



Guru Gobind Singh Indraprastha University
Sector – 16C Dwarka, New Delhi – 110078

(Coordination Branch)


Ph:011-25302135-136, Email: coordination112@gmail.com,
Website: www.ipu.ac.in

F.No.: GGSIPU/Co-ord./46th AC/2019/17

Dated: 13 August 2019

CIRCULAR

The 46th meeting of the Academic Council of the University was held on 22.07.2019. Please find enclose herewith the minutes of the 46th meeting of the Academic Council for kind information.


(Brig. P.K. Upmanyu)
Registrar

F.No.: GGSIPU/Co-ord./46th AC/2019/17

Dated: 13 August 2019

To

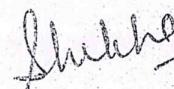
1. Dean- USBAS/ USBT/ USCT/ USEM/ USICT/ USHSS/ USMC/ USLLS/ USM&PMHS/ USMS/ USAP/ USE, GGSIP University
2. Director- Academic Affairs/ Coordination/ Students' Welfare/ CDMS/ Development/ International Affairs/ CEPS/ Research and Consultancy/ Legal Aid / IUIIC, GGSIP University
3. Librarian, GGSIP University
4. Prof. P.K. Jhulka, (Retired), Max Institute of Cancer Care, 26-A Ring Road, Nirmal Puri, Nirmal Colony, Block -2, Lajpat Nagar-IV, New Delhi-110024
5. Prof. M.C. Sharma, 109, Nav Shakti Sadan, Sector 13, Rohini, New Delhi-110085
6. Prof. Karmeshu, (Retired), 150, Deepali, Road No. 42, Pitampura, Delhi-110034
7. Sh. Arvind Misra, 5/101, Mathura Road, Agra-282002
8. Shri. Sandeep Gupta, 100 UB Jawahar Nagar, Delhi-110007
9. Prof. Rajiv Bhat, School of Biotechnology, Jawaharlal Nehru University, New Delhi
10. Prof. (Dr.) Pradeep Kulshrestha, Dean, School of Law, Sharda University, Plot No. 32 & 34, Knowledge Park-III, Greater Noida-201306 (UP)
11. Dr. Rupal S. Randhawa, 204-A, Pocket B, Mayur Vihar, Phase-2, New Delhi-110091
12. Prof. P.N. Varshney, E-30, Greater Kailash-III, New Delhi-110048
13. Dr. Jagdish Lal Gupta, CP-18, Maurya Enclave, Pitam Pura, Delhi-110034
14. Prof. M.N. Hooda, Director, Bharti Vidyapeeth's Institute of Computer Application & Management, A-4, Paschim Vihar, Rohtak Road, New Delhi-110063
15. Dr. Surendra Kumar, Principal, Delhi Institute of Rural Development, Holambi Khurd, Delhi-110082
16. Dr. Maharaj Krishen Bhat, Director, Maharaja Agrasen Institute of Management Studies, Maharaja Agrasen Camp, Plot No.1, Sec-22, Rohini, Delhi-110086

Contd.....2/-

17. Dr. Dharendra Srivastava, Principal, ESIC Dental College & Hospital, Sector-15, Rohini, New Delhi -110085
18. Prof. Sanjiv Mittal, University School of Management Studies, GGSIP University
19. Prof. U.K. Mandal, University School of Chemical Technology, GGSIP University
20. Prof. Udyan Ghosh, University School of Information Communication & Technology, GGSIP University
21. Dr. Nimisha Sharma, Associate Professor University School of Biotechnology, GGSIP University
22. Dr. Gulshan Dhamija, Asst. Professor, University School of Basic and Applied Science, GGSIP University

Copy for information of the Competent Authority:

- (i) AR to the Vice Chancellor, GGSIP University
- (ii) AR to the Registrar, GGSIP University



(Shikha Agarwal)
Dy.Registrar (Co-ordination)

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
SECTOR – 16 C, DWARKA, NEW DELHI - 110078



GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

FORTY SIXTH MEETING OF THE ACADEMIC COUNCIL

DATE : 22ND JULY, 2019 (Monday)

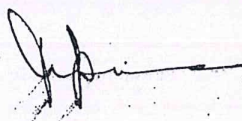
TIME : 03:00 P.M.

