GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (CONSTRUCTION ENGINEERING AND MANAGEMENT) (14)
PROJECT RISK ANALYSIS AND MITIGATION TECHNIQUES
SUBJECT CODE: 2721404
SEMESTER: II

Type of course: MAJOR ELECTIVE -II

Prerequisite: NA

Rationale: NA

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks		Practical Marks				
				ESE (E)	PA (M)	ESE (V)		PA (I)		
						ESE	OEP	PA	RP	
4	2#	0	5	70	30	30	0	10	10	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	**General** Importance of Risk, types of risks, quantifiable and unquantified risks	08	
2	**Risk analysis and Management for projects (RAMP)** Identifying risk events. Probability distribution. Stages in Investment life-cycle; determination of NPV and its standard deviation for perfectly co-related, moderately co-related and un-correlated cash flows. Sensitivity analysis, scenario analysis simulation, decision tree analysis, risk profile method, certainly equivalent method; risk adjusted discount rate method, certainty index method, 3 point estimated method; use of risk prompts, use of Risk Assessment tables, details of RAMP process, utility of Grading of construction entities for reliable risk assessment.	20	
3	**Risk Mitigation Techniques** Elimination, reducing, transferring, avoiding, absorbing or pooling. Residual risk, mitigation of unquantified risk. Coverage of risk through CIDC's MOU with the Actuarial Society of India through risk premium such as (BIP) - Bidding Indemnity Policy (DIMO) - Delay in meeting obligation by client policy, (SOC) - Settlement of claims policy (LOP)- Loss of profit policy (TI). Transit Insurance policy (LOPCE) Loss of performance of construction equipment policy.	20	

Reference Books:

1. Industrial Engineering and Management of manufacturing systems. Dr.Surendra Kumar Satya Prakashan
2. RAMP Handbook by institution of Civil Engineers and the faculty and Institute of Actuaries-Thomas Telford publishing, London.
3. Construction Engineering and Management - Seetharaman.

4. Projects Planning analysis selection implementation and Review - Prasanna Chandra.

Course Outcome:

After learning the course the students should be able to:

1. apply various aspects of risk management
2. identify risk events,
3. use of risk prompts, risk assessment tables and utility of grading of construction entities for reliable risk assessment.
4. apply Risk Mitigation Techniques.

List of Tutorials:

Assignment work is based on above subject contents.

Assignment work:

1) Net present Worth.

2) Perfectly co related, moderately co-relations & uncorrelated cash flows.

3) Scenario analysis

4) Sensitivity analysis

5) Risk Profile methods

6) Certainty Equivalent Method

7) Risk adjusted discount rate method

8) Certainty index method

9) 3 point estimated method

10) Use of risk assessment tables.

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