Dated 5/10/23

From,

HOD
Dept of Chemistry
Meskeveeyam college, Valanchery

To,

Principal
Meskeveeyam college, Valanchery

Sir,

Sub: Request for conducting certificate course in association with Northamps, Thripunithura, Cochi.

Considering the demands from students and industry, the Department of Chemistry would like to conduct a certificate course on "Scientific Waste Management." The course being conducted in collaboration with NORTHAMPS, Cochi. A memorandum of understanding is also being planned with Northamps. The course is meant for undergraduate and postgraduate students and is of 30 hr duration.

I request you to kindly grant permission to conduct the course.

Thanking You,
Yours Faithfully

M.E.S. Ke Vee Yam College * Valanchery * Date:.....

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MES KEVEEYAM COLLEGE
VALANCHERY

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principal@meskeveeyamcollege.ac.in

Reaccredited with 'A+' Grade by NAAC (Score 3.44)

Aided by Govt. of Kerala and Affiliated to the University of Calicut
ISO 9001:2015 certified institution

Proceedings of the Principal, MESKVM COLLEGE VALANCHERY

(Dr.Vinod kumar K.P.)

Proceeding No: Certificate Course/ CHE/2023-2024/01 dated 12/10/23

Ref: 1. Letter from HOD , department of chemistry

ORDER

As per reference cited (1) Prof.K.M. Rukkiya (Head, department of Chemistry) has requested permission to conduct a certificate course on scientific waste management in collaboration with NORTHAMPS.The course is meant for UG and PG students. Sanction is hereby accorded to department of chemistry to conduct the course by accepting the terms and conditions mentioned in the Memorandum of Understanding between the NORTHAMPS and the Department.

Order is issued accordingly

Dr.Vinod kumarK.P

M.E.S. Ke Vee Yam College
Date:.....
Valanchery

Prof. (Dr.) VINOD KUMAR.K.P
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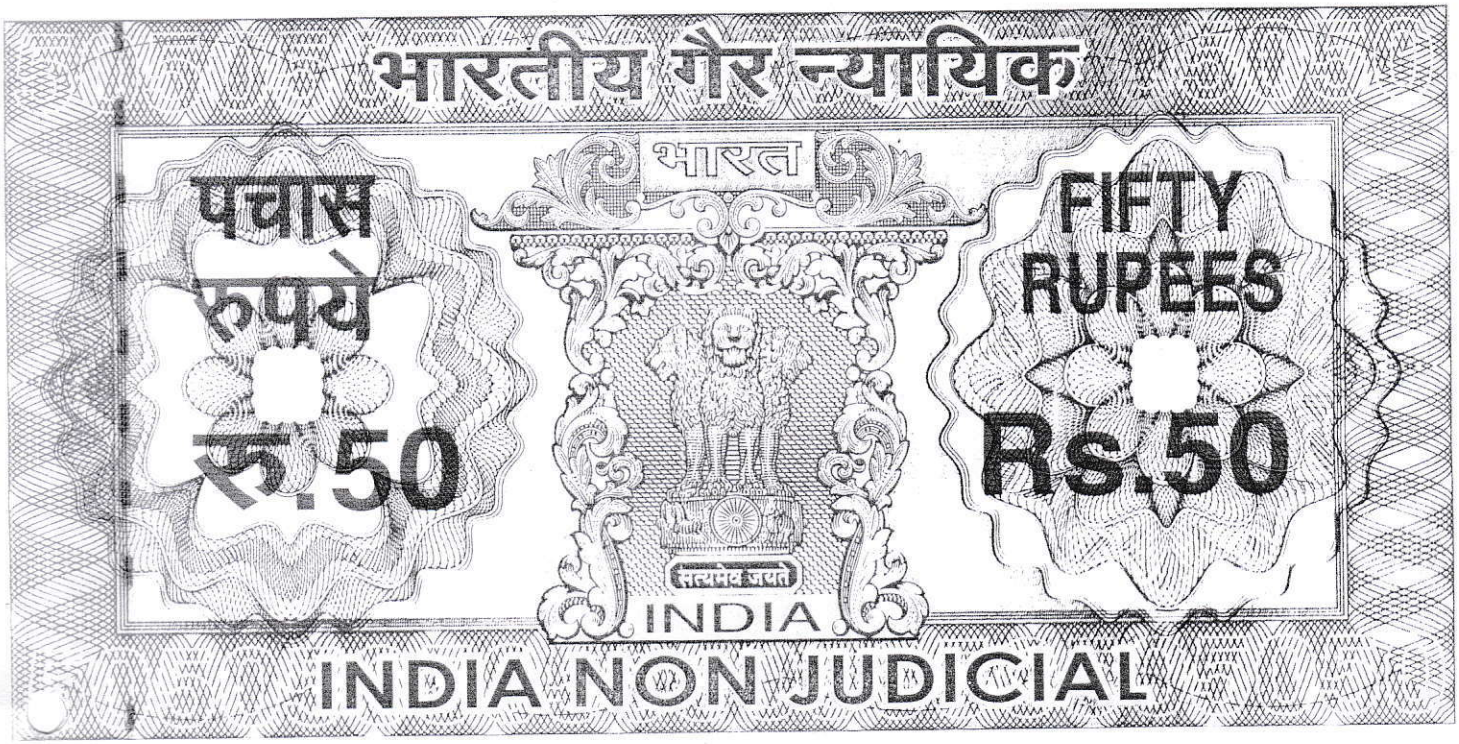