VENUE : VC SECTT., (Conference Hall)

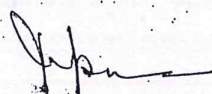
MINUTES FOR 46TH ACADEMIC COUNCIL MEETING

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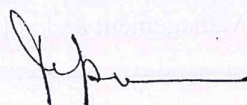
S. No.	Agenda Item(s) No.	Particulars	Page No.
01	AC 46.01	To confirm minutes of the 45 th meeting of the Academic Council held on 19.03.2019.	08-09
02	AC 46.02	To report action taken on the proceedings of 45 th meeting of the Academic Council held on 19 th March, 2019.	09
03	AC 46.03	To consider and approve the typographical error for the course code BCT-422, Bioinformatics, which was inadvertently types as BCT-422, Polymer Engineering.	10
04	AC 46.04	To consider and approve the change of course code from BCT-428 with title Food Biotechnology to BCT-430 with minor modifications of course contents to be implemented from the Academic Session 2019-20.	10
05	AC 46.05	To consider and approve the change of credits from 3 to 4 for the course title Research Methodology and Data Analysis (with course code CT-713 for Ph.D. Course Work) w.e.f. 2018-19 onwards.	10
06	AC 46.06	To consider and approve the course objective & Course outcome(s) for the BT code subjects and allows inclusion of Course objectives & Course outcome(s) for the non-BT code subjects as and when they are approved by their respective school's BOS for the B.Tech Biotechnology- 2019 & M.Tech Biotechnology- 2019 scheme & syllabus.	10
07	AC 46.07	To consider and approve the detailed course content (scheme & Syllabus) of M.Tech (Biotechnology) programme w.e.f. 2019 onwards.	11
08	AC 46.08	To consider and approve the detailed course content (scheme & Syllabus) of B.Tech (Biotechnology) programme w.e.f. 2019 onwards.	11
09	AC 46.09	To consider and ratify the Academic Calendar for the Academic Session 2019-20 for the programmes covered by Ordinance 11.	11
10	AC 46.10	To consider and approve the recommendations of the committee constituted by Vice Chancellor to consider the issuance of Equivalence Certificate from B.Tech	11



S. No.	Agenda Item(s) No.	Particulars	Page No.
		(Tool Engineering) to B.Tech (Mechanical Engineering).	
11	AC 46.11	To consider and approve the detailed course content (Syllabus) of 5 th and 6 th Semester of B.A. (Honors) Economics Programme from the Academic Session 2019-20 onwards	11-12
12	AC 46.12	To consider and approve the minor revision to the course titles of B.A. (H) Economics programme	12
13	AC 46.13	To approve the format for Memorandum of Understanding (MoU) between GGSIP University and Foreign Educational Institutions as per revised UGC guidelines.	12
14	AC 46.14	To approve the upgradation of CDMS as "Centre of Excellence" in Disaster Management as per Ordinance 35.	12
15	AC 46.15	To consider and approve the syllabus of 3 rd to 10 th Semesters of B.Arch Programme w.e.f. session 2019-20.	12
16	AC 46.16	To consider and approve the Scheme of Examinations (up to 4 semester) and syllabus of the 1 st semester for M.Voc. (Interior Design) programme proposed to be introduced from Academic Session 2019-20.	13
17	AC 46.17	To consider and approve the syllabus of Ph.D. Program offered by CEPS.	13
18	AC 46.18	To consider and approve the syllabus of M.Pharm. (Pharmaceutical Chemistry) offered by CEPS.	13
19	AC 46.19	To consider and approve the syllabus of M.Sc (Medicinal Chemistry. & Drug Design) offered by CEPS	13
20	AC 46.20	Finalization of Admission Brochure from the Academic Session 2020-2021 and onwards.	13
21	AC 46.21	To consider and approve the start of Six Months Diploma (Full Time / Part Time) and One year PG Diploma (Full Time / Part Time) in Disaster Management and approval of syllabus.	14



S. No.	Agenda Item(s) No.	Particulars	Page No.
22	AC 46.22	To consider and approve the start of Ph.D. Programme (Full Time & Part Time) and Syllabus of Ph.D. Programme offered by CDMS.	14
23	AC 46.23	Ratification of MOUs of Centre for Disaster Management Studies (CDMS), GGSIPU with Gujarat Institute of Disaster Management (GIDM), Centre for Disaster management (CDM), Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, National Fire Service College, Nagpur, Maharashtra and National Institute of Disaster Management (NIDM), Delhi in pursuance of 66 th Board of Management Resolution vide letter No.F.IPU/JR(C)/66 th BOM/2018/519 dated 16.10.2018.	14
24	AC 46.24	To consider and approve the start of One year PG Diploma (Full Time/Part Time) in Fire and Life Safety Audit and approval of Syllabus.	14
25	AC 46.25	To consider and approve the Draft Regulations for financial assistance to faculty members for presenting their work at National and International conferences/seminars/symposia (2019).	15
26	AC 46.26 (a)	Approval of Scheme & Syllabus of MBA (Financial Management) to be offered w.e.f. Academic Session 2019-20.	15
	AC 46.26 (b)	For information on decision taken with respect of Agenda Item No. 45.29 regarding feasible solutions for difficulties in implementation of syllabus of the specialization of "Operations and Analytics".	15
27	AC 46.27	Statutory approval of opening new course or changes in the curriculum and scheme of examination of existing courses prior to the publication of admission brochure.	16
28	AC 46.28	Important Notification regarding Priorities in Defence Categories for Academic Session 2019-20.	16



