SWAMI VIVEKANAND UNIVERSITY, SIRONJA, SAGAR (M.P.)

SYLLABUS

For

DIPLOMA IN CONSTRUCTION SAFETY MANAGEMENT

Course Code: DCSM

Department of Fire Safety & Disaster Management

Duration of Course	:	1 Year
Examination Mode	:	Yearly
Examination System	:	Non-Grading

Swami Vivekanand University, Sironja Sagar (M.P.)
2017-2018

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DIPLOMA IN CONSTRUCTION SAFETY MANAGEMENT

Duration of Course (1 Year)

Faculty :Science Department :Fire Safety& Disaster Management

Scheme of Course : Course Code-DCSM Semester / Year -Yearly

Course Code	Title of the Paper	Distribution Of Marks					
		Theory		Practical		Total	Marks Obtained
		Max	Min	Max	Min		
DCSM-101	ORGANIZATION COMMUNICATION SKILL	100	33	-	-	100	
DCSM -102	FOUNDATION OF MANAGEMENT	100	33	-	-	100	
DCSM -103	CONSTRUCTION SAFETY MANAGEMENT	100	33	-	-	100	
DCSM -104	INDUSTRIAL SAFETY	100	33	-	-	100	
DCSM -105	INDUSTRIAL HYGIENE AND OCCUPATIONAL HEALTH	100	33	-	-	100	
DCSM -106	FIRE SAFETY AND EXTINGUISHING METHODS	100	33	-	-	100	
DCSM -107	DESIGN AND INSTALLATION OF FIRE PROTECTION SYSTEM	100	33	-		100	
DCSM -108	PROJECT WORK	-	-	100	33	100	
Grand Total		**700**		**100**		**800**	

Organizational Communication Skills (DCSM-101)

UNIT- I **Marks:20**

Definition of leadership, Organization, Elements & Principles of good organization, Communication, Methods of Communication, Speaking skills, written communication, Formal and Informal reports.

UNIT- II **Marks: 20**

Safety communication, Managerial communication, Communication with employees with conducting training, Emergency communication, Essentials of Grammar.

UNIT- III **Marks: 20**

Parts of Speech, Types of Correspondence, Receipt and Dispatch of Mail, Types of Letters-Formal / Informal, Importance and Function.

UNIT- IV **Marks: 20**

Group Discussion & Presentation, Presentation Skills, Voice & Picture Integration, Body Language, Presentation Plan.

UNIT- V **Marks: 20**

Employers Expectations, General Etiquette, Dressing Sense, Postures & Gestures.

Text Books -

1. Herbert. A. J. The structure of Technical English Orient Longman 1995.
2. Pickett and Laster, 'Technical English, Writing, Reading and Speaking', New York Harper and Row Publications, 1997.
3. Interactive course in phonetics and spoken English published by Acoustics Engineers (ACEN) 2002

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Foundation of Management (DCSM-102)

Unit I: **Marks: 20**

Management concepts & Evolution: Definition - nature - scope and functions of management. Importance of management, role of manager, management and administration, functional areas of management, POSDCORB-Evolution of management thought - Relevance of management to modern industry, Govt., University, hospital & other institutions.

Unit II: **Marks: 20**

Planning : Meaning, features, nature and importance of planning. Procedure, types of planning, Techniques. Elements of planning, principles of planning, planning and control, types of plans. Objectives, MBO.

Unit III: **Marks: 20**

Organizing: Nature - purpose - organizational structure - Theories of organization - span of control - Line & staff functions. Authority & Responsibility - centralization and decentralization -delegation of authority.

Unit IV: **Marks: 20**

Staffing:Staffing nature and purpose, selection, PA and Creer planning

Unit V: **Marks: 20**

Directing: Nature of directing - leadership qualities - styles - motivation - morale and discipline.

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Text Books - 1. Koontz, Weihrich Essentials for Management :An International Perspective TMHE

2. V S P Rao & Hari Krishna Management text and cases Excel Books, New Delhi

3. Kreitner, Management Theory and Applications, Cengage Learning,India, 2009

4. Robbins, Management, 9th edition Pearson Education, 2008,

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Construction Safety Management (DCSM-103)

UNIT-I **Marks : 20**

Introduction to Construction Industry- Safety issues in construction- Human factors in construction safety management. Roles of various groups in ensuring safety in construction industry. Framing Contract conditions on safety, and related matters. Relevance of ergonomics in construction safety.

UNIT-II **Marks : 20**

Safety in various construction operations- Excavation- under- water works- under- pinning & shoring Ladders & Scaffolds- Tunneling- Blasting- Demolition- Pneumatic caissons- confined Space Temporary Structures. Indian Standards on construction safety- National Building Code Provisions on construction safety.

UNIT-III **Marks : 20**

Safety in material handling and equipments-Safety in storage & stacking of construction materials.

