

Karamadai, Coimbatore - 641104

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)
Ph: +91 91500 76729 Email: principal@ckec.ac.in Web: www.ckec.ac.in

PERMISSION LETTER

Date: 03.07.2019

From

Mr. Vivek D

Assistant Professor / Course Coordinator

Department of Civil Engineering

Christ the King Engineering College

Coimbatore

To

The principal

Christ the King Engineering College

Coimbatore

Through: Head of The Department / Civil Engineering

Respected Sir,

Sub: Requesting permission to organize a Value-Added Course on "Environmental Sustainability of Contaminated Sites" - Reg.

Department of Civil Engineering is planning to organize a Value-Added Course on "Environmental Sustainability of Contaminated Sites" from 08.07.2019 to 24.07.2019 for Second, Third and final year Civil Engineering students. Mrs. Nandhini K Assistant Professor, Department of Civil Engineering as a Resource Person. In this regard, we seek your permission to conduct the same in the Seminar Hall from 08.07.2019 to 24.07.2019 from 4 pm to 6 pm. Kindly consider our request and grant the same.

Thanking You,

AG ENGINEER COMMENTERS COMMENTERS

Dr.M.JEYAKUMAR, M.E..Ph.D.

CHRIST THE KING ENGINEERING COLLEGE, Chickerampalayani Village,

Karamada: Mettupalayam Taluk, Combatore - 641 104. Approved

Yours truly,



Karamadai, Coimbatore - 641104

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DEPARTMENT OF CIVIL ENGINEERING

RefNo: CKEC/CIVIL/VAC/19-20/001

DATE:05.07.2019

CIRCULAR

This is to inform that the department of Civil engineering is planning to conduct "ENVIRO NM ENTAL SUSTAINABILITY a value-added course on OF CONTAMINATED SITES " for all Second, third and final year students on 08.07.2019 to 24.07.2019 Students are asked to register you and utilize this opportunity to improve their skills.

| S. No | Course Code | Name of the Course | Department | No of Hours | Course Coordinator |
|-------|-------------|--|------------|----------------|--------------------|
| 1 | | Environmental Sustainability of Contaminated Sites | Civil | 30 | Mr. Vivek D |

Note: The circular Display in the department Notice board for student's attention.

Copy to: Principal Notice board

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Combatore - 641 104.

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DEPARTMENT OF CIVIL ENGINEERING

Organizes
Value Added Course on

Environmental Sustainability of Contaminated Sites

08.07.2019 to 24.07.2019 (4 to 6pm)

Resource Person

MRS. K. NANDHINI

ASSISTANT PROFESSOR

DEPARTMENT OF CIVIL ENGINEERING

For II, III & IV Year Students

CHIEF PATRON

DR M. Jeyakumar

Principal

Wenue: Semmar Hall

PATRON

Mr. N. Sundaramoorthy

HOD/CIVIL

COORDINATOR

Mr. D. Vivek

AP / CIVIL



Dr.M., JEYAKUMAR, M.E., Ph.D.
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Chikkaramp nayam, Valence,
Karamada, Menupahyam, Laluk,

Comecatore - 641 104.



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DEPARTMENT OF CIVIL ENGINEERING

| Course Code | VACE1903 |
|------------------------|--|
| Name Of the Course | Environmental Sustainability of Contaminated Sites |
| Duration Of the Course | 30 Hours |
| Academic Year | 2019-2020 |
| Period Of the Course | 15 Days |

COURSE OBJECTIVES:

The course details the usual remediation techniques practiced worldwide and provide an understanding of the relevant theoretical concepts. The current course will enable a student to:

- Develop understanding of integrated approaches to remediating contaminated sites.
- Develop the ability to screen, choose and design appropriate technologies for remediation

Syllabus

UNIT I- INTRODUCTION

(6)

Introduction Laws, Regulations and Remediation A. Legal Concepts 1. Types of Law 2. Regulations.

UNIT II - LAWS AND REGULATION

(6)

Federal B. Laws/Regulations a) History b) Objectives c) Remediation Process d) Definition of hazardous waste e) Waste Classification f) Corrective Action.