S. No.	Agenda Item(s) No.	Particulars	Page No.
29	AC 46.29	Implementation of 10% reservation for Economically Weaker Sections (EWS) for academic session 2019-20 as mentioned in No. DHE.1(119)/Estt./2018-19/2549-76 dated 17.06.2019 from Admin Officer (HE) Directorate of Higher Education, enclosed with another letter No. F No: 12-4/2019-U1 dated 17.01.2019 from Director Govt. of India, Department of Higher Education Ministry of Human Resource Development.	16
30	AC 46.30	Few programme which had declared to be held online but held as Offline due time bound of statutory body guidelines for academic session 2019-20	16
31	AC 46.31	To consider the Admission Brochure of B.Voc Programme for the Academic Session 2019-20	16
32	AC 46.32	To consider the Admission Brochure of M.Voc Programme for the Academic Session 2019-20	17
33	AC 46.33	To consider the Admission Brochure of Diploma Programme for the Academic Session 2019-20	17
34	AC 46.34	Allocation of seat for Jammu & Kashmiri Migrants in University Schools of Studies (USS) and Affiliated Institutes/Colleges of GGSIPU.	17
35	AC 46.35	To consider and approve amendment in clause 11.3(vi) of Ordinance 10 and 11 pertaining to Final Year Supplementary End Term Examinations.	17-18
36	AC 46.36	Agenda regarding non receipt of verification of NOC and other documents of the lending University in respect of candidates applied for Inter University Migration for Academic Session 2018-19	18
37	AC 46.37	Agenda regarding information about decision of the Hon'ble High Court Orders in WP(C) No 12219/2018 titled Ritika Jain Vs. GGS IP University and others petitions in which the writ petitions for change of stream in inter shift migration were dismissed.	19



Agenda Item No. AC 46.21:

To consider and approve the start of Six Months Diploma (Full Time/Part Time) and One year PG Diploma (Full Time/Part Time) in Disaster Management and approval of Syllabus.

The Academic Council considered and approved the proposal and syllabus for starting of Six Months Diploma (Full Time/Part Time) and One year PG Diploma (Full Time/Part Time) in Disaster Management.

Agenda Item No. AC 46.22:

To Consider and approve the start of Ph.D. programme (Full Time/ Part Time) and Syllabus of Ph.D. programme offered by CDMS from Academic Session 2019-2020.

The Academic Council considered and approved the proposal and syllabus for starting of Ph.D. programme (Full Time/ Part Time) and Syllabus of Ph.D. programme offered by CDMS from Academic Session 2019-2020.

Agenda Item No. AC 46.23:

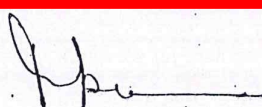
Ratification of MoUs of Centre for Disaster Management Studies (CDMS), GGSIPU with Gujarat Institute of Disaster Management (GIDM); Centre for Disaster Management (CDM), Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, National Fire Service College, Nagpur, Maharashtra, and National Institute of Disaster Management (NIDM), Delhi in pursuance of 66th Board of Management Resolution vide letter No. F.IPU/JR(C)/66th BOM/2018/519 dated 16/10/18.

The Academic Council ratified the MOU(s) of CDMS, GGSIPU with Gujarat Institute of Disaster Management (GIDM), Centre for Disaster Management (CDM), Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie, National Fire Service College, Nagpur, Maharashtra, and National Institute of Disaster Management (NIDM).

Agenda Item No. AC 46.24:

To consider and approve the start of One Year PG Diploma (Full Time/Part Time) in Fire and Life Safety Audit and approval of the Syllabus.

The Academic Council considered and approved the proposal and syllabus for starting of One year PG Diploma (Full Time/Part Time) in Fire and Life Safety Audit.