UNIT-IV **Marks : 20**

Safety in these of construction equipments- Vehicles, Cranes, Tower Cranes, Lifting gears, Hoists & Lifts, Wire Ropes, Pulley blocks, Mixers, Conveyors, Pneumatic and hydraulic tools in construction. Temporary power supply.

UNIT-V **Marks : 20**

Contract Labor (R&A) Act and Central Rules: Definitions, Registration of Establishments, Licensing of Contractors, Welfare and Health provisions in the Act and the Rules, Penalties, Rules regarding wages. Building & Other Construction Workers (RE&CS) Act,1996 and Central Rules, 1998: Applicability, Administration, Registration, Welfare Board & Welfare Fund, Training of Building workers, General Safety, Health & Well fare provisions, Penalties.

Text Books -

1.K.N.Vaid,ConstructionSafetyManagement.
2. V.J. Davies and K.Tomasin, Construction Safety Handbook.
3. James B.Fullman, Construction Safety, Security & Loss Prevention
4.LingerL,ModernMethodsofMaterialHandling
5. R.T. Ratay, Hand book of Temporary Structures in Construction.
6. National Building Code of India
7.RelevantIndianStandardspublishedbyBIS

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Industrial Safety (DCSM-104)

UNIT-I **Marks : 20**

Factories Act- Definitions, Preliminary, Inspecting staff, Health, Safety, Provisions relating to hazardous processes, Welfare, Working hours of adults, Employment of young persons, Special provisions. Dock workers (Safety, Health and Welfare)Act and Regulations - Definitions, Powers of Inspectors, Power of Govt. to direct Inquiry, Obligation of dock workers. Duties of Safety Officers, Reporting of accidents, Emergency Action Plan, Safety Committee.

UNIT-II **Marks : 20**

Work men's Compensation Act: Definitions, Employer's liability for compensation, Calculation of amount of compensation. ESI Act and Rules: Applicability to Construction, Definitions and Benefits as per the Act & the Rules. Public Liability Insurance Act and Rules- Definitions, Calculation of amount of relief, Environmental Relief Fund, Advisory Committee, Powers of District Collector, Extent of Liability, Contribution to Relief Fund

UNIT-III **Marks : 20**

Explosives Act and Rules-Definitions, Categories of Explosives, General Safety Provisions, Use of Explosives Grant of license, Notice of Accidents, Inquiry in to ordinary and more serious accidents, Extension of definition to other explosive substances. Petroleum Act & Rules- Definitions, Control over Petroleum import, transport, storage, production, refining and blending, Need for license, exemption, Notice of Accidents and Inquiries.

UNIT-IV **Marks : 20**

Water Act- Definitions, Powers and Functions of Boards, Provisions regarding prevention and control of water pollution, Power to make rules, Rules on Consent for Establishment and Operation. Air Act- Definitions, Power & Functions of Boards, Prevention & Control of Air Pollution, Consent as per Air Pollution Rules.

UNIT-V **Marks : 20**

Environment (Protection)Act and Rules- Definitions, general powers of central government, prevention, control and abatement of environmental pollution, standards for emission, prohibition and restrictions on sitting and operation of industries. MSIHC Rules- Definitions, Duties of Authorities, Notification of Major Accidents Safety Reports, Safety audit, MSDS, On-site & Off- site Emergency Plan, Giving safety in formation to public.

Text Books -

1.FactoriesAct,1948 with aamendments of1976&1987.
2.DockWorkers(SHW)Act,1986;Rules,1990&Regulations,1990.
3.ExplosivesActandRules.
4.PetroleumActandRules.
5.EnvironmentalActs&Rulesasabove

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Industrial Hygiene & Occupational Health (DCSM-105)

UNIT-I **Marks: 20**

Basic concepts of Industrial Hygiene, Environmental factors of stress- Chemical Hazards, Physical Ergonomically Biological Hazards, Threshold limit values (TLV) Short term exposure limit (STEL), Maximum Tolerable exposure Limit (MTEL), LC-50, LD-50, MSDS of Hazardous chemicals

UNIT-II **Marks: 20**

Recognition of hazards: Industrial toxicology, gases, vapors, solvent, dust, fibers, particulates, Industrial noise, Ionizing & non-Ionizing radiation thermal, Ergonomics.

UNIT-III **Marks: 20**

Evaluation of hazard: General principals, Air sampling, Analysis, methods of air sampling various equipments for sampling, direct reading instruments for gases, vapors and particulates, Asbestos fibers, sampling & analysis..

UNIT-IV **Marks: 20**

Control of hazards: Methods of control local exhaust ventilation, dilution ventilation of Industrial work places, respiratory protection, ventilation norms requirements & measurements,.

UNIT-V **Marks: 20**

Occupational health: Occupational diseases of skin, respiratory system, diseases from metals, pesticides, solvents & gases occupational cancer, Biological Monitoring.

