2297319 Principal: 0495-2295121





[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Gradel

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

Hour	Delivery Mode and Activity	Topics to be Covered
25	Assessment Hour - 4	Assignment on nuclear Hazardous
26	Assessment Hour - 5	Assignment on Thermal Pollution
27	Course Work – 6: Course	Course Assignment on Maintaining
41	Assignment	Our Environment
28	Course Work – 7: Course	Course Assignment on Pollution
40	Assignment	Control
29	Assessment Hour - 6	Course End Assessment
30	Assessment Hour - 7	Course End Assessment

16. ASSESSMENT COMPONENTS

Total Marks: 100

CLASSROOM AND GROUP PARTICIPATION: 20 Marks. This component aims at testing the course content understanding and the reflection skills and their attainment levels.

COURSE WORK: 30 Marks. This component aims at testing the skill attainment levels of the learners in analysing and implementing the real-world problem.

MID-COURSE ASSIGNMENT: 20 Marks. This component aims at testing the module-wise attainment levels of the course objectives and course outcome and module outcomes.

END-COURSE ASSESSMENT: 30 Marks. This component aims at testing overall attainment levels of the course with respect to course objectives, course outcome and module outcomes.



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com

Office: 0495-2297319 Principal: 0495-2295121 www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Gradel

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

17. COURSE EVALUATION & GRADING

The course evaluation is done/coordinated entirely by the course coordinator. The following 10-point Indirect Grading System is used for awarding grades to students:

Percentage of Mark	Letter Grade	Interpretation	Class
95 and above	0	Outstanding	First Class with Distinction
85 to below 95	A+	Excellent	First Class with Distinction
75 to below 85	A	Very good	First Class with Distinction
65 to below 75	B+	Good	First Class
55 to below 65	В	Satisfactory	First Class
45 to below 55	C	Average	Second Class
35 to below 45	P	Pass	Third Class
Below 35	F	Failure	Fail
Incomplete	I	Incomplete	Fail
Absent	Ab	Absent	Fail

The grade is awarded by the course-coordinator by considering the overall performance of the learner in all the assessment component of the course.

18. GRIEVANCE REDRESSAL

The grievances, if any, can be submitted to the Head of the Department for its redressal. Those grievances that cannot be redressed by HoD can be forwarded to Academic Council of the College for final decision on the matter.



Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com

Office: 0495-2297319 Principal: 0495-2295121 www.mamocollege.org



[Govt. Aided First Grade College & Affiliated to University of Calicut. Re-Accredited by NAAC with A Grade]

DEPARTMENT OF CHEMISTRY

CURRICULUM FOR CERTIFICATE COURSE - CERCH009

19. ISSUANCE OF CERTIFICATES

The Course Completion Certificate will be issued to all the successful candidates showing the Total Marks and Grade Obtained.





Manassery, Mukkam Post, Kozhikode, Kerala, India, 673 602. email: mamocollege@gmail.com



www.mamocollege.org