Syllabi and Scheme of Examination

for

Post Graduate Diploma in Fire & Life Safety Audit (With effect from August, 2019)



**Centre for Disaster Management Studies
Guru Gobind Singh Indraprastha University
Dwarka, New Delhi - 110078**

Employability/Skill Development/Entrepreneurship



**CENTRE FOR DISASTER MANAGEMENT STUDIES
GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
SECTOR 16 C, DWARKA, NEW DELHI -110078**



One Year P G Diploma in Fire & Life Safety Audit (Full time /Part Time)

Vision

- To be the leading Centre of Excellence for the Fire and Life Safety Audit education and research in the country.

Mission

- To effectively prepare competent professionals to undertake Fire and Life Safety Audit. Through training and capacity development of personnel in collaboration with other stakeholders, this course aims to provide a standard procedure and Format in India for Auditors to conduct Fire & Life Safety Audit

Programme Objectives (PO):

The objectives of PGD in Fire & Life Safety Audit are:

- PO1: To understand the basics of fire chemistry, behaviour of fire and its effects on structural elements.
- PO2: To understand the philosophy of effective fire prevention and protection design.
- PO3: To study and compare different National and International legal requirements with respect to fire and safety.
- PO4: To understand the concepts of Industrial Fire Safety Risk assessment and Management Concepts for Risk Reduction
- PO5: To understand the concept of Performance based Design and its role in Fire and Life Safety Management and Audit
- PO6: To understand the concepts of Building Services Design and their role in Fire and Life Safety in Buildings
- PO7: To understand the basics of Fire and Life Safety Audit
- PO8: To develop competence in the subject of Fire and Life Safety Audit



Programme Learning Outcomes (PLO):

The expected outcomes after completing the program would be:

- PLO1: Management knowledge: Understand the basics of fire prevention, protection
- PLO2: Communication: Proficient communication through various presentations and projects necessary for a management professional.
- PLO3: Technical Knowledge: Create, select, and apply appropriate methods, execution skills, Audit skills and competence to execute undertaken assignments and projects.
- PLO4: Investigation of Problems: Summarize and apply the research-based knowledge and practical exposure in the real scenario.
- PLO5: Ethics: Apply ethical principles and committed to professional ethics and responsibilities of fair audit practices.
- PLO6: Global Perspective: Enhance ability to assess and evaluate the dynamics of internal and external elements of the competitive global trends in audit field
- PLO7: Area Specific Expertise: Apply various concepts, models etc. in the functional areas like Building Safety, Industrial Fire Safety Risk assessment, Fire Risk and Hazard analysis in Cities, Fire Forensics etc.
- PLO8: Cross-Disciplinary Integration and Strategic Perspective: Conceptualize, organize and resolve complex Audit challenges by using the limited resources available.
- PLO9: Legal Knowledge: Apply the knowledge related to the various laws relating to Fire and Life safety in the audit process.

Program Specific Outcomes (PSO):

- PSO1: Acquire Practical learning through industrial visits, Assignments and research reports/projects.
- PSO2: Apply in-depth knowledge in their core elective area of specialization like Fire Risk Assessment and Management, Risk Mitigation, Various National and International Acts, Codes and Standards, Techniques of Fire and Life Safety audits, etc. to be able to solve the complex challenges of Audit.
- PSO3: Understand and develop core competence in conducting audits related to Fire and Life Safety and preparation of report.



**CENTRE FOR DISASTER MANAGEMENT STUDIES
GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
SECTOR 16 C, DWARKA, NEW DELHI -110078**