References: - 1. Fundamentals of Industrial Hygiene by Barbara A. Plog & particia J. Quinlan.
2. Safety at work by John ridby & John Channing.
3. Occupational Health & Safety in manufacturing Industries M K Potty.
4. Diseases of occupation D. Hunter.
5. Code of Practice for Hazardous goods by NFPA
6. Dangerous properties of Industrial materials by Irvin Sex.
7. Handbook of occupation Health & Safety NSC Chicago 1982
8. Encyclopedia of occupational Health & Safety Vol I & II I.L.O. Geneva 1985.
9. Human Factors in Engineering & Design Tata McGraw-Hill 1982

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Fire Safety and Extinguishing Methods(DCSM-106)

UNIT- I **Marks: 20**

Combustible Matter, Flammable/Combustible Liquids, Classification Of Petrochemicals Liquids As Per NFPA, Combustible Gases.

UNIT- II **Marks:20**

Combustion and It's Types ,Oxygen Content in Air by Weight And Volume, Combustion of Solid ,Liquid and Gases Exothermic and Endothermic Reactions, Jet and Flash, Flames and its types, Premixed ,Diffusion, Turbulent Stationary and Propagating Flames Burning Velocity ,Flash Point, Fire Point, Transmission of Heat by Conduction Convection and Radiation.

UNIT- III **Marks: 20**

FIRE: Definition of Fire, Fire Triangle, Tetrahedron of Fire, Classification of fires, Types of Extinguishing Media of Agent, Principles of Fire Extinguishing Methods Cooling, Starvation ,Smothering(Blanketing),Retarding Chain Reaction.

UNIT- IV **Marks: 20**

Types of Foam Concentrate, Protein, AFFF, Fluoro Protein, Alcohol Types, Low, Medium and High Expansion Foam, Physical and Chemical Properties of Foam.

UNIT-V **Marks: 20**

Sprinklers Automatic Alarms Water Tenders, Fire Extinguishers, Fire Prevention And Inspection Procedures , Fire Protection Law as/Bye Laws .

Text Books-

Carl Goodson, “Essentials of fire fighting” Fire protection publications; 5th edition

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Design and Installation of Fire Protection System (DCSM-107)

UNIT-I **Marks: 20**

Grouping of Fixed-Fire-fighting Installations, Provisions of First Aid Fire-Fighting Arrangements, External Hydrants, Ring-Mains. Rising Mains: Down Comer, Dry-riser, Wet-riser and specifications of each types, their relevant code of practices.

UNIT-II **Marks: 20**

Water Supply & Hydrant System: Grading, Requirement of water supply, Total requirement of water for different hazards pressure tanks water supply, Designing of Fire Hydrant System for different occupancies.; Designing of HVWSS/MVWSS/Sprinklers System: Types of Sprinklers system and its specification New Standard for the installation of sprinklers and Hazard classification. Multiple Jetsprinklers, Water spray projector system, MVWSS and HVWSS-Drenchers: Different types of Drenchers, Rules for spacing sprinklers and drenchers heads.

UNIT-III **Marks: 20**

Mechanical Foam Installations: Determination of foam compound for fire-fighting in oil tanks, Methods of application. Top application Base injection, Sub-surface Injection. Foam inlets and Risk for which foam is used. Premix foams, Installation characteristics of foam. Different types of foam, Low expansion, Medium expansion and High expansion foam, their special application, advantage and disadvantages of various types and the storage of foam concentrates.

UNIT-IV **Marks: 20**

Installations Involving Carbon-di-oxide and Dry powder: Their special features, Characteristics, Designing, arrangements, operation, extinguishing action, risks and specification.

UNIT-V **Marks: 20**

Fire Alarm & Detection System: Designing, Calculations, Installation, Testing and Maintenance, Working principle of smoke detectors, heat detectors, Flame detectors & optical beam type detectors.

References:

1. Standard Installation of sprinkler system by NFPA.
2. A Study of Performance of Automatic Sprinkler System by NFPA.
3. National Fire Code of Sprinklers by NFPA.
4. Care and Maintenance of Sprinkler System by NFPA.
5. Fire and Fire Risers by UNISEF Publication.
6. Relevant Indian Standards and Code of Practices.

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Project (DCSM-108)

1. Project work on “On Site Emergency Plan a Chemical / Explosive / Steel Industry”
2. Project work on study of fire hazards associated in Industrial process / activities and safety precautions taken for these hazards.
3. Project work on security arrangements of Red Alert
4. Project work on security arrangements of Mob Controlling
5. Project work on installation, servicing and maintenance of portable fire extinguisher installed in Industry.
6. Project work on safety and security arrangements of Railway Station.
7. Project work on firefighting equipment provided in an Industrial fire station.
8. Project work on safety arrangements in a Power Plant.
9. Fire Safety for storage of hazardous goods in Industry.
10. Project work on any one type of fire tender used in Industry.
11. Project work on safety arrangements in Explosive Plant / Storage.
12. Project work on fire safety arrangements in High rise Building.