

Nallamuthu Gounder Mahalingam College, Pollachi (Autonomous)

NAAC Accredited and Affiliated to Bharathiar University

19 PCV402-CHEMISTRY OF INDUSTRIAL PROCESS: AN INTRODUCTION

(A value added course offered by Post Graduate Department of Chemistry)

Offered to: **Students of all streams**

Total Hours: **30Hrs**

Semester of offering: **Even**

MISSION

We aim to cultivate a deep understanding of the chemical reactions, materials, and technologies used in various industries, enabling students to critically analyze, innovate, and contribute to the advancement of industrial processes in a sustainable and responsible manner.

VISION

To empower students with a comprehensive understanding of the chemical processes that drive industrial production, fostering a generation of professionals equipped to innovate and optimize industrial processes for sustainability and efficiency.

Scope

- This course will train participants with the knowledge, skills and competencies required for success in the practical operation of water treatment plants.
- This course is designed to expertise regulations governing industrial wastes, sources of wastes, methods for preventing and minimizing wastes at the source, and industrial waste monitoring.

Objectives

- Define and implement cleaner production activities, industrial water management strategies for pollution and toxicity prevention.
- To Select the most appropriate treatment technology and design a wastewater treatment methods to treat an industrial effluent stream for a selected industry.
- Integrate cleaner production, industrial water management, wastewater treatment processes, and disposal in the design on an industrial waste treatment process for a selected industry

Course Outcomes

- To teach the students the essential role of water in industries
- To study the various methods involved in analytical techniques
- The pupil will learn about the characteristics of water, water pollution and how to manage and prevent water pollution.
- Learn the physico chemical properties of water, different wastewater treatment processes and water management strategies.

Contact Details:

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Mrs. K. Vimala Devi	k.vimala83@gmail.com	9865222985
Mrs. R. Mini	minichem1990@gmail.com	9952602887

Course fee: Rs. 350/- Class time: 4.00pm to 5.00 pm Course starts on 16.03.2022
Course admission: first week of March 2022

19PCYV02- CHEMISTRY OF INDUSTRIAL PROCESS: AN INTRODUCTION

SCOPE

- This course will train participants with the knowledge, skills and competencies required for success in the practical operation of water treatment plants.
- This course is designed to expertise regulations governing industrial wastes, sources of wastes, methods for preventing and minimizing wastes at the source, and industrial waste monitoring.

Objectives

Upon completion, the participant should be able to:

- To teach the students the essential role of water in industries
- To study the various methods involved in analytical techniques
- To learn about the characteristics of water, water pollution and how to manage and prevent water pollution.

Employability

- Graduates will be qualified to work in Wastewater Treatment Plants as operators to the expected industry standard.
- Students have the opportunity to undertake an optional placement and enhance their entrepreneur skill by offering valuable experience.

Nature of Course

- Value added

Advantages

- To reduce, recycle and reuse water for different purposes

Course Outcomes

- Define and implement cleaner production activities, industrial water management strategies for pollution and toxicity prevention.
- To Select the most appropriate treatment technology and design a wastewater treatment methods to treat an industrial effluent stream for a selected industry.
- Integrate cleaner production, industrial water management, wastewater treatment processes, and disposal in the design on an industrial waste treatment process for a selected industry.
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UNIT-I

L P T

Characteristics of Water

20 10 30 hrs

10 Hrs

Introduction – sources of water – Characteristics of water, Water Analysis- study of water samples - acidity, alkalinity, Hardness, free chlorine, chlorine demand, calcium, magnesium, iron, manganese, zinc, ammonia, nitrate, sulphate and fluoride, DOC, BOD, COD and their importance- Disadvantages of hard water – Scale and sludge formation in boiler – Boiler Corrosion - Softening methods –desalination of Brackish water: Distillation, Electro dialysis and reverse osmosis.

UNIT-II

Water Pollution

10 Hrs

Introduction –water Pollutants – physical and chemical pollution of water – ground water pollution – harmful effects of ground water pollution – surface water. River water and sea water pollution, Oil pollution of water. Effects oil pollution in marine water – Radioactive materials in water- Role of pollution control boards.

UNIT-III

Physico chemical Examination of water

10 Hrs

Collection of samples – colour – odour Turbidity pH – temperature – Soilds: Total Solids, Dissolved solids, suspended solids, setttable solids – Acidity — Alkalinity – Hardness – calcium, Magnesium, Sodium - Potassium - Iron–*Dissolved Oxygen*, BOD, COD, biological and chemical treatments.

Text books:

1. Mark C. M. van Loosdrecht, Per Halkjaer Nielsen, C. M. Lopez-Vazquez, Damir Brdjanovic, (2016). *Experimental methods in waste water treatment*, IWA Publishing.