Scheme of One Year Post Graduate Diploma in Fire & Life Safety Audit

Semester 1		Credit hours
PGDF 101	Basics of Fire and Life Safety Audit (<i>Core</i>)	3
PGDF 103	Fire Prevention (<i>Core</i>)	3
PGDF 105	Life Safety (<i>Core</i>)	3
PGDF 107	Fire Protection (<i>Core</i>)	3
PGDF 109	State Fire Service Acts, Rules & Byelaws (<i>Core</i>)	3
PGDF 111	Disaster : Causes Impacts and Management (<i>Core</i>)	3
	Electives (Any One)	
PGDF 113	Building Codes and Standards (<i>Elective</i>)	3
PGDF 115	Industrial Fire Safety Risk Assessment (<i>Elective</i>)	3
PGDF 117	Management Concepts for Risk Reduction (<i>Elective</i>)	3
	Practicals	
PGDF 151	Field Visits / Presentation (<i>Compulsory</i>)	1+1
PGDF 153	Project Work (<i>Compulsory</i>)	5
	Total	28
Semester 2		Credit Hours
PGDF 102	International Building Codes & Standards (<i>Core</i>)	3
PGDF 104	International Fire Service Acts (<i>Core</i>)	3
PGDF 106	Building Services Design (<i>Core</i>)	4
PGDF 108	Performance Based Fire Design (<i>Core</i>)	4
PGDF 110	Institutional & Legal Framework for Disaster Management (<i>Core</i>)	3
PGDF 112	Fire Risk and Hazard Analysis of Cities (<i>Elective</i>)	3
PGDF 114	Fire Risk and Hazard Analysis of Industry (<i>Elective</i>)	3
PGDF 116	Fire Forensics (<i>Elective</i>)	3
PGDF 118	Geoinformatics for Fire Risk Assessment (<i>Elective</i>)	3
	Practicals	
PGDF 152	Field Visits / Presentation (<i>Compulsory</i>)	1+1
PGDF 154	Dissertation (<i>Compulsory</i>)	6
	Total	28

Total Credits Offered in Semester 1 & 2 = 56

Required Credits for award of One Year PG Diploma = 50



Detailed Syllabus – Semester I

One Year Post Graduate Diploma in Fire & Life Safety Audit

PGDF 101: Basic of Fire & Life Safety Audit (L-3 T-0 C-3)

Course Outcome:

- CO 1: Introduction to Fire and Life Safety Audit. Requirements, Role of Fire and Life Safety Auditor, Fire Officers and consultants.
- CO2: Learn about Fire, Occupational Safety and Life Safety Audit, Statutory and Recommendatory Legal Provisions of Fire and Life Safety in India, Europe, USA and Australia, Code of Practice.
- CO 3: Understand the philosophy of Fire Safety Management Audit, Safety Management Audit Model, Audit Process, Organizational Strength, Audit Report and Action Planning, Preparing for Audit.
- CO 4: Guidance for Auditing Management Systems in National and International Standards, Terms and Definitions, Principles of Audit, Conducting Audit Follow-Up, Competence and Evaluation of Auditors.

Course Content:

Unit I:

Introduction to Fire and Life Safety Audit, Requirements, Role of Fire and Life Safety Auditor, Fire Officers and Consultants.

Unit II:

Fire Occupational Safety and Life Safety Audit, Statutory and Recommendatory Legal Provisions of Fire and Life Safety in India, Europe, USA and Australia, Code of Practice.

Unit – III:

Fire Safety Management Audit, Safety Management Audit Model, Audit Process, Organizational Strength, Audit Report and Action Planning, Preparing for Audit.

Unit – IV

Guidance for Auditing Management Systems in National and International Standards, Terms and Definitions, Principles of Audit, Conducting Audit Follow-Up, Competence and Evaluation of Auditors.

Reading List:

1. Fire Safety Management Audit, Specification August 2017 or as amended, Published by British Safety Council.
2. Code of Practice on Occupational Safety and Health Audit, IS 14489:1998 Published by Bureau of Indian Standards.
3. Guidelines for Auditing Management System, ISO 19011, Published by International Standard Organization.
4. NFPA 921 Guide for Fire and Explosion Investigation 2014, Published by National Fire Protection Association, USA.
5. Fire and Life Safety Codes of Europe, USA and Australia Published by National Fire Protection Association, USA, British Council and Australian Standards.



PGDF 103: Fire Prevention (L-3 T-0 C-3)

Course Outcome:

- CO 1: Principles of Fire Science, Classification of Fire, Spread of Fire, Sources of ignition, Products of Combustion, Electricity and Fire Risks, Fire Load
- CO 2: Classification of Occupancy, Hazards of Contents, Fire Resistance Rating of Various Building Materials
- CO 3: Building Rehabilitation, Historic Buildings, Repairs, Renovations, Modification, Reconstruction, Change of Occupancy.
- CO 4: Fire Drills, Emergency Evacuation Plans, Fire Command Centre, Fire Prevention and Fire protection Programme.

Course Content:

Unit I:

Principles of Fire Science, Classification of Fire, Spread of Fire, Sources of Ignition, Products of Combustion, Electricity and Fire Risks, Fire Load

Unit II:

Classification of Occupancy, Hazards of Contents, Fire Resistance Rating of Various Building Materials.

Unit III:

Building Rehabilitation, Historic Buildings, Repairs, Renovations, Modification, Reconstruction, Change of Occupancy

Unit IV:

Fire Drills, Emergency Plans, Fire Command Centre, Fire Prevention and Fire Protection Programme.

