

DEPARTMENT OF Mechanical Engineering
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Course Title	SAFETY IN MATERIAL HANDLING		
Course Code	ME 675	No. of Credits	3
Course Code of Pre-requisite subject(s)	-	Session	-
Session	Jan-2018	Specialization	Industrial Safety Engineering
Name of Faculty	Dr.K.Sankaranarayananasamy	Department	MECHANICAL ENGG
Email	ksnsamy@nitt.edu	Telephone No.	9486001114
Name of Course Coordinator(s) (if, applicable)	-		
E-mail		Telephone No.	
Course Type	Core course		

Syllabus

Course Content

MANUAL MATERIAL HANDLING

Preventing common injuries, lifting by hand, team lifting and carrying, handling specific shape machines and other heavy objects – accessories for manual handling, hand tools, jacks, hand trucks, dollies and wheel barrows – storage of specific materials - problems with hazardous materials, liquids, solids – storage and handling of cryogenic liquids - shipping and receiving, stock picking, dock boards, machine and tools, steel strapping and sacking, glass and nails, pitch and glue, boxes and cartons and car loading – personal protection – ergonomic considerations.

RIGGING

Unit Load, Tackles - Fiber rope, types, strength and working load inspection, rope in use, rope in storage - wire rope, construction, design factors, deterioration causes, sheaves and drums, lubrication, overloading, rope fitting, inspection and replacement – slings, types, method of attachment, rated capacities, alloy chain slings, hooks and attachment, inspection.

CRANES AND CONVEYORS

Hoisting apparatus, types - cranes, types, design and construction, guards and limit devices, signals, operating rules, maintenance safety rules, inspection and inspection checklist – conveyors, precautions, types, applications.

INDUSTRIAL TRUCKS AND ELEVATORS

Fork Lift, types, operators selection, safe operating procedures, Powered industrial trucks, requirements, operating principles, operators selection and training and performance test,

inspection and maintenance, electric trucks, gasoline operated trucks, LPG trucks – power elevators, types of drives, hoist way and machine room emergency procedure, requirements for the handicapped, types- Escalator, safety devices and brakes, moving walks – man lifts, construction, brakes, inspection.

COURSE OBJECTIVES

- To imbibe knowledge on hazards involved in manual and mechanical material handling
- To imbibe knowledge on selection, testing, usage, inspection and maintenance of material handling equipment.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
Upon the completion of the course, the students will be able to	
1. Recognize the practical solutions to eliminate and/or minimize hazards in material handling	1, 10, 12
2. Perform safe rigging for material Handling	2, 6, 8
3. Administer a crane and sling safety to operation	1, 2, 8
4. Disseminate the basic safety concepts and techniques in mechanical material handling.	5, 6, 8
5. Recognize the safe use, inspection for fork Lifts.	1, 10, 12

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1/3hrs	Introduction to Material handling, Significance of providing safety to material handling process	Lecture C&T/ PPT
2	2/3hrs	General safety consideration in material handling	Lecture C&T/ PPT
3	3/3hrs	Accessories of manual material handling- Ropes, chains, Hooks, Clamps, Arresting gears	Lecture C&T/ PPT
4	4/3hrs	Ergonomics consideration in material handling, design, installation, operations of conveyers and its types	Lecture C&T/ PPT
5	5/3hrs	Maintenance of Conveying equipments, hoisting, traveling and slewing mechanisms	Lecture C&T/ PPT

6	6/3hrs	Rigging, Unit Load, Tackles	Lecture C&T/ PPT
7	7/3hrs	Ergonomic consideration in material handling, design, installation, operation and maintenance of driving gear for hoisting mechanism – Traveling mechanism	Lecture C&T/ PPT
8	8/3hrs	Introduction to mechanical handling and Accessories of Mechanical handling.	Lecture C&T/ PPT
9	9/3hrs	Classification of Equipments used in mechanical handling Process	Lecture C&T/ PPT
10	10/3hrs	Fork Lift, types, operators selection, safe operating procedures	Lecture C&T/ PPT
11	11/3hrs	Storage and Retrieval of common goods of various shapes and sizes in a general store of a big industry.	Lecture C&T/ PPT
12	12/3hrs	Selection, operation and maintenance of Industrial Trucks – Mobile Cranes – Tower crane – Checklist - Competent persons.	Lecture C&T/ PPT
13	13/3hrs	Case Studies	Lecture C&T/ PPT

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle test-1	6 th week	1hr	20
2	Seminar Cum Assignment	12 th week	-	30
CPA	Compensation Assessment	13 th week	1hr	20
3	Final Assessment	15 th week	3 hr	50

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Course Exit survey will be collected at the end of the semester before the start of semester examination through online. Students can log in their MIS account to give the feedback.

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc)

ATTENDANCE

- Students should attend all the classes and should participate in all deliberation taking place.
- 75% attendance is mandatory. If student is not able to maintain 75% attendance but have above 60%; he/she is required to write the compensation assessment and obtain a minimum of 60% of marks to become eligible to write the final assessment. For less than 60% attendance mandatory to redo the course.

COMPENSATION ASSESSMENT

- Compensation Assessment is permitted only for those who couldn't write the cycle test on valid reasons and getting permission to write compensation assessment within two days of cycle test.

ACADEMIC HONESTY & PLAGIARISM

1. All the students are expected to be genuine during the class work. Taking of information by means of copying simulations, assignments, looking or attempting to look at another student's paper or bringing and using study material in any form for copying during any assessments is considered dishonest.
2. Tendering of information such as giving one's program, simulation work, assignments to another student to use or copy is also considered dishonest.
3. Preventing or hampering other students from pursuing their academic activities are also considered as academic dishonesty.

ADDITIONAL INFORMATION

The course faculty is available for discussion in department. Students can interact with faculty.

FOR APPROVAL

Course Faculty 

CC-Chairperson 

HOD 