



List of Courses which focuses on Professional Ethics, Gender, Human Values, Environment & Sustainability and other value framework

Department : *Chemical Engineering*

Programme Name : *B.Tech.*

Academic Year : 2017-18

Courses which focuses on Professional Ethics, Gender, Human Values, Environment & Sustainability and other value framework:

Sr. No.	Course Code	Name of the Course
01.	CH6TPE31	Fuel Combustion Energy Technology
02.	CH6TPE32	Environmental Engineering
03.	CH4803	Environmental Pollution Control Engineering



Scheme and Syllabus

**DEPARTMENT OF CHEMICAL ENGINEERING
INSTITUTE OF TECHNOLOGY
GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (C.G.)
(A Central University Established by the Central University Ordinance 2009, No. 3 of 2009)**

**SCHEME FOR EXAMINATION
B.Tech. (FOUR YEAR) DEGREE COURSE, CHEMICAL ENGINEERING
THIRD YEAR, SIXTH SEMESTER**

S. No.	Course No.	Subject	Periods			Evaluation Scheme				Credits	
			L	T	P	Sessional			Sub Total		
						IA	MSE	Total			ESE
01.	CH6TPC09	Mass Transfer-II	3	1	-	20	20	40	60	100	4
02.	CH6TPC10	Process Dynamics and Control	3	1	-	20	20	40	60	100	4
03.	CH6TPC11	Organic Chemical Technology	3	-	-	20	20	40	60	100	3
04.	CH6TPE2X		3	1	-	20	20	40	60	100	4
05.	CH6TPE3X		3	1	-	20	20	40	60	100	4
06.	CH6TOE2X		3	0	-	20	20	40	60	100	3
PRACTICAL											
01.	CH6PPC06		-	-	3	30	-	30	20	50	2
02.	CH6PPC07		-	-	3	30	-	30	20	50	2
TOTAL			18	4	6					700	26

IA - Internal Assessment
Total Marks - 700

MSE - Mid Semester Examination
Total Periods - 28

ESE - End Semester Examination
Total Credits - 26

BOS held on 24th May 2017

Dr. Chandan Guha
Professor
CHEMICAL ENGINEERING DEPT.
JADAVPUR UNIVERSITY
Kolkata-700 032

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**LIST OF PROFESSIONAL ELECTIVES OFFERED BY THE DEPARTMENT OF CHEMICAL
FOR V and VI SEMESTER**

Semester	Subject Code (PE)	Subject
V	CH5TPE11	Engineering Material
	CH5TPE12	Fundamentals of Biochemical Engineering
	CH5TPE13	Food Engineering
	CH5TPE14	Polymer Technology
VI	CH6TPE21	Process Equipment Design-I
	CH6TPE22	Fertilizer Technology
	CH6TPE31	Fuel Combustion Energy Technology
	CH6TPE32	Environmental Engineering

PE - Professional Elective

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CH6TPE31: Fuel Combustion Energy Technology (310)

Unit I : Solid Fuel : Classification of fuel, Origin, Composition, Characteristics and analysis of coal washing & storage of coal, Physical & chemical processing of coal, Various classification systems of coal briquetting, Carbonization, Gasification of coal.

Liquid fuels: Origin, composition, characteristics and classification of crude oil, crude oil processing cracking and reforming, storage and handling of liquid fuel

Gaseous fuel: Classification of gaseous fuel, Natural gas, Coal gas, Coke oven and blast furnace gas, producer gas, water and Carbureted water gas

Unit II: Fuel Combustion Calculation: Fundamentals of various combustion calculations with numerical examples.

Unit III: Combustion Process: General Principles of combustion, Flame, Draught, Limits of Inflammability, Types of combustion Process- Surface, Submerged, Pulsating, Slow combustion.

Unit IV: Energy Conservation: Energy consumption pattern in various sectors, various ways of energy conservation in various process industries including petroleum.

Unit V: Non - Conventional Energy Technologies : General principles with applications and technology of Biomass Energy, Solar Energy, Geothermal Energy, Wind Energy, Nuclear Energy, Hydal, Tidal and Ocean Energy.

