

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.E. SEMESTER : VI**  
**ENVIRONMENTAL SCIENCE AND ENGINEERING**

**Subject Name: Occupational Health & Safety**

**Subject Code:161305**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
3	2	0	5	70	0	30	50

Sr No	Course Contents
<b>Occupational Health</b>	
<b>1</b>	<b>Occupational Health:</b> Classification of occupational health hazards, dangerous properties of chemical and their health effects, routes of entry of toxic material into human body, permissible exposure limits, Threshold limit value, lethal dose and lethal concentration, Ergonomics, constituents of ergonomics, application of ergonomics for safety & health, occupational diseases due to metals & dusts, fumes & chemical compounds.
<b>Safety</b>	
<b>2</b>	<b>Concept, Philosophy &amp; Psychology of safety:</b> Concept of safety, Nature of concept of safety, Philosophy of safety, safety terminology, philosophy of total safety concept, safety psychology, accident causative factors, general psychological factors.
<b>3</b>	<b>Accident Causative and prevention:</b> Causation, Accident problem, Reasons for prevention, factors impeding safety, Accident prevention.
<b>4</b>	<b>Safety Management:</b> Concept of management, element of management, functions, management principles, safety management & its responsibilities, safety organization.
<b>5</b>	<b>Electrical Safety:</b> Electricity and Hazardous, Indian standards, effects of electrical parameters on human body, safety measures for electric works.
<b>5</b>	<b>Fire and Explosion:</b> Fire phenomena, classification of fire and extinguishers, statutory and other standards, fire prevention & protection system, explosion phenomena, explosion control devices, fire awareness signs.
<b>6</b>	<b>Hazards &amp; Risk identification, Assessment and control techniques:</b> Hazards, Risks & detection techniques, Preliminary hazard analysis(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 offsite emergency plans.
<b>7</b>	<b>Personal Protective Equipment:</b>

	Need of PPE, Indian standards, factors of selection of PPE, non respiratory equipments, respiratory equipments.
<b>8</b>	Safety in different industries as case study.

**Tutorials:**

1. Occupational Hazards
2. Occupational diseases
3. Concept, Philosophy & psychology of safety
4. Accidental causation & prevention
5. Safety management
6. Electrical safety
7. Fire and explosion
8. Hazard and Risk identification, assessment & control techniques.
9. Personal Protective Equipments
10. Safety in Chemical Industry: Case study

**Reference Books:**

1. Fundamentals of Industrial safety & health by Dr. K. U. Mistry.
2. Social & Preventive Medicines by Yashpal Bedi.
3. Industrial & occupational Safety, Health & Hygein - by AHommadi.
4. Occupational Health, a Practical Guide for Managers -by Ann Fingret & Akin Smith.
5. Environmental Health & Technology - by Y P Kudes
6. Environment & Health by Norman M Triff.