Vivek V. Ranade, Vinay M. (2014). *Industrial Wastewater Treatment, Recycling and Reuse*. Bhandari Butterworth-Heinemann Publications,

Reference Books:

1. Mukhlyonov. I (1979) *Chemical Technology*, Moscow, 3rd Edition. Mir publication
2. Norris Shreve. R &. Brink, J.A (1977) *Chemical Process Industries*. 4th Edition. McGraw Hill
- Tokyo.
3. Agarwal. S.K. (2005) *Water Pollution*, APH Publishing.
4. Chakrabarty, B.N. (1981) *Industrial Chemistry*, Oxford & IBH Publishing Co., New Delhi.
5. Singh, P.P. Joseph, T.M. Dhavale, R.G (1983) *College Industrial Chemistry*, Himalaya Publishing House, Bombay. 4th Edition
6. De. A.K. (1989) *Environmental Chemistry*. 11th Edition, Wiley Eastern Ltd. Meerut.

Course Designed by	Verified by HoD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: Dr.K.Poonkodi Dr.V.Prabhu Ms.K.Vimaladevi Ms. R.Mini Ms. M.Anusuya Signature:	Name: Dr.K.Poonkodi Signature:	Name: Mr.K.Srinivasan Signature:	Name: Dr.R.Muthukumaran Signature:

Dr.K.POONKODI
HEAD
PG DEPARTMENT OF CHEMISTRY (SF)
NGM COLLEGE, POLLACHI

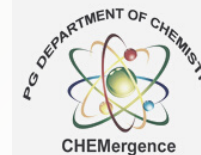
K. SRINIVASAN, M.C.A.,
Co-ordinator
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NGM College (Autonomous)
Pollachi - 642 001.

Dr. R.MUTHUKUMARAN
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.



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CERTIFICATE OF COMPLETION

Value Added Course

This is to certify that **Mr. BHUVANESWARAN.R, II-MSc Chemistry,**
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OF INDUSTRIAL WATER PROCESS"

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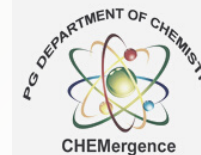


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Chemistry, Postgraduate Department of Chemistry, NGM College,
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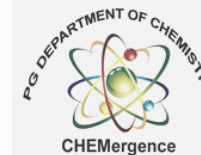


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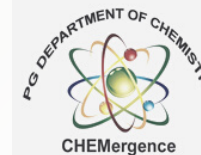


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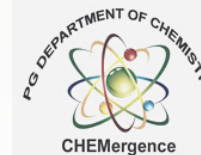


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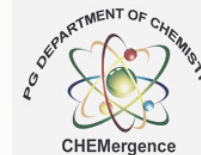


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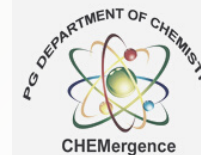


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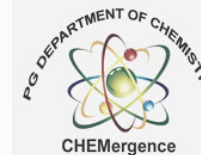


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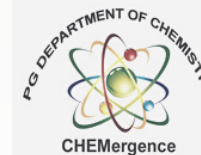


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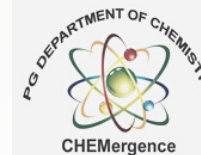


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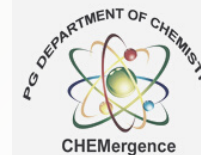


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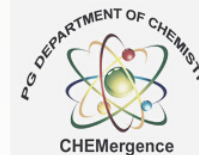


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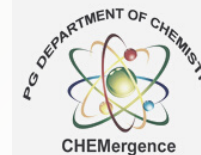


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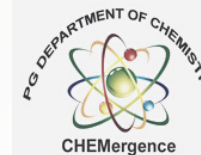


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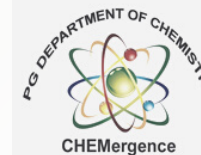


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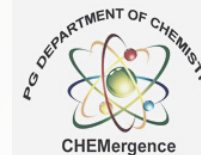


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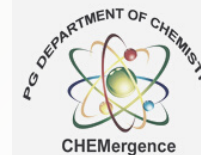


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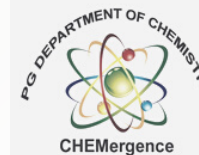


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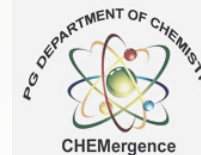


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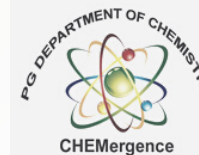


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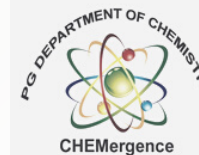


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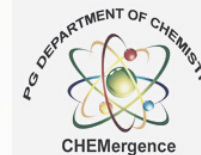


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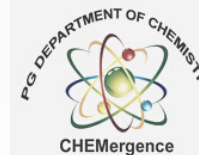


