PIUI 7006	Utility and Energy Management & Regulations	L	T	P	C
Version 1.0		3	0	0	3
Pre-requisites/Exposure	Graduate, Basics of Construction Mgt.				
Co-requisites	Good Command in MS Word and MS Powerpoint				

Course Objectives

(a) Students will be able to understand a solid introduction to Utilities, Energy Management & Regulation.
(b) Students will be able to develop skills to analyze problems faced in Towns, metros for power, water, and gas distributions systems.
(c) Students will be able to develop understanding of Safety and disposal of wastages generated and their disposal with effect on the environment, habitants and on other ecosystem.
(d) Students will be able to exemplify the Policies/Acts/Regulations/Tariff of power, water, gas sanitation and related matters
(e) Students will be able to learn R&R Policies upgradation and modernization of Existing systems in India

Course Outcomes

On completion of this course, the students will be able to

CO1	**Outcome 1** – The students will be able to develop the Basics understanding of existing power Transmission & Distribution System Utilities functioning in Public and Private sectors along with their Rating methods. Future integrated approach of Reduction of line losses and reduction of Transformer Failures projects will be learned
CO2	**Outcome 2** - The students will be able to create a systematic development of oil and gas industry and its marketing retailing storage and transportation networks management and policies
CO3	**Outcome 3** – The students will be able to develop a structural understanding of the natural gas sector and city gas distribution practices in India and abroad
CO4	**Outcome 4** – The students will be able to gain analytical analysis of regulatory matters/Acts/policies/guidelines/rules related with water gas electricity distribution in integrated approaches
CO5	**Outcome 5** – The students will be developing applicable knowledge about the water sewerage & sanitation projects functioning and their difficulties their DPR preparations works for arrangements of funds

Catalog Description

This course comprises the interdisciplinary study of Urban Infrastructure opportunities. By the end of the semester, students would have an understanding of how Urban Infrastructure policy are framed, and the range of strategic decisions that are faced by most policy makers and the implementing agency, and how some of the concepts students have been exposed to in other courses can generate information used for analytical Urban infrastructure problem solving.

Course Content

Unit I: 4.5 lecture hours

MODULE 1: Basics of power industry/Generation/Transmission/Distribution

- Introduction
- Study of Basic terminologies
- Current scenario of Distribution System in India

Module 2: Electricity Act & Regulations/Power Policies/Reforms
Energy conservation

- Power Pricing/Auditing/Smart Grids

Unit II: 7.5 lecture hours

Module 3: Oil and gas/historical perspective of petroleum industry

- Natural gas sector

Module 4: City gas distribution/global scenario

- Government Policies
- Regulatory Framework

Module 5: Water utility/Water security

- City water distribution
- Metering Technologies
- Internet billing

Unit III: 6 lecture hours

Module 6: Rain water harvesting/Water Recharging, Rain Water Harvesting

Unit IV: 6 lecture hours

Module 7: Sewage & sanitation/Regulatory aspects

Module 8: SWACHH Bharat

Unit V: 12 lecture hours

Module 10:Solid waste management system

Module 11: Meter to cash cycles

Text Books and Journals

1. Private Sector Participation in Light Rail Light Metro Transit Initiatives by Cledan Mandari Perott
2. Track Design Handbook for Light Rail Transit by Transportation Research Boards
3. ACCESSIBILITY IN CITIES: TRANSPORT AND URBAN FORM
4. HARVARD CASE STUDIES

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

Components	Presentation/Assignment/Projects etc	ESE

Weightage (%)	50	50

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Programme Outcomes**
CO1	**Outcome 1** – The students will be able to develop the Basics understanding of existing power Transmission & Distribution System Utilities functioning in Public and Private sectors along with their Rating methods. Future integrated approach of Reduction of line losses and reduction of Transformer Failures projects will be learned	PO 1,2, ,4,7,8,9,10, 11,12,13, 14
CO2	**Outcome 2** - The students will be able to create a systematic development of oil and gas industry and its marketing retailing storage and transportation networks management and policies	PO 1,2, 3, 7,8,9,10, 11,14
CO3	**Outcome 3** – The students will be able to develop a structural understanding of the natural gas sector and city gas distribution practices in India and abroad	PO 1,2, 3, 8,9,10, 11, 12,13,14
CO4	**Outcome 4** – The students will be able to gain analytical analysis of regulatory matters/Acts/policies/guidelines/rules related with water gas electricity distribution in integrated approaches	PO 4,5,6, 8,7, 12,13, 14
CO5	**Outcome 5** – The students will be developing applicable knowledge about the water sewerage & sanitation projects functioning and their difficulties their DPR preparations works for arrangements of funds	PO 1,2, 3, 4,8,10, 11, 13,14

Course Outcomes	**CO 1**	**CO 2**	**CO 3**	**CO 4**	**CO5**
PO 1	3	3	3	3	3
PO 2	3	3	2	2	2
PO 3	3	3	3	2	2
PO 4	2	2	3	3	3
PO 5	2	2	2	3	3
PO 6	3	2	3	2	2
PO 7	2	3	3	2	2
PO 8	3	2	3	3	3
PSO 9	2	2	2	2	2

