

GUJARAT TECHNOLOGICAL UNIVERSITY

BE (CIVIL & INFRASTRUCTURE ENGINEERING) CONSTRUCTION SAFETY AND MATERIAL MANAGEMENT

SUBJECT CODE: 2164007

6th Semester

Type of course: Department Elective Subject in BE (Civil and Infrastructure Engineering)

Prerequisite: NIL

Rationale:

Construction Safety and Material Management is providing conceptual understanding and applications of safety required on infrastructure projects. It also enables basic understanding of material management of projects sites. With the help of this knowledge students may be able:

1. To create awareness on the importance of safety management aspects of construction projects
2. To understand the various safety concepts and requirements applied to construction projects.
3. To study the of construction accidents, safety programmes, contractual obligations, and design for safety
4. To understand the process of planning, procurement, allocation and control of materials in construction projects for their optimal use.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks			Practical Marks			
			ESE	PA(M)		ESE (V)		PA (I)		
PA	ALA	ESE		OEP						
3	2	0	5	70	20	10	30	0	20	150

Contents:

Sr. No	Topics	Hrs.	% Weightage
1	Construction Accidents: Accidents and their Causes – Human Factors in Construction Safety, Costs of Construction Injuries, Occupational and Safety Hazards– Legal Implications.	6	14
2	Safety Managements: Introduction to safety, Elements of an Effective Safety Programme, Safety and health programs in construction industry; Job-Site Safety Assessment, Planning for safety provisions, HSE plans, Analysis of construction hazards and accidents, Construction hazards and safety guidelines, Occupational health hazards, Prevention techniques for construction accidents; Site management with regard to safety recommendations, Training for safety awareness and implementation, Contractual obligations and provisions for safety, Construction safety and health manual.	18	41
3	Materials Management: Overview of construction materials and their characteristics, Objective and functions of material management, Supply chain management and material management, Management organization for materials management, Role of material manager, Material requirement planning, Classification and coding of construction materials for MIS, ABC Analysis, XYZ Analysis,	20	45

	Inventory control systems, Inventory Models: fixed order quantity, economic order quantity, Purchase Function, Vendor Rating, Vendor Analysis, Legal aspects of purchase, E-Procurement, Stores management, Value engineering application for materials, Material Wastage.		
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Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
25	25	20	15	15	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above

Reference Books:

1. Gopalakrishnan, P. & Sundarshan, M, Materials Management: An Integrated Approach, Prentice Hall of India Pvt. Ltd., New Delhi.
2. Reese C. D. and J. V. Eidson, Handbook of OSHA construction safety and health, 2nd ed., CRC Press, Boca Raton, 2006.
3. Holt A. S. J., Principles of construction safety, Blackwell Publishing, Oxford, 2008.
4. Kwaku, A., Tenah, Jose. M. Guevara, Fundamentals of Construction Management and Organization, Reston Publishing Co., Inc., Virginia, 2005.
5. Jimmy W. Hinze, Construction Safety, Prentice Hall Inc., 1997.
6. Richard J. Coble, Jimmie Hinze and Theo C. Haupt, Construction Safety and Health Management, Prentice Hall Inc., 2001.

Course Learning Outcomes:

1. Ability to understand and appreciate the importance and financial and legal implications of construction safety issues
2. Student will be able to visualize and assess and plan for the potential hazards involved in a construction project
3. Ability to understand and appreciate the importance of material management process in construction
4. Ability to apply the concept of material management practices in construction projects

List of Open Source Software/learning website:

www.nptel.iitm.ac.in/courses/

Active learning Assignments (AL) : Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The Power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.