UNIT III - RISK ASSESSMENT

(6)

Risk Assessment A. Introduction 1. Terminology 2. History B. Steps in Human Health Risk Assessment 1.Data Collection and Evaluation 2. Exposure Assessment 3.Toxicity Assessment 4.Risk Characterization 5. Risk Management 6.Risk Communication Ecological Risk Assessment D.Risk-based Corrective Action

UNIT IV - SOURCE OF CONTAMINATION

(6)

Plume Containment a) introduction b) extraction wells c) extraction trenches d) injection wells/trenches e) wells/barriers. Pump and Treat a) Introduction b) Contaminant behavior c) Design Or.M.JEYAKIMAR, M.E. Ph.D. Dr.M.JEYAKIMAR, M.E. Ph.D. Dr.M. Dr.M.

CHRIST THE KING ENGINEERING COLLEGE.

Chikkarampalayani Village,

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Combatore - 641-104.

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UNIT V – DESIGN CONSIDERAION

(6)

Solidification/Stabilization a) Introduction b) Fundamentals (1) Chemical (2) physical c) Leaching (1) single-component (2) multi-component d) Design Considerations (1) TCLP-based approach (2) Risk-based approach

TOTAL HOURS:30

COURSE OUTCOME:

- Collect representative environmental samples, perform routine and specialized tests and interpret results, using current and relevant tools.
- Identify, select and use scientific concepts and models in the prevention, control and elimination of environmental hazards and in the remediation of contaminated sites.
- Analyze water/soil/air samples in a manner that contributes to the resolution of environmental problems through the selection and application of relevant scientific and engineering principles.
- Participate in the planning, design, implementation and maintenance of environmental projects, following standard procedures.

TEXT BOOK & REFERENCES:

1.LaGrega, M.D., Buckingham, P.L., Evans, J.C., Hazardous Waste Management, McGraw-Hill, 1994.Haas, 2.C.N., Vamos, R.J., Hazardous and Industrial Waste Treatment, Prentice Hall, Englewood Cliffs, NJ, 1995.



Dr.M.JE YAKUMAR, M.E.Ph.D.
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Karamadai Menupalayam Taluk,
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DEPARTMENT OF CIVIL ENGINEERING VACE1903 - Environmental Sustainability of Contaminated Sites SCHEDULE

| S. No | DAY | TIME/SESSION | SCHEDULE CONTENT | RESOURCE PERSON |
|-------|------------|--------------|--|---|
| | 08.07.2019 | 4.00-6.00pm | Introduction Laws, Regulations and Remediation A. Legal Concepts | |
| 1 | 09.07.2019 | 4.00-6.00pm | Types of Law Regulations. | |
| | 10.07.2019 | 4.00-6.00pm | | |
| | 11.07.2019 | 4.00-6.00pm | Federal B. Laws/Regulations a) History b) Objectives c) Remediation | |
| 2 | 12.07.2019 | 4.00-6.00pm | Process d) Definition of hazardous waste e) | |
| | 13.07.2019 | 4.00-6.00pm | Waste Classification f) Corrective Action. | |
| | 15.07.2019 | 4.00-6.00pm | Risk Assessment A. Introduction 1. Terminology 2. History B. Steps in Human | |
| | 16.07.2019 | 4.00-6.00pm | Health Risk Assessment 1. Data Collection and Evaluation 2. Exposure Assessment 3. Toxicity | |
| 3 | 17.07.2019 | 4.00-6.00pm | Assessment 4. Risk Characterization 5. Risk Management 6. Risk Communication C. Ecological Risk Assessment D. Risk-based Corrective Action | Mrs. Nandhini K Assistant Professor, Department of Civil Engineering, |
| | 18.07.2019 | 4.00-6.00pm | Plume Containment a) introduction b) extraction wells c) extraction trenches d) | Christ the King Engineering College |
| 4 | 19.07.2019 | 4.00-6.00pm | injection wells/trenches e) wells/barriers. Pump and Treat a) Introduction b) Contaminant | |
| | 20.07.2019 | 4.00-6.00pm | behavior c) Design considerations Source Control a) Philosophy b) Options | |
| | 22.07.2019 | 4.00-6.00pm | Solidification/Stabilization a)Introduction b) Fundamentals (1)Chemical (2)physical | |
| 5 | 23.07.2019 | 4.00-6.00pm | c)Leaching (1)single-component (2)multi- component d)Design Considerations (1)TCLP- based approach (2)Risk-based approach | |
| | 24:07.2019 | 4.00-6.00pm | Test | |

