

# GUJARAT TECHNOLOGICAL UNIVERSITY

## CIVIL (CONSTRUCTION ENGINEERING AND MANAGEMENT) (14)

ENERGY MANAGEMENT

SUBJECT CODE: 2721411

SEMESTER: II

Type of course: OPEN ELECTIVE

Prerequisite: NA

Rationale: NA

### Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	ESE (V)		PA (I)			
		ESE			OEP	PA	RP			
3	2#	2	5	70	30	20	10	10	10	150

### Content:

Sr. No.	Content	Total Hrs	% Weightage
1	<b>Energy Calculations</b> Fundamental equations, units, conversion factors.		
2	<b>Introduction to Energy Management</b> Energy conservation, Energy conservation opportunities, National Energy strategies and Plan.		
3	<b>Introduction to Energy Sources and current and emerging technologies.</b> Renewable (Wind, Solar and Tidal) & Non Renewable (Coal, Hydro, Gas, Diesel and Nuclear): hydrogen fuels and fuel cell technologies. Fusion fuel for future. Solar ponds. Solar photo voltaic system. Geo thermal energy. Energy generation principle, future scenario in India.		
4	Demand and supply assessment. Energy impact assessment- prediction and analysis. Regulation in energy management.		
5	Energy in urban and rural planning.		

### Reference Books:

1. Energy management handbook. Wayne C. Turner., Stevadofy
2. A text book of energy technology. Vedams ebooks Pvt. Ltd. New Delhi.
3. Non-conventional energy sources. G.D. Rai. Khanna publisher. New Delhi.
4. Handbook of energy Audit & environment. Y.P.Abbi, Shashank Jain. TERI book store.
5. Solar energy by S. P. Sukhatme. Tata McGraw Hill. New Delhi.

**Course Outcome:**

After learning the course the students should be able to:

1. Calculate energy available and energy required.
2. Prepare energy strategies and energy management plan.
3. Understand and apply conventional, current and emerging technologies of energy.
4. Do Demand and supply assessment and Energy impact assessment.

**List of Experiments:****Open Ended Problems:**

**Review Presentation (RP):** The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website