UNIVERSITI TEKNOLOGI MARA

EVT578: AIR SAMPLING AND ANALYSIS

Course Name (English)	AIR SAMPLING AND ANALYSIS APPROVED
Course Code	EVT578
MQF Credit	4
Course Description	This course introduces sampling techniques and analytical methods for determining contaminant levels in air gases and particulate. Students will be introduced to various techniques of sample collection using suitable instrument and air sampling media for subsequent analysis. As part of quality assurance, the significance of calibration, blanks and controls are integrated into the lecture. Special topic is devoted to air stack sampling and its inherent problems. Elements of blended learning are also incorporated into the teaching methodology.
Transferable Skills	Able to select and interprets the best analysis for air sampling data. Able to communicate and disseminate any information on air sampling and analysis to public domain.
Teaching Methodologies	Lectures, Blended Learning, Lab Work, Presentation
CLO	CLO1 Describe the general principle of air sampling techniques and classification CLO2 Evaluate the appropriate procedures for measuring particulate and gases in ambient, indoor and stack sampling. CLO3 Report on general air sampling procedures for particulate and gases CLO4 Report verbally and in writing the air sampling and analysis for particulate and gases technology.
Pre-Requisite Courses	No course recommendations

Topics
1. Introduction to Air Sampling and Monitoring 1.1) Monitoring vs sampling 1.2) Objectives of air sampling 1.3) Classification of air pollutants and air sampling matrixes 1.4) Air sampling terminologies
2. Air Sampling and Analytical Technique 2.1) Representative sampling 2.2) Air sampling plan checklist 2.3) Meteorological and physical/chemical considerations 2.4) Overview of the methods and techniques for air sampling
3. Sampling for Particulate and Analysis 3.1) Active vs passive samplers 3.2) Particulate analysis 3.3) Sampling equipment 3.4) Sampling collection media/devices 3.5) Particulate filters
4. Sampling for Gases and Analysis 4.1) Sampling and analytical technique 4.2) Types of air samplers 4.3) Overview of analysis for gases and vapours 4.4) Quality assurance/quality control requirement

5. Principle of Stack Monitoring 5.1) Introduction of stack monitoring 5.2) Monitoring and sampling requirement 5.3) Analysis of flue/stack gas monitoring 5.4) Problem associated with stack sampling
6. Indoor Air Quality Monitoring 6.1) Indoor/outdoor relationship 6.2) Personal air pollution exposure 6.3) Pollutants sampling and monitoring of indoor air

Assessment Breakdown	%
Continuous Assessment	70.00%
Final Assessment	30.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Lab Exercise	Cumulative of 6 reports	20%	CLO3
Test	Test 1 (Relates on Chapter 1 & 2)	15%	CLO1
Test	Cumulative of 2 tests.	35%	CLO2

Reading List

Recommended Text

- **James P. Lodge 1998, *Methods of Air Sampling and Analysis*, 3 Ed., Lewis Publisher Inc. [ISBN: 13: 978-08737]**

Reference Book Resources

- **Ian Colbeck 2008, *Environmental chemistry of aerosols*, Wiley-Blackwell [ISBN: 9781405139199]**
- **James H. Vincent 2007, *Aerosol Sampling*, Wiley [ISBN: 9780470027257]**
- **USEPA, *Quality assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan and Data Validation Procedures. EPA/540/G90/004***
- **Dwayne Heard 2006, *Analytical Techniques for Atmospheric Measurement*, Wiley-Blackwell [ISBN: 9781405123570]**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources