

COURSE TEMPLATE

1.	Department/Centre proposing the course	Civil Engineering
2.	Course Title (< 45 characters)	ENVIRONMENTAL SCIENCE
3.	L-T-P structure	2-0-0
4.	Credits	2
5.	Course number	CEL140
6.	Status (category for program)	Core ES (Environmental Science) Category Course
7.	Pre-requisites (course no./title)	NA
8.	Status vis-à-vis other courses (give course number/title)	
8.1	Overlap with any UG/PG course of the Dept./Centre	CEL 212, CEL 120
8.2	Overlap with any UG/PG course of other Dept./Centre	No
8.3	Supercedes any existing course	CEL 140 (existing CEL 140 with 3-0-0)
9.	Not allowed for (indicate program names)	Civil Engg students
10.	Frequency of offering	☒ Every sem ☐ 1 st sem ☐ 2 nd sem ☐ Either sem
11.	Faculty who will teach the course Prof. M. Khare, Prof. A.K. Mittal, Prof. A.K. Nema, Prof. B.J. Alappat, Dr. G. Habib, Dr. Arun Kumar	
12.	Will the course require any visiting faculty?	No
13.	Course objective (about 50 words): The main objective is to introduce Environmental concepts to the young students and make them aware of the environmental issues. The idea is to motivate and train them to understand the environmental challenges in a scientific manner and to find out viable solutions.	
14.	Course contents (about 100 words) (Include laboratory/design activities): Pollutant sources and control in air and water, solid waste management, noise pollution and control, cleaner production and life cycle analysis, reuse, recovery, source reduction and raw material substitution, basic of EIA, environmental risk assessment, environmental audit, emerging technologies for sustainable environmental management, identification and evaluation of emerging environmental issues in air, water, wastewater and solid waste.	

15. Lecture Outline (with topics and number of lectures)

Module no.	Topic	No. of hours
1	Pollutant in water and its control	4
2	Pollutants in air and its control	3
3	Noise Pollution and control	2
4	Solid waste management	4
5	Basics of Environmental Risk Assessment	2
6	Three R's of waste management	2
7	Basics of Environmental Impact Assessment	3
8	Cleaner Production and LCA	2
9	Environmental audit	2
10	Emerging technologies for Environmental management	2
11	Emerging Local and Global Environmental issues and troubleshooting	3
12		
COURSE TOTAL (14 times 'L')		29

16. Brief description of tutorial activities

NA

17. Brief description of laboratory activities

Module no.	Experiment description	No. of hours
1	NA	
2	NA	
3	NA	
4	NA	
5	NA	
6	NA	
7	NA	
8	NA	
9	NA	
10	NA	
COURSE TOTAL (14 times 'P')		NA

18. Suggested texts and reference materials

STYLE: Author name and initials, Title, Edition, Publisher, Year.

H.S. Peavy, D.R. Rowe and G. Tchobanoglous, Environmental Engineering, McGraw Hill International.

J. G. Henry and G.H. Heinke, Environmental Science and Engineering, Prentice Hall International.

G.M. Masters, Introduction to Environmental Engineering and Science, Pearson Education.

R.T. Wright and D.F. Boorse, Environmental Science Towards a Sustainable Future, PHI Learning.

P.A. Vesilind and S.M. Morgan, Introduction to Environmental Engineering, Thomson Books.

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19. Resources required for the course (*itemized & student access requirements, if any*)

19.1	Software	Nil
19.2	Hardware	Nil
19.3	Teaching aides (videos, etc.)	Yes
19.4	Laboratory	Nil
19.5	Equipment	Nil
19.6	Classroom infrastructure	LCD Projector
19.7	Site visits	Nil

20. Design content of the course (*Percent of student time with examples, if possible*)

20.1	Design-type problems	10
20.2	Open-ended problems	15
20.3	Project-type activity	15
20.4	Open-ended laboratory work	Nil
20.5	Others (please specify)	Nil

Date:

(Signature of the Head of the Department)