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This collaboration has been made at 21/11/2023

BETWEEN

NORTHAMPS GLOBAL ECOSOLUTIONS PVT.LTD., Thrippunithura, Kochi, Kerala 682301, a waste management organization offers vital role in maintaining environmental health, conserving resources, and mitigating the negative impacts of waste on ecosystems and human well-being(ISO-9001-2015). Northamps are collaborator of GIZ (German Govt agency working for environmental sustainability) and approved service provider, empanelled engineering consultant and technical consultant for solid and liquid waste management for Suchitwa Mission and Haritha Keralam, Govt of Kerala. Northamps also have Kerala State Pollution Control Board consent to operate waste management services all over Kerala.

AND

RESEARCH & POST GRADUATE DEPARTMENT OF CHEMISTRY,

MES Keveeyam COLLEGE VALANCHERY

Northamps has agreed to the following,

- To provide certificate classes for students on "Scientific waste management" to empower their knowledge and awareness on proper disposal of waste in the academic year 2023-2024

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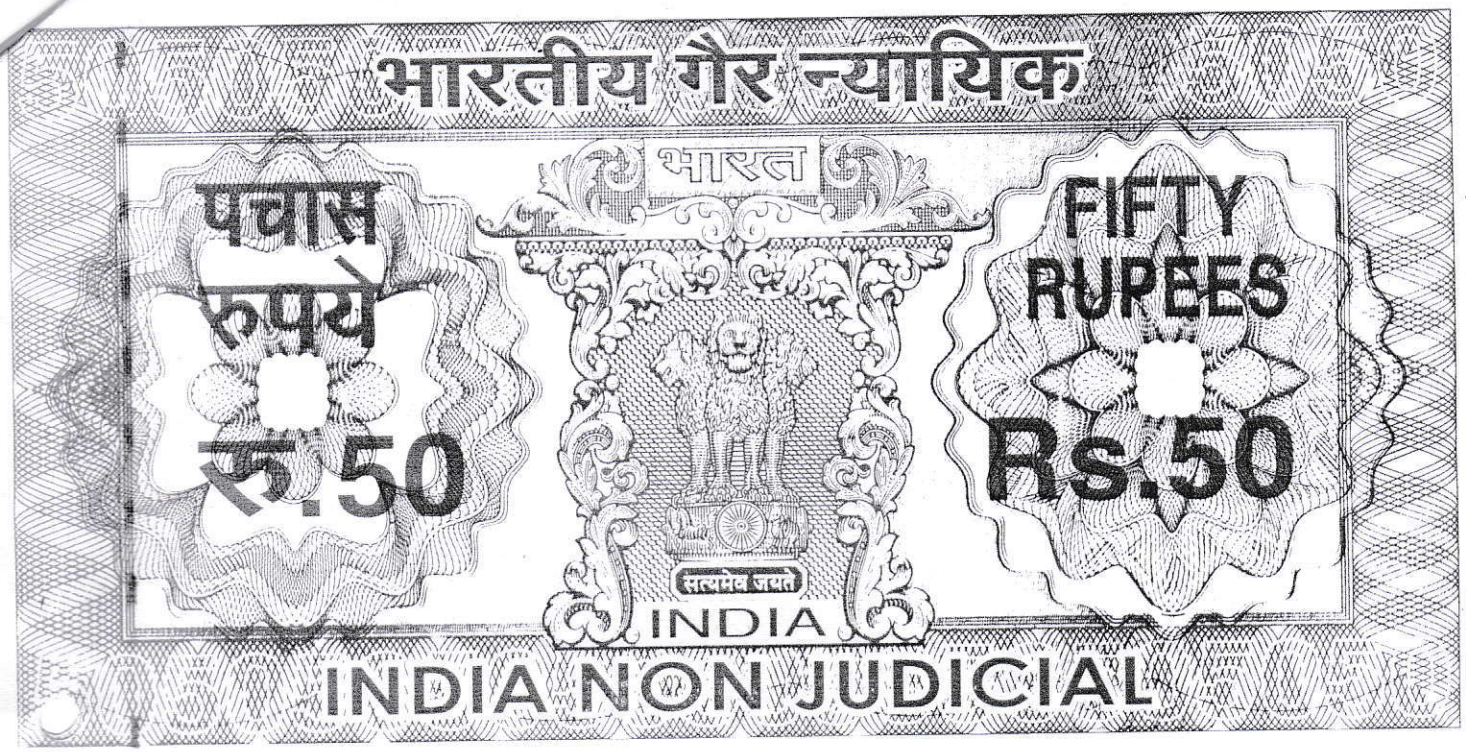
20 NOV 2023



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RESEARCH & POST GRADUATE DEPARTMENT OF CHEMISTRY,

MES Keveeyam COLLEGE VALANCHERY has agreed to the following,

To provide students for the certificate courses on "Scientific waste management"

AUTHORISATION

The signing of this document is a formal undertaking. It implies that the signatories will strive to reach, to the best of their ability, the scope and terms stated in the agreement. The agreement may be extended by mutual consent of the two parties after the one-year period. This agreement place no financial obligations or supplementary funding commitments on either party.

On behalf of the organization I represent, I wish to sign this MoU and contribute to its development.

1. Name: Mr. Zakariya Joy
   Title: Director, Northamps Global Ecosolutions Pvt.Ltd.,
   Date : 21/11/2023
2. Name : Rukkiya K M
   Title: HOD, Department of Chemistry
   Date : 21/11/2023

SUB TREASURY VALANCHERY
20 NOV 2023

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SYLLABUS FOR

CERTIFICATE PROGRAMME ON "SCIENTIFIC WASTE MANAGEMENT"

ORGANIZED BY

NORTHAMPS GLOBAL ECOSOLUTION PVT LTD

The certificate programme on "Scientific Waste Management" provides the significance of proper waste segregation, management and disposal. The course empowers faculties to create awareness and motivates the students/faculty to achieve competitive teaching and learning environment.

Duration: The certificate course will be conducted with a total of 30 hrs online classes

Programme Schedule

Module 1: Basics of waste management, types, solid waste management- physical, chemical characteristics and significance of waste disposal

Module 2: Biodegradable waste management, non-biodegradable waste management, disposal techniques

Module 3: The sanitary waste management, Chemical waste management, Bio-medical waste management, E-waste management, Glass waste management, Metal waste management, Solid waste management rules and regulations.

Module 4: Plastics and waste management

Module 5: Liquid waste management

Module 6: Climate change and waste, Zero waste initiatives, Sustainable materials. Awareness and education for scientific waste management

THEORY (30 hrs)

Topic 1: Introduction and definition waste management, classification of waste: solid, liquid, gaseous, properties of waste, importance of scientific waste management, technologies related to solid waste management

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Topic 2: Biodegradable waste, home composting and commercial composting methods, non-biodegradable waste management-sources, classification of non-biodegradable waste, disposal methods of non-biodegradable waste

Topic 3: Sanitary waste management, MHM guidelines, current practices, role of customer/producer/private agencies/villages/local levels. Chemical waste management, sources, treatment methods. Biomedical waste management, causes, classification, sources, waste management hierarchy, biomedical waste management rule 2018, treatment methods, benefits of proper waste management. E-waste management, sources, environmental impact, E-waste in India, E-waste recycling process, E-waste management rule 2016. Glass waste management, properties, types, recycling process, outcome, benefits, negatives, future. Metal waste management, types, recycling process, benefits, negatives, risk, metal theft. Solid waste management rules and regulations, KPCB rule 2020, National Green Tribunal.

Topic 4: The importance of plastics in daily life, its drawbacks, plastic pollution and consequences, recycling stages, plastic waste classification, advantages of plastic recycling.

Topic 5: Liquid waste management, sewage and sullage, health aspects of sewage, aim of sewage treatment, sewage treatment plant and process. Effluent treatment plant, need of effluent treatment plant, design of effluent treatment plant, treatment levels and mechanism. Septage treatment systems, process.

Topic 6: Climate change and waste, major environmental impacts. Zero waste initiatives, zero waste cities and Countries. Circular economy concept, Sustainable materials, bioplastic products, applications, advantages,types, current uses, future scope. Awareness and education for scientific waste management.

Reference Books

1. Introduction to Environmental Engineering and Science" by Gilbert M. Masters and Wendell P. Ela
2. Waste Management and Sustainable Development" by Ranjith K. Dani and Tanvi Arora
3. Waste Treatment and Disposal" by Paul T. Williams
4. "Waste: A Handbook for Management" by Trevor Letcher
5. Waste to Energy Conversion Technology" by Naomi B. Klinghoffer and Marco J. Castaldi
6. Waste Management Practices: Municipal, Hazardous, and Industrial" by John Pichtel

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Course Outcome

Certificate course on scientific waste management for college students can have several valuable outcomes and benefits for both the students and the broader community. It equips them to make informed choices about waste management in their personal lives, while also opening doors to career opportunities and community involvement in sustainability efforts.

Here are some of the potential outcomes of such a course for college students:

1. Knowledge and awareness: College students who complete waste management certificate course will acquire in-depth knowledge about the principles, methods, and best practices of scientific waste management of all types of waste. This knowledge can extend by the students beyond the classroom and into their daily lives. The course can increase students' environmental awareness, making them more conscious of the importance of responsible waste management to attain a sustainable future.

2. Career Opportunities: Completing waste management certificate can enhance students' career prospects in various fields of environment sector, including environmental science, sustainability, waste management, and public health. It can be a valuable addition to their resumes.

3. Sustainability initiatives: Students can apply what they've learned to improve waste management practices on their college campuses. This may involve setting up recycling programs, reducing waste generation, and promoting sustainability initiatives within the institution. Empowered students may become leaders in their communities, advocating for and implementing sustainable waste management practices. They can organize and participate in community clean-up events and awareness campaigns.College students can become better stewards of the environment, applying the principles of waste management to protect ecosystems and wildlife. Students who are educated in scientific waste management contribute to achieving Sustainable Development Goals, such as responsible consumption and production, climate action, and life on land

4. Resource Conservation: Students can contribute to resource conservation by learning how to repurpose waste materials and reduce waste in their everyday lives.Knowledge gained from the course can help students save money by adopting waste reduction practices and making informed choices in their consumption habits.

