Syllabus for Masters of Technology

Environmental Engineering

Subject Code: 02EN0105

Subject Name: Occupational health and safety

M.Tech Year – I (Semester I)

Objective: To disseminate knowledge of precautionary steps for health & safety.

Credits Earned: 3 Credits

Course Outcomes: After completion of this course, student will be able to:

1. To convey knowledge on safe work practices in offices, industry and construction
2. To identify and correct the problems related to occupational health & safety in industries as well as in the house.
3. Select suitable techniques to control hazards in industry.

Prerequisite: understanding of health & safety in industry

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Internal (I)	Viva (V)	Term work (TW)	
2	2	0	3	50	30	20	25	25	150

Contents:

Unit	Topics	Contact Hours
1	Hazard identifications Types of occupational Hazards with classification, Terminology related to OHS, Toxic material, TLV, LD & LC, accident etc. Ergonomics, diseases related to toxic materials	4
2	Safety Concept, Accident causing factors & its prevention, Need of safety, Importance of safety	8
3	Safety management methods Define ways to manage safety, Engineering & Managerial management methods TKN, Phosphates and analysis of Heavy Metals.	10

4	Area of safety in industry (Physical & Chemical Hazards) Fire safety, Noise & Vibration, Heat & Temperature, Mechanical Hazardous, Stress & safety, Falling Impacts, Lifting Hazards	5
5	Risk identification & Control Techniques Hazards, Risks & detention techniques, Preliminary hazards Methos (PHA), hazard analysis(HAZAN), failure mode effect analysis(FMEA), Hazard and operability(HAZOP) study, Hazard ranking (DOW & MOND index), Fault tree analysis, Event tree analysis(ETA), major accident hazard control, on-site and off-site emergency plans.	10
6	PPEs Need, Indian standards, factors considering, Personal & Area monitoring	5
	Total Hours	42

Tutorials:

1. PHA
2. HAZAN
3. HAZOP
4. DOW & MOND INDEX
5. FMEA
6. HAZOP
7. ETA
8. FTA
9. Personal Protective Equipment

Reference Books:

1. Fundaments of Industrial safety & health by Dr. K. U. Mistry.
2. Industrial & occupational Safety, Health & Hygein - by AHommadi.
3. R.K.Jain and Sunil S.Rao , Industrial Safety , Health and Environment Management
4. Systems, Khanna publishers , New Delhi (2006)
5. Slote.L,Handbook of Occupational Safety and Health, John Willey and Sons, NewYork

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
5%	15%	40%	30%	10%	-

Instructional Method:

a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by white board, may also use any of tools such as collaborative learning, demonstration, role play, Quiz, brainstorming, MOOCs, Active Learning Assignments etc.

b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

d. Students will use supplementary resources such as online videos, Virtual Laboratory NPTEL videos, e-courses.