Text Book:

1. Elements of Fuel Combustion & Energy Engineering by S.N. Saha, Dhanpat Rai Publication Co. Pvt. Ltd. New Delhi, 2014

BOS held on 24th May 2017

S. Saha
24/5/17
विभागाध्यक्ष, रासायनिक अभियांत्रिकी
HOD, Chemical Engineering
प्रौद्योगिकी संस्थान/Institute of Technology
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)

I agree
24/5/17
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CH6TPE32: Environmental Engineering (3 1 0)

Unit I : Environmental Pollution and Its Effect : Environment and its components, Sources and type of pollutants, General effects on man, animal, vegetation and property.

Unit II : Air Pollution : Air quality criteria and standards, Ambient air sampling and analysis, Stack emission standards, Stack sampling and analysis, Meteorology and dispersion of air pollutants, Atmospheric lapse rate and stability, Plume behavior, Control of gaseous and particulate pollutants from mobile and stationary sources.

Unit III : Water Pollution : Water quality criteria and effluent discharge standards, Domestic and industrial sources of waste water, Waste water sampling and analysis methods as per BIS specifications, Physico-chemical and biological methods of waste water treatment, Recovery of material from process effluents.

Unit IV: Pollution Due to Hazardous Industrial Waste : Nature of hazardous waste materials from various chemical and allied industries, Methods of disposal, destruction and reuse, Nuclear wastes and their management.

Solid waste from commercial, domestic and industrial sectors-composition and characterization, recycle, resource recovery and disposal.

Unit V: Environmental Pollution Management : Case studies of air and water pollution control in chemical industries.

Text Books:

1. Environmental Pollution Control Engineering by C. S. Rao, New Age International Ltd.
2. Environmental Engineering by N N Basak, Tata McGraw-Hill Pub. Co. Ltd.
3. Essentials of Environmental Studies by K. Joseph and R. Nagendran, Pearson Education (Singapore) Pvt. Ltd.

BOS held on 24th May 2017

VSD. Subala 24/5/17
विभागाध्यक्ष, रासायनिक अभियांत्रिकी
HoD, Chemical Engineering
प्रौद्योगिकी संस्थान / Institute of Technology
गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)
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SCHEME FOR EXAMINATION

B.Tech. (FOUR YEAR DEGREE COURSE) - CHEMICAL ENGINEERING

FOURTH YEAR, EIGHTH SEMESTER

Paper Code	Subject	Periods			Evaluation Scheme		Total	Credits
		L	T	P	IA	ESE		
THEORY								
CH4801	Process Utilities and Safety	3	1	-	40	60	100	4
CH4802	Optimization Techniques in Chemical Engineering	3	1	-	40	60	100	4
CH4803	Environmental Pollution Control Engineering	3	1	-	40	60	100	4
CH4804-05	Elective - II*	3	1	-	40	60	100	4
PRACTICAL								
CH4806	Environmental Pollution Control Engineering	-	-	3	30	20	50	2
CH4807	Major Project	-	-	12	90	60	150	6
CH4808	Comprehensive Viva	-	-	-	-	50	50	2
Total							650	26

IA - Internal Assessment

ESE - End Semester Examination

- * CH4804 : Petrochemical Engineering
CH4805 : Polymer Technology- II

CH4803 : Environmental Pollution Control Engineering (3 1 0)

Unit I : Environmental Pollution and its Effect : Environment and its components, Sources and type of pollutants, General effects on man, animal, vegetation and property.

Unit II : Air Pollution : Air quality criteria and standards, Ambient air sampling and analysis, Stack emission standards, Stack sampling and analysis, Meteorology and dispersion of air pollutants, Atmospheric lapse rate and stability, Plume behavior, Control of gaseous and particulate pollutants from mobile and stationary sources.

Unit III : Water Pollution : Water quality criteria and effluent discharge standards, Domestic and industrial sources of waste water, Waste water sampling and analysis methods as per BIS specifications, Physico-chemical and biological methods of waste water treatment, Recovery of material from process effluents.

Unit IV: Pollution Due to Hazardous Industrial Waste : Nature of hazardous waste materials from various chemical and allied Industries, Methods of disposal, destruction and reuse, Nuclear wastes and their management. Solid waste from commercial, domestic and industrial sectors-composition and characterization, recycle, resource recovery and disposal.

Unit V: Environmental Pollution Management : Case studies of air and water pollution control in chemical industries.

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