5. Health and Safety: Understanding the proper handling of hazardous waste can contribute to safer environments both on and off-campus.

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6. Interdisciplinary Learning: Waste management is an interdisciplinary field that can be relevant to a wide range of academic disciplines. Students can apply this knowledge in various courses and research projects.

7. Networking Opportunities: The course may provide students with networking opportunities, enabling them to connect with professors, experts in the field, and like-minded peers.

Question Paper.

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1) Give the most preferable order of waste management hierarchy methods.
   a) Reuse, Reduce and Recycle
   b) Reduce, Reuse and Recycle
   c) Recycle, Reuse and Reduce
   d) Reduce, Recycle and Reuse

2) Which of this factor enable us to determine whether a waste is hazardous or not ?
   a) Solubility
   b) Corrosivity
   c) pH
   d) Oxidative nature

3) Which among the following physical parameter determine the volume of landfill during the solid waste management?
   a) Mass
   b) Viscosity
   c) Density
   d) All of the above

4) Give the full form of RDF
   a) Recycle derived fuel
   b) Reduce derived fuel
   c) Refuse derived fuel
   d) None of the above

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5) Which among the following is a sustainable way for the disposal of non - biodegradable waste ?
   a) Composting
   b) Bio pot
   c) Thumboormuzhy bin
   d) Sanitary landfill
6) Which is the most recommended practice for sanitary waste disposal?
   a) Throw them unwrapped into courtyard
   b) Incineration
   c) Bury them
   d) Throw them in latrine
7) What is dioxin ?
   a) Fertilizer
   b) Toxic chemical
   c) Pesticide
   d) Cosmetic
8) Wild life issue related to ocean pollution
   a) Entanglement
   b)Ingestion
   c) Invasive species
   d) All of the above
9) What is effluent?
   a) Untreated industrial waste water
   b) Treated industrial waste water
   c) Solid part of industrial waste water
   d) Treated sewage
10) Benefit of metal recycling
   a) 100% Recyclable
   b) Saves energy
   c) Reduce greenhouse gas emission
   d) All the above
11) As per solid waste management rules, solid waste can be segregated as
   a) Biodegradable and non-biodegradable
   b) Recyclable and RDF
   c) Wet, dry, hazardous

d) Dry, chemical,E-waste

12) What is cullet
a) Molten state of glass
b) Crushed state of glass
c) One type of glass
d) Raw material of glass

13) Which of the following is the least preferable method involved in the E-wate management system?
a) Reuse
b) Reduce
c) Pyrolysis
d) Landfill

14) Which of the following waste can be included in the category of hazardous waste?
a) Common salts
b) Sugar
c) Used oil
d) DDT

15) Find the biological treatment of hazardous waste
a) Land farming
b) Neutralisation
c) Precipitation
d) Reduction

16) Bioplastic can be used as ----in the field of agriculture
a)mulch film
b)yarn
c)net

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d)all of the above

17) Example for commonly used bioplastic
a)PLA
b) HDPE
c)PP
d) nylon

18) Select positive aspect of bioplastic from the options given below
a)Eco friendly in nature
b) Reduces consumption of non-renewable energy sources
c) Reduces carbon foot print
d)All of the above

19) select the sources bioplastic
a)plants
b)animals
c)microorganisms
d)all of the above

20) Choose biopolymer from the following which can be used for bioplastic production
a)starch
b)Polypropylene
c)ethylene
d)none- of the above

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BATCH – 20 MES KEVEEYAM COLLEGE VALANCHERY 07-11-2023 TO 07-12-2023