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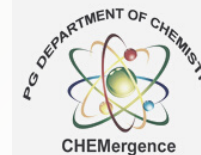


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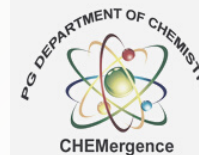


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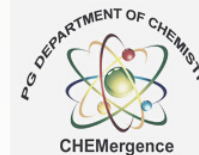


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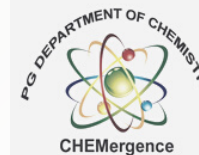


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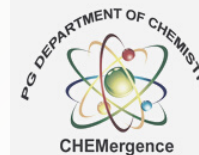


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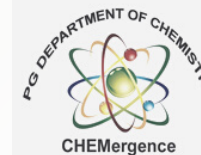


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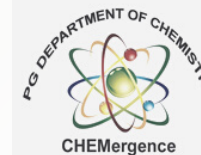


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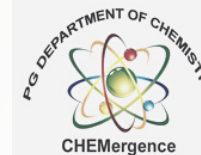


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HOD

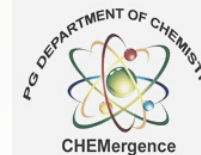


Principal



NGM COLLEGE

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CERTIFICATE OF COMPLETION

Value Added Course

This is to certify that **Ms. Muthuselvi, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

lc. P-LL

HOD

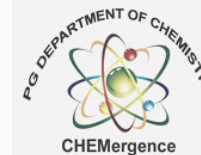


Principal



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CERTIFICATE OF COMPLETION

Value Added Course

This is to certify that **Mr. Ramanaa N, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY**
OF INDUSTRIAL WATER PROCESS"

lc. P-LL

HOD

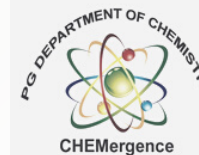


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Value Added Course

This is to certify that **Ms. Reshmi Elsa Joseph, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

lc. P-LL

HOD

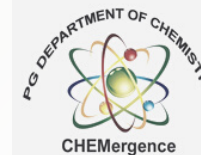


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Value Added Course

This is to certify that **Ms. Revathi K, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

lc. P-LL

HOD

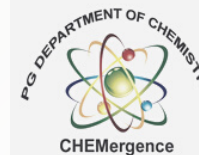


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CERTIFICATE OF COMPLETION

Value Added Course

This is to certify that **Ms. Rohini P, I-MSc Chemistry, Postgraduate**
Department of Chemistry, NGM College, Pollachi, has successfully
completed a **Value Added Course** entitled "**CHEMISTRY OF**
INDUSTRIAL WATER PROCESS"



HOD



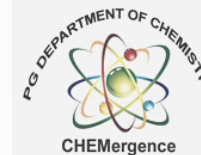


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CERTIFICATE OF COMPLETION

Value Added Course

This is to certify that **Ms. Sharmiladharshini K, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY**
OF INDUSTRIAL WATER PROCESS"

lc. P-LL

HOD

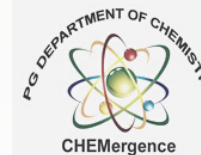


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Value Added Course

This is to certify that **Ms. Shenbagapriya J, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

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HOD

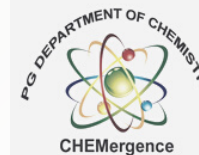


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Value Added Course

This is to certify that **Ms. Sreenisha S, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

lc. P-LL

HOD

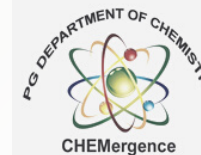


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Value Added Course

This is to certify that **Ms. Sritha M, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

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HOD

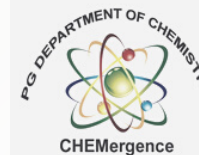


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Value Added Course

This is to certify that **Ms.Swathi P, I-MSc Chemistry, Postgraduate**
Department of Chemistry, NGM College, Pollachi, has successfully
completed a **Value Added Course** entitled "**CHEMISTRY OF**
INDUSTRIAL WATER PROCESS"

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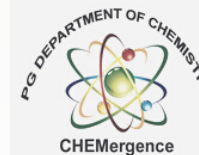


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Value Added Course

This is to certify that **Ms. Vasuki M, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

lc. P-LL

HOD

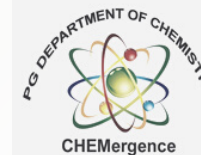


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Value Added Course

This is to certify that **Ms. Vrinda Sivadas N, I-MSc Chemistry,**
Postgraduate Department of Chemistry, NGM College, Pollachi, has
successfully completed a **Value Added Course** entitled "**CHEMISTRY
OF INDUSTRIAL WATER PROCESS**"

lc. P-LL

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Principal