PSO 10	2	2	2	2	2
PSO 11	2	2	2	2	2
PSO 12	2	2	2	2	2
PSO 13	2	2	2	2	2
PSO 14	2	2	2	2	2

		Students will demonstrate strong conceptual knowledge and execution in soft and hard infrastructure planning, development, management, financing, regulation and governance.	Students will demonstrate effective understanding of infrastructure planning and development, utility & energy management, urban transportation including metro rail, e-vehicle with charging and other modes of urban surface transportation, water supply and sewerage, smart city planning and effective financing urban infrastructure.	Students will demonstrate analytical skills to understand issues with remedial solutions relating to urban infrastructure. of soft and hard infrastructure	Students will exhibit the ability to integrate planning, construction & development, operation & management, financing, regulation and governance of urban infrastructure projects and facilities.	Students will exhibit the ability to integrate technical, economic, social and regulatory frameworks for urban infrastructure sector planning and resource management.	Students will exhibit deployable skills pertinent to urban hard and soft infrastructure sector and smart city development and management.	Students will be able to develop and evaluate alternate managerial choices and identify optimal solutions.	Students will demonstrate effective application capabilities of their conceptual understanding to infrastructure planning, development and management.	Students will be able to exhibit effective decision-making skills, employing analytical and critical thinking ability for planning, development and management of soft and hard infrastructure.	Students will demonstrate effective oral and written communication skills in the professional context.	Students will be able to work effectively in teams and demonstrate team-working capabilities.	Students will exhibit leadership and networking skills.	Students will demonstrate sensitivity towards ethical and moral issues and have ability to address them in the context of urban planning, development and management including cost effective financing and good governance.	Students will demonstrate employability traits in line with the needs of changing hard and soft urban infrastructure sector.
Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PO13	PO14
PIUI 7006	Utility and Energy Management & Regulations	3	2	3	3	2	2	2	3	2	2	2	2	2	2

1=weakly mapped
2= moderately mapped
3=strongly mapped

Model Question Paper

Name: **Enrolment No:**	UPES

Course: PIUI 7006-Utility and Energy Management & Regulations

Programme: MBA UISC **Semester: Even**

Time: 03 hrs. **Max. Marks:100**

Instructions:

Section A (each carrying 2 marks); Attempt all questions from **Section B** (each carrying 5 marks)**.** Any **Two Questions** from **Section C** (carrying 15 marks)**.** Case Study **Section D (** 30 Marks)

Section A ( )

Write Short Note

1	At present India generate about 62 million tons of Solid waste annually	**[2]**	**CO1**
2	At present India process and treat about 25% of Municipal waste.	**[2]**	**CO5**
3	By 2030 the waste generation will increase to 165 million tons.	**[2]**	**CO2**
4	India has more than 18% of population of world and only 4% of world renewable water resources	**[2]**	**CO2**
5	The availability of fresh water in the world is only 3% rest is all saline water	**[2]**	**CO3**
6	National water policy was issued in the year 2012.	**[2]**	**CO1**
7	At present 50% of annual precipitation is received in just 15 days period.	**[2]**	**CO2**
8	Leakage / seepage / and inefficiency are responsible for 50% loss of usable water.	**[2]**	**CO4**
9	Water day is celebrated on 22 march every year.	**[2]**	**CO4**
10	Piped natural gas is cheaper than liquefied petroleum gas.	**[2]**	**CO2**
	SECTION B (Attempt all Questions**)**		
11	Describe the salient features of Electricity Conservation Act-2001	**[5]**	**CO4**
12	Describe the salient features of HELP-2016. Explain how it differs with NELP policy	**[5]**	**CO2**
13.	Explain in detail the national urban sanitation policy-2008	**[5]**	**CO5**
	What do you understand by ECBC and ESCO, what is their role in energy conservation. Write Some tips of energy conservation.	**[5]**	**CO1**
	SECTION C (Attempt all)		
14.	What are the advantage of rain water harvesting explain the components of rain water harvesting system.	**[15]**	**CO4**

15.	Describe the salient features of solid waste management rules-2016	**[15]**	**CO4**
	SECTION D (Attempt All)		
	Case Study Q. 12 (a) Draw the L.N.G. Terminals and gas pipe lines diagram in India. Explain the details of gas distribution structure of Indraprastha gas in Delhi (b)Describe the potential environment impact from solid waste management activities Q. 13 Two Lamps are to be compared. (a) Cost of first lamp is Re. 1 and it takes 100 watts. (b) Cost of second lamp is Rs 4 and it takes 60 watts. Both lamps are of equal candlepower and each has a useful life of 1000 hours. Which lamp will prove economical if the energy is charged at Rs. 70 per kW of maximum demand per year plus paisa per kWh? At what load factor both the lamps will be equally advantageous? Q.14 (a) Explain the strategies adopted for sustainable development of water resources in India (b) Describe in detail the wastes in M.S.W plants and the requirements for special attention in the plants	**[30]**	**CO3**