DEPARATMENT OF CHEMISTRY MES KEVEEYAM COLLEGE VALANCHERY

CERTIFICATE COURSE ON SCIENTIFIC WASTE MANAGEMENT

SL.NO	NAME OF THE STUDENT	CLASS	SCORE
1	LAHAN M (M)	2nd MSc CHEMISTRY	34
2	ANSIDA NAZAR	1st MSc CHEMISTRY	34
3	AMINA NIDHA K P	2nd MSc CHEMISTRY	20
4	AMEERA K	2nd MSc CHEMISTRY	36
5	SUMI SHAHAREES K	1st MSc CHEMISTRY	32
6	NIGHITHA P P	2nd MSc CHEMISTRY	34
7	FATHIMA SHAHMA K	1st MSc CHEMISTRY	36
8	ASNA M	2nd MSc CHEMISTRY	34
9	MUBEENA THANSEEHA	2nd MSc CHEMISTRY	34
10	NAFILA K P	2nd MSc CHEMISTRY	34
11	SREELAKSHMI P	2nd MSc CHEMISTRY	34
12	RISLA A K	2nd MSc CHEMISTRY	34
13	FATHIMATH SHANA V K	1st MSc CHEMISTRY	36
14	THASNEEM P K	2nd MSc CHEMISTRY	`34
15	JUNAINA C P	2nd MSc CHEMISTRY	34
16	VYSHNA K P	1st MSc CHEMISTRY	36
17	FATHIMA BINZY K	1st MSc CHEMISTRY	-
18	SRUTHI K C	2nd MSc CHEMISTRY	34
19	JISHNA K P	2nd MSc CHEMISTRY	34
20	SHAHMA SHERIN C P	1st MSc CHEMISTRY	36

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21	NAYANA P	1st MSc CHEMISTRY	36
22	FATHIMA HIBA T	2nd MSc CHEMISTRY	34
23	FATHIMA THIRIKKOTTU	2nd MSc CHEMISTRY	34
24	FATHIMA AMNA	2nd MSc CHEMISTRY	34
25	RUMSHINA SHERIN	2nd MSc CHEMISTRY	34
26	NAFEESATHUL MISIRIYA T	2nd MSc CHEMISTRY	34
27	AMEER JHAN P (M)	1st MSc CHEMISTERY	36
28	ANOOSHA P	1st MSc CHEMISTERY	36
29	MUHAMMED RASHID M (M)	1st MSc CHEMISTERY	-
30	JOUHARA THESNI	1st MSc CHEMISTERY	36
31	HARSHA P P	1st MSc CHEMISTERY	36
32	SAFARNA SHERIN N V	1st MSc CHEMISTERY	-
33	RIJILSHA K	1st MSc CHEMISTERY	36
34	AISWARYA K K	1st MSc CHEMISTERY	36
35	ATHILA (TOP SCORER)	1st MSc CHEMISTERY	38
36	FATHIMA HIBA K	1st MSc CHEMISTERY	36

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CERTIFICATE

OF ACHIEVEMENT

THIS CERTIFICATE IS PROUDLY AWARDED TO

Ms. Harsha P P

First year MSc Chemistry student of MES Keveeyam College Valanchery, for her (EXCELLENT/GOOD/SATISFACTORY) performance in the 30hrs Certificate Course in "Scientific Waste Management" in the month of November 2023.

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M.E.S. Ke Vee Yam College
Date:
Valanchery

Mr. Zakaria Joy
Director

Dr. Dhanya K R
Project Head

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CERTIFICATE

OF ACHIEVEMENT

THIS CERTIFICATE IS PROUDLY AWARDED TO

Ms. Athila

First year MSc Chemistry student of MES Keveeyam College Valanchery, for her excellent performance (Top Scorer) in the 30hrs Certificate Course in "Scientific Waste Management" in the month of November 2023.

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Mr. Zakaria Joy
Director

Dr. Dhanya K R
Project Head