DEPARTMENT OF CIVIL ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Name of the programme and specialization	B.Tech. – Civil Engineering V Semester B .Tech.		
Course Title	Environmental Engineering II		
Course Code	CEPC18	No. of Credits	3
Course Code of Pre-requisite subject(s)	CEPC 17		
Session	July 2022	Section (if, applicable)	A & B (Combined)
Name of Faculty	Dr. G. Swaminathan	Department	Civil Engineering
Email	gs@nitt.edu	Telephone No.	04312503159
Name of Course Coordinator(s) (if, applicable)			
E-mail		Telephone No.	
Course Type	✓ Core course	☐ Elective course	

Syllabus (approved in BoS)

Course Content

Characteristics and composition of sewage – Sampling – Analysis – Population equivalent – Drainage in buildings – Plumbing systems for drainage. Primary treatment – Secondary treatment – Biokinetics – Lagooning – Sludge digestion – Tertiary treatment. Disposal standards – Self-purification of rivers – Streeter Phelps equation – Oxygen sag curve. Toxic and hazardous wastes – Equalization and neutralization – Biological degradation – Recycle and reuse of waste effluents – Treatment of industrial wastewater – Diary, Tannery, Petrochemical, Fertilizer, Textiles, Pulp and paper. Air pollution – Effects – Stack emission – Automobile exhaust – Control devices – Solid waste management – Environmental Impact Assessment.

COURSE OBJECTIVES

1. To learn the basics of sewage composition and its characteristics
2. To have adequate knowledge about various sewage treatment processes and its design
3. To provide the adequate information on various disposal standards for industrial effluents
4. To study the effect of air pollution and its control measures
5. To gain knowledge about solid waste disposal and Environmental Impact Assessment

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)

CO 1	Students will gain knowledge in characteristics and assessment of wastewater and its significance in Environment sustainability.
CO 2	Students will be imparted knowledge physical and biological treatment
CO 3	Students will be imparted knowledge of Effluent and stream standards and its impacts in flora and fauna
CO 4	Students will gain knowledge in natural and anthropogenic sources of Pollution in atmosphere, its impact, measurement and air quality Standards
CO 5	The students will know Environmental Impact assessment and its significance

	1	2	3	4	5	6	7	8	9	10	11	12
CO 1	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
CO 2	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓

1. Application on Mathematical knowledge	7. Societal focus
2. Engineering principles applications.	8. Vision and Long term planning
3. Project Formulation	9. Material Handling.
4. Quality Assurance and Quality control.	10. Resource Management
5. Sustainability	11. environmental Ethics
6. Application on design principles in problem solving.	12. environmental hygiene

COURSE PLAN – PART II

COURSE OVERVIEW

The Students will be imparted awareness about the environment, availability of fresh water in the planet, dwindling of these natural resources, water quality, treatment and equitable distribution.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1/3	Principles of Wastewater generation, DWF, Impact of wastewater in Environment, Collection and Transportation-An Overview	Lecture mode and Tutorials
2	2/3	Characteristics and composition of Sewage BOD COD Laboratory determination of BOD.	Lecture mode and Tutorials
3	3/3	Method of Least Squares. Thomas Slope Equation, TOC, Population Equivalent, relative Stability	Lecture mode and Tutorials
S.No.	**Week/Contact Hours**	**Topic**	**Mode of Delivery**
4	4/3	Introduction to Treatment of wastewater-Physical Treatment-Screens-Grit Chamber-Control Section-Primary clarifier	Lecture Mode
5	5/3	Secondary Tratment-Biological Methods-Suspended and Attached Growth-Bio Kinetics-I cycle Test	Lecture mode and Tutorials
6	6/3	Determinatin of Bio kinetics Constant- Attached	Lecture mode and

		Growth Process-Sludge-Sludge Digestion	Tutorials
7	**7/3**	Internal Drainage-Septic Tank-Disposal on Ground-Soak pit-Dispersion Trench-Rate of infiltration-Field test-Lagoon type of treatment.	Lecture Mode and Tutorials
8	**8/3**	Disposal of wastewater on Water Bodies-Deoxygenation and Reoxygenation-Oxygen deficit-Zones of pollution	Lecture Mode
9	**9/3**	Self -purification-Streeter-Phelps Model and its application.	Lecture mode and Tutorials
10	**10/3**	Industrial Waste treatment-An Overview-II Cycle Test	Lecture mode and Power point presentation
11	**11/3**	Industrial Waste management	Power point presentation
12	**12/3**	Environment Impact Assessment	Lecture mode
13	**13/3**	Seminar Presentation Evaluation-Semester Examination	Examination

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assignments/Tutorials/ surprise Quiz(Preferably in the middle of the semester, with Weightage of 40% of assignment total marks)/group projects -Seminar Presentations	Before Cycle Test I And II	Then And There Evaluation. Project seminar evaluation in the last week of the semester	20
2	Mid Semester Cycle Tests I And II Conducted as Quizzes in MS forms and Ms Teams.	Week 5 and Week 10	Sixty Minutes	40(Two Cycle Tests of 20 marks each)
CPA	Compensation Assessment*	One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.		
3	Final Assessment * (Based on Assumption -Online Mode)	Week 13	3 h	40

The passing minimum shall be as per the regulations : 35% or class average/2 whichever is greater

COURSE EXIT SURVEY

Online Feedback in Institute MIS . The students should fill in the required details honestly, so as to improve the teaching learning process

COURSE POLICY

The faculty handling the suject will be mostly available in his Chamber C!3 , I Floor of Department of Civil Engineering. (eastern Side)

The course handling faculty can be contacted in his room C13 in the Department of Civil Engineering,. Intercom No.3159.

His E Mail is gs @nitt.edu

The students are expected to be ethical during the Cycle tests and Semester Examinations. Resorting to unfair practices of copying will attract punishment as per the Institute rules in vogue. Contacting the faculty through phone, sending WhatsApp messages need to be avoided. The Teacher prefers to meet him in his Chamber in C13.

It is the primary duty of the faculty to arrange for compensation classes , whenever he avails leave. The Students should restrain from contacting the faculty member , seeking cancellation of classes citing intervening Holidays, other co curricular activities preparation etc.,

COMPENSATION ASSESSMENT POLICY

If any student misses the final assessment for genuine reason compensation assessment will be done as per the institute policy in vogue.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- **At least 75% attendance in each course is mandatory.**
- **A maximum of 10% shall be allowed under On Duty (OD) category.**
- Students with **less than 65% of attendance** shall be prevented from writing the final assessment and **shall be awarded 'V' grade.**

ACADEMIC DISHONESTY & PLAGIARISM

- Unfair practices. copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programmes.

FOR APPROVAL

G.Swaminathan	**Dr R Manjula**	**Dr. G Swaminathan**
Course Faculty	**CC-Chairperson**	**HOD**

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