

DEPARTMENT OF CIVIL ENGINEERING NATIONAL INSTITUTE OF TECHNOLOGY

TIRUCHIRAPPALLI - 620 015, TAMIL NADU, INDIA

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	COUR	SE PLAN (PAR	Г I)					
Name of the programme and specialization	M.Tech/Environmental Engineering							
Course Title	Envi	Environmental Quality Measurements Laboratory						
Course Code	CE709		No. of Credits	2				
Course Code of Pre-requisites	-		initiaci iloura) e	0) () (3) ()				
Session	July / January 2021		Section (if, applicable)	- 7				
Name of the Faculty		R. Gandhimathi	Department	Civil Engineering				
		Jma Sakthivel	confestions 2021. De					
E-mail	rgmathii@nitt.edu umasakthi@nitt.edu		Telephone No.	8904420530				
Course Coordinator(s)(if, applicable)	Dr. S	S. T. Ramesh						
E-mail	ids Determination of Loun		Telephone No.	-				
Course Type	oldO la	Core						
		Elective						
		Open Elective						
		Essential Lab	Essential Laboratory Requirements (ELR)					

The course provides the introduction to sampling techniques and analytical methods to measure the contaminants in water. wastewater, soil and air. It also provides various techniques for the examination of microbial contamination in water.

COURSE CONTENT (APPROVED IN BoG)

Physical and Chemical Characteristics of Water - pH, Electrical Conductivity, Turbidity, Alkalinity, Acidity, Hardness. Sulphates, Fluorides, Nitrates - Analysis of Solids Content of Water - Total Solids, Suspended Solids, Volatile Solids. Non Volatile Solids - Residual Chlorine Analysis - Test on Dissolved Oxygen, BOD and COD - Metal Analysis; Microscopic Examination of Microorganisms - Preparation of Bacterial Smear.- Staining - Basic Pure Culture Techniques Bacteriological examination of water - Standard Plate Count Test, MPN Tests and MFT Tests; Ambient Air Quality Analysis - Determination of SPM, PM10, PM 2.5, CO, NOT J2nd SOx -stack emission monitoring; Soil Analysis - pH. Conductivity, Cation Exchange Capacity, Sodium Adsorption Ratio.

References

- Standard Methods for the Examination of Water and Wastewater, 23rd Edition, 2017.
- Manual on water supply and Treatment, CPHEEO, Ministry of Urban Development, GOI, New Delhi, 2000.

COURSE LEARING OBJECTIVES

- 1. To analyse the physical and chemical characteristics of water and wastewater
- 2. To familiarize the methods to estimate the organic strength of wastewater
- 3. To study the various techniques for the examination of microorganisms
- 4. To measure the particulate and gaseous pollutant concentration in ambient air

COURSE OUTCOMES (CO)

ourse	Outcomes	Aligned Programme Outcomes(PO)															
	accessful completion of the cour ents should be capable to:	se,	mqqio.	- Unic	issi	neluk		Paris			city (erro	velv	Cignol Isaalii	e Fi			
ante	To apply different analysis techniques for the	lmag	PO	1	2	3	4	5	6	7	8	9	10	11		-	
CO1	measurement of physical and	10	CO1	V	V	-	V	V	V	80	00	V	1.19	770	ABA.		
	chemical parameters of water		CO2	V		220	V		V	H	lugi.	V	1/10	ghel	1		
	and wastewater	0	CO3	V	V	V	V		V		8.	V	100				
1	to explain the operation and		V	V	V	OF	V	V				V					
CO2	mechanism of different																
	analytical equipment and their advantages and limitations	9/11															
	to relate the theoretical															2	
CO3	knowledge of sampling and														138.1		
14	analysis into lab practice	1111								1/2							
CO4	To estimate the concentration of various parameters in water, wastewater and ambient air																