A. Sundey HoD/CIVIL Dr.M.JEYAKUMAR, M.E..Ph.D.
PRINCIPAL
CHRIST THE KING ENGINEERING COLLEGE,
Unikkarampalayam Village.
Karamadan Menupalayam Taluk,
Colmbatore - 641 104.



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DEPARTMENT OF CIVIL ENGINEERING VACE1903 - Environmental Sustainability of Contaminated Sites STUDENT REGISTRATION

| S.No | REGISTER NUMBER | NAME OF THE STUDENT | SIGNATURE |
|-------|--------------------|----------------------|----------------|
| 1 | 710418103001 | ALINA BOBAN | ding |
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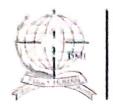
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DEPARTMENT OF CIVIL ENGINEERING VACE1903 - Environmental Sustainability of Contaminated Sites STUDENTS ATTENDANCE LIST

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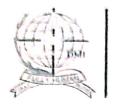
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STUDENTS ATTENDANCE LIST

| S.No | REGISTER | NAME OF THE | 13.07.2019 | 15.07.2019 | 16.07.2019 | 17.07.2019 | 18.07.2019 |
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STUDENTS ATTENDANCE LIST

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|------|--------------|----------------------|-------------|------------|----------------|------------------|------------|
| S.No | REGISTER | NAME OF THE | 19.07.2019 | 20.07.2019 | 22.07.2019 | 23.07.2019 | 24.07.2019 |
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| 19 | 710416103004 | AJI JOSE MATHEW | ×10080 | dose | Diose | Mose | , AB |
| 20 | 710416103005 | АЛТН. А | W Alle | -Alto- | alith | 4 100 | ality |
| 21 | 710416103006 | ALWIN. A. S | Akoin | ARS | Alwin | Thoin | Shon |
| 22 | 710416103007 | AMAL MATHEW | Mathan | Nedrand | rathar | Castroa | Mathan |
| 23 | 710416103008 | BENAT. M. B | Port | Bath M | ar Calcum | Ale chat IM : 1 | AB |
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| 24 | 710416103010 | DILNA BABY | Dut | TRUF | Pur | Drid | Dut |
|----|--------------|-------------------|--------|----------|----------|----------|----------|
| 25 | 710416103011 | DURKAMALINI | Penco | Zarban | Duk - | Penbe | Auros |
| 26 | 710416103013 | JEYACHANTHIRAN. A | Jough | Jaip | Joug | Jarge | Joseph . |
| 27 | 710416103015 | KARTHICK. S | buthic | bouthi | Couthi | Couthi | torfin |
| 28 | 710416103016 | MERIN JOY | Newsby | Merinby | Merinday | Main Doy | Main Day |
| 29 | 710416103017 | PALPANDI. K | Λ0 - | | Palpadi | Faired; | _ \ |
| 30 | 710416103018 | PAULVIN KURIAN | # | | AB | R | P |
| 31 | 710416103020 | SNEHA MERY | Dos | Dies | Siga | Shoga | AB |
| 32 | 710416103022 | TONY JOSE | AB | Jong. | Tones | Tons | J-578 |
| 33 | 710416103701 | SURJITH | AB | Susjeth. | Sajatr. | Sujith. | Suy ith. |
| 34 | 710416103901 | ABISHEK E | Assay | Shire | 7 AB | Amil | Skul |
| | | | - | | | | - |

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DEPARTMENT OF CIVIL ENGINEERING VACE1903 - Environmental Sustainability of Contaminated Sites MULTIPLE CHOICE QUESTION

| 1.The | program for the cleanup of closed or abandoned hazardous waste sites is administered |
|-------------------|---|
| by EPA. | |
| a) Superfund | |
| b) HZAMAT | |
| c) NPL | |
| d) HPS | |
| 2 | are the most common contaminants in hazardous sites according to EPA data analysis. |
| a) VOC | |
| b) Metals | |
| c) PAH | |
| d) PCB | |
| 3. USTs conta | ining petroleum products are regulated by RCRA. |
| a) True | |
| b) False | |
| | soil remediation technology is used for remediating unsaturated soils contaminated with |
| SVOC. | |
| a) SVE | |
| b) Soil washin | g B |
| c) NPL | |
| d) HPS | |
| | e following technique is successful in treating petroleum hydrocarbons? |
| a) SVE | |
| b) Soil washin | g |
| c) NPL | |
| d) Landfarmi | ng |
| 6 | reduces the mobility of hazardous substances and contaminants in the environment. |
| a) SVE | |
| b) Soil washin | |
| c) Solidification | |
| d) Landfarmin | |
| | solidification uses a powerful source of energy to melt soil. |
| a) SVE | |
| b) Soil washin | |
| c) Asphalt bate | |
| d) Vitrificatio | n |



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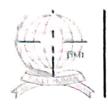
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8. _____ soil remediation technology uses liquids and mechanical processes to scrub soils.

- a) SVE
- b) Soil washing
- c) NPL
- d) HPS
- 9. Which of the following is done on an individual level?
- (a) Burning
- (b) Disposal
- (c)Recycling
- (d) Source reduction
- 10. The burning of solid waste is not recommended because
- (a) It is very costly
- (b) It requires a lot of space
- (c) It requires modern technologies
- (d) It causes several environmental issues



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DEPARTMENT OF CIVIL ENGINEERING VACE1903 - Environmental Sustainability of Contaminated Sites STUDENTS ASSESSMENT MARKS

| S.No | REGISTER NUMBER | NAME OF THE STUDENT | MARKS (10) | |
|------|--------------------|----------------------|---------------|--|
| 1 | 710418103001 | ALINA BOBAN | 9 | |
| 2 | 710418103002 | ASHAK SHAN J | 8 | |
| 3 | 710418103003 | JITHIN DEV | 7 | |
| 4 | 710418103004 | JITHIN P | 8 | |
| 5 | 710418103006 | NIDHIN M DAVID | | |
| 6 | 710418103007 | PARTHIBAN E | 7 | |
| 7 | 710418103009 | SNEHA THOMAS | Ś | |
| 8 | 710418103010 | VIGNESH E V | 7 | |
| 9 | 710418103701 | THENMOZHI S | 7 | |
| 10 | 710417103001 | AJISH S.V | Ş. | |
| 11 | 710417103002 | AMANSHEK.S | 9 | |
| 12 | 710417103003 | BHUVANESHWARAN .S | 8 | |
| 13 | 710417103005 | GODWIN.V | ٦ | |
| 14 | 710417103006 | JOBIN ANTONY.D | 7 | |
| 15 | 710417103301 | SARAVANAN S | 7 | |
| 16 | 710417103701 | HARI HARAN J | 8 | |
| 17 | 710416103001 | ABHAKOOK JAYAPAUL. A | 8 | |
| 18 | 710416103002 | ABISHEK. S | 8 | |
| 19 | 710416103004 | AJI JOSE MATHEW | 8 | |
| 20 | 710416103005 | AJITH. A | | |
| 21 | 710416103006 | ALWIN. A. S | ٦ | |
| 22 | 710416103007 | AMAL MATHEW 8 | | |
| 23 | 710416103008 | BENAT. M. B | ٦ | |
| 24 | 710416103010 | DILNA BABY 7 | | |
| 25 | 710416103011 | DURKAMALINI | 10 | |
| 26 | 710416103013 | JEYACHANTHIRAN. A | | |
| 27 | 710416103015 | KARTHICK. S | 7 | |
| 28 | 710416103016 | MERIN JOY | 8 | |
| 29 | 710416103017 | PALPANDI. K | 8 | |
| 30 | 710416103018 | PAULVIN KURIAN | 9 | |
| 31 | 710416103020 | SNEHA MERY | 7 | |
| 32 | 710416103022 | TONY JOSE | 8 | |
| 33 | 710416103701 | SURJITH | 119 de | |
| 34 | 710416103901 | ABISHEK E Dr.M.JEV | AKUMAR, M.I | |

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DEPARTMENT OF CIVIL ENGINEERING

VACE1803 - Environmental Sustainability of Contaminated Sites

MULTIPLE CHOICE QUESTION

| Name Register No. Year / Sem Academic Year | : Jithin.P : 7104 (8103004 : 12/11/1 : 2019-20 |
|--|---|
| 1.The by EPA. (a) Superfund b) HZAMAT c) NPL d) HPS | program for the cleanup of closed or abandoned hazardous waste sites is administered |
| 2 are a) VOC b) Metals c) PAH d) PCB | e the most common contaminants in hazardous sites according to EPA data analysis. |
| 3. USTs containing True b) False | ng petroleum products are regulated by RCRA. |
| 4 soi SVOC. (a) SVE (b) Soil washing (c) NPL (d) HPS | il remediation technology is used for remediating unsaturated soils contaminated with |
| 5. Which of the fol a) SVE b) Soil washing c) NPL d) Landfarming | llowing technique is successful in treating petroleum hydrocarbons? |

reduces the mobility of hazardous substances and contaminants in the environment.

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| b) Soil washing c) Solidification d) Landfarming | |
|--|---|
| 7 solidification uses a powerful so a) SVE b) Soil washing c) Asphalt batching | ource of energy to melt soil. |
| 8 soil remediation technology use a) SVE b) Soil washing c) NPL d) HPS | es liquids and mechanical processes to scrub soils. |
| 9. Which of the following is done on an individual(a) Burning(b) Disposal(c)Recycling | level? |
| (c) Recycling (d) Source reduction 10. The burning of solid waste is not recommended | d because |
| (a) It is very costly(b) It requires a lot of space(c) It requires modern technologies | d because |
| (d) It causes several environmental issues | • |



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DEPARTMENT OF CIVIL ENGINEERING

STUDENT FEEDBACK FORM

Name of the value added course: Environmental Surfability of confaminal site

Name of the student: Aline baken Register Number:

710418103001

Year / semester:

II / Misem

Batch:

2018-2022

Course Coordinator: Mr. viveu. D

Academic Year:

2011-20

| Sl.No. | Criteria | Rating | | | | |
|--------|-------------------------------------|-----------|------|---------|--------------|------|
| | | Excellent | Good | Average | Satisfactory | Poor |
| 1. | Course content | | | | | |
| 2. | Individual attention | * | | | | |
| 3. | Level of the course | | | | | |
| 4. | Regularity and knowledge of faculty | | | | | |
| 5. | Coverage of syllabus | | | | , | |
| 6. | Interaction | | | | | |
| 7. | Outcome | | | | | |
| | Total | 15 | 16 | | | |
| | Remarks | _ | _ | | | |

EXCELLENT-5

GOOD-4

AVERAGE-3

SATISFACTORY-2

POOR-1



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Signature of the student



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DEPARTMENT OF CIVIL ENGINEERING POST EVENT REPORT

| Course code | VACE1803 | | |
|---|---|--|--|
| Name of the course | Environmental Sustainability of Contaminated Sites | | |
| Duration of the course | 30 Hours | | |
| Academic year | 2019-2020 | | |
| Period of the course | 15 Days | | |
| Coordinator & Faculty handling the course | Mr. Vivek D Mrs. Nandhini K | | |
| Number of the students registered | 34 | | |
| Number of the students completed | 34 | | |
| % of students completed the course | 100% | | |
| Details of the course | The course details the usual remediation techniques practiced worldwide and provide an understanding of the relevant theoretical concepts. The current course will enable a student to: Develop understanding of integrated approaches to remediating contaminated sites. | | |



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VACE 19-20: Environmental Sustainability of Contaminated Sites



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CERTIFICATE



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