OURSE	TEACHING AND LEARNING	GACTIVITIES	1 11)			
SI.No.	Week	Тор	nie	Mode of Delivery		
	2 rd Week of January 2021	vironmental Quality	Online /MS Teams			
1.	(3 Contact Hours)	Introduction to En Measurements Laborator		Omme 71415 Teams		
		Instrumentation Techniqu				
2.	3 rd Week of January 2021	Determination of pH;	Online /MS Teams			
	(3 Contact Hours)	Electrical Conductivity a	nd Turbidity			
3.	4 th Week of January 2021	Determination of Alkalini	ty and Acidity	Online /MS Teams		
3.	(3 Contact Hours)			ment lands traine		
4.	5 th week of January 2021	Determination of Total Ha	ardness; Calcium and	Online /MS Teams		
4.	(3 Contact Hour)	Magnesium Hardness		white Land In am		
5.	1 st week of February 2021	Determination of Sulpha	tes; Determination of	Online /MS Teams		
3.	(3 Contact Hours)	Fluorides				
	2 rd Week of February 2021	Determination of Total So	Online /MS Teams			
6.	(3 Contact Hours)	Dissolved solids, Volat				
	old geogle	Solids Determination of In	ron			
7.	3 rd Week of February 2021	Estimation of Residual Ch	nlorine Estimation of	Online AICT		
	(3 Contact Hours)	Dissolved Oxygen		Online /MS Teams		
8.	4 th Week of February 2021	Assessm	ient 1	Online /MS Teams		
0.	(3 Contact Hour)	dimedial fairmed				
1 st week of March 2021		Determination of Biocher	Online /MS Teams			
9.	(3 Contact Hours)	(BOD); Determination				
	in of midwhist confusionalin in a	Demand (COD)	ales provides various se			
10.	2 rd Week of March 2021	Analysis of Bacterial Co	nalysis of Bacterial Cell Morphology Using			
10.	(3 Contact Hours)	Light Microscope Microb				
11.	3 rd Week of March 2021	Flame sterilization and Tu	o II niâm			
11.	(3 Contact Hours)	Culture Techniques	Online /MS Teams			
12.	4th Week of March 2021	Preparation of Broth, Slan	Online /MS Teams			
14.	(3 Contact Hour)	18 - HOHE HARLES TO	HOSTING - I HIZINGED			
13.	5 th week of March 2021	Estimation of Bacterial	Estimation of Bacterial Cell Concentration			
13.	(3 Contact Hours)	Standard Plate Count Test	Online /MS Teams			
14.	1 st week of April 2021	Bacterial Examination	Online /MS Teams			
1-1.	(3 Contact Hours)	Examination in Soil				
15.	2 nd week of April 2021	Determination of Particula	Determination of Particulate Matter In The			
3.	(3 Contact Hours)	Ambient Air	Online /MS Teams			
16.	3 rd week of April 2021	Determination of Sox, NO	Online /MS Teams			
0.	(3 Contact Hours)	WAY DOD'T THE WAY THE SAME PROPERTY.	Bary usumbto one lables			
7.	4 th week of April 2021	Assessm	Assessment-2			
	(3 Contact Hours)	minusion of micromental	rivis techniques for the ex	2 division T		
8.	5 th week of April 2021	Soil Analysis-pH	Online /MS Teams			
	(3 Contact Hours)		of marker's farm amminum of	OID THEBUIL UT		
9.	1st week of May 2021	Cation Exchange capacity	Online /MS Teams			
	(3 Contact Hours)	ratio		entionin's same		
20.	2 nd week of May 2021	Record Submission / Com	pensation Assessment	Online /MS Teams		
	(3 Contact Hours)		- Company of aldered	o ed bloods strasbulk be c		
1.	3 rd week of May 2021	Final Asse	Online /MS Teams			
	(3 Contact Hours)		file ord constitution.	a majininganta.		
	ASSESSMENT METHODS	2 10 100) is an effect to early by	Americano 1 1613		
No.	Mode of Assessment	Week / Date	Duration	% Weightage		
7.	Assessment 1 (Written Test)	4 th week of February 2021	60 Minutes	15%		
) 10	Assessment 2 (Written Test)	4 th week of April 2021	60 Minutes	15%		
3.	Assessment 3 (Record Work)		Throughout the	40%		
			semester			

ESSENTIAL READINGS: Textbooks, reference books Website addresses, journals, etc

1. Guideline manual: Water and Wastewater Analysis, central Pollution control Board, Ministry of Environment & Forest, New Delhi, India

^{2.} Experimental methods in wastewater Treatment, IWA Publishing

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

It is proposed to take feedback from the students to evaluate the execution of the course

- Direct feedback collected from the students through online mode from individual and as the class as a whole.
- · Feedback from the students during class committee meetings
- Exit survey from the students at the end of the session

COURSE POLICY (COMPENSATION ASSESSMENT)

- 1. Attending all the assessments, (Assessment 1 to 4) is MANDATORY for every student.
- 2. If any student is not able to attend Assessment-1 / Assessment-2 due to genuine reason, student is permitted to attend the respective assessment as compensation assessment (CPA) with the same weightage.
- 3. At any case, CPA will not be considered as an improvement test.

ATTENDANCE POLICY

The attendance will be taken in all the contact hours. Students are encouraged to attend all the classes without absence. Also, the students are encouraged to participate in various co-curricular and extracurricular activities to enrich the academic / campus life.

- a) At least 75% of attendance in each course is mandatory. Students with less than 75% in any course by the end of 9th week will be identified and alerted by the respective class committees.
- b) A maximum of 10% shall be allowed under On Duty (OD) category.
- c) Students with less than 65% of attendance shall be prevented from writing the end assessment and shall be awarded as 'V' grade.

ACADEMIC DISHONESTY AND PLAGIARISM

Academic Dishonesty

- a) Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty
- b) Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- c) The department disciplinary committee constituted with the faculty member, PAC Chair person, and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student found guilty,

Plagiarism means knowingly presenting another person's ideas, findings or work as one's work by coping or reproducing them without due acknowledgement of the source, with intent to deceive the examiner into believing that the content is original to the student.

Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e. their intellectual property) so used as one's own work

ADDITIONAL COURSE INFORMATION

- All the students are advised to check their NIT-T webmail regularly to know the updates. All the correspondence (schedule of classes/ schedule of assessment/ course material/ any other information regarding this course) will be communicated through webmail.
- 2. Queries / Clarifications / Discussions (if required) may be E-mailed to me / contact me during working hours (4.00 PM to 5.00 pm) from Monday to Thursday with prior intimation.

FOR APPROVAL

Dr R Gandhimathi

Dr. S. Uma

Course Esculty

Chairman (Class Committee)

Dr. G. Swaminathan

Professor and Head
Department of CMI Engineering

Truchirappalli-620 015.