Reading List:

1. SP7:2016 National Building Code of India Volume 1 & 2 (Published by Bureau of Indian Standards)
2. NFPA 101 Life Safety Code (Published by National Fire Protection Association, USA).
3. Fire Protection Handbook Volume – I & II (Published by National Fire Protection Association, USA)
4. International Fire Code (Published by International Code Council, INC.)
5. Fire Fighting The Essential Handbook by Barendra Mohan Sen (Published by UBS Publishers' Distributors Pvt. Ltd, New Delhi)
6. IS codes on 'Fire and Life Safety' published by Bureau of Indian Standards, India
7. NFPA 551 'Guide for the Evaluation of Fire Risk Assessments (Published by National Fire Protection Association, USA)



PGDF 105: Life Safety (L-3 T-0 C-3)

Course Outcome:

- CO 1: General Definitions, Construction and Compartmentation, Fire Barriers; Smoke Partitions; Smoke Barriers; Vertical Openings, Special Hazard Protection.
- CO 2: Life and Fire Safety in High Rise Buildings; Egress and Occupation Strategy; Fire Safety Requirement for Lifts; Horizontal Exits
- CO3: Understand Occupancy Wise Life Safety Requirements; Atrium Protection; Commercial kitchen; Car Parking Facilities; Metro Stations
- CO4: Learn about Building Materials, Glazing, Interior Surface Finishes, Facade

Course Content:

Unit I:

General Definitions, Construction and Compartmentation, Fire Barriers; Smoke Partitions; Smoke Barriers; Vertical Openings, Special Hazard Protection.

Unit II:

High Rise Buildings; Egress and Occupation Strategy; Fire Safety Requirement for Lifts; Horizontal Exits.

Unit III:

Occupancy Wise Life Safety Requirements; Atrium Protection; Commercial kitchen; Car Parking Facilities; Metro Stations.

Unit IV:

Building Materials, Glazing Interior Surface Finishes, Facade

Reading List:

1. SP7:2016 National Building Code of India Volume 1 & 2 (Published by Bureau of Indian Standards)
2. NFPA 101 Life Safety Code (Published by National Fire Protection Association, USA).
3. Fire Protection Handbook Volume – I & II (Published by National Fire Protection Association, USA)
4. International Fire Code (Published by International Code Council, INC.)
5. Fire Fighting Operations in High-Rise and Standpipe-Equipped Buildings by David M. McGrail (Published by PennWell Corporation, USA)
6. IS codes on 'Fire and Life Safety' published by Bureau of Indian Standards, India



PGDF 107: Fire Protection (L-3 T-0 C-3)

Course Outcome:

- CO 1: Understand the Objectives, Fundamental Fire Protection Requirements, Minimum Requirements Based on Building Occupancy Classification
- CO 2: Understand the design basis of Fire Detection and Alarm systems, Voice Evacuation and Public Address System, Electrical installations, Emergency Power Supply, Lightning Protection, Escape Lighting and Exit Signages.
- CO 3: Study about the Fire Fighting System, Wet Riser, Down-Corner, Dry Riser, Static Water Storage Tanks, Fire Pumps and Appurtenances, Fire Extinguishers, Automatic High Velocity and Medium Velocity Water Spray Systems, Fixed Foam Installations, Gas Based Suppression Systems, Automatic Water Mist Systems, Special Provision for High Rise Buildings
- CO 4: Heating, Ventilation, Air Conditioning and Refrigeration Systems; Mechanical Smoke Exhaust systems, Pressurization of staircase and protection of escape routes, arrangements for Smoke Exhaust and Pressurization of Areas Below Ground, Smoke management in Atrium and High-Rise buildings.

Course Content:

Unit I:

Objectives, Fundamental Requirements, Minimum Requirements Based on Building Occupancy Classification.

Unit II:

Fire Detection and Alarm Systems, Voice Evacuation and Public Address System, Electrical Installations, Emergency Power Supply, Lightning Protection, Escape Lighting and Exit Signages.

Unit III:

Fire Fighting System, Wet Riser, Down-Corner, Dry Riser, Static Water Storage Tanks, Fire Pumps and Appurtenances, Fire Extinguishers, Automatic High Velocity and Medium Velocity Water Spray Systems, Fixed Foam Installations, Gas Based Suppression Systems, Automatic Water Mist Systems, Special Provision for High Rise Buildings.

Unit IV:

Heating, Ventilation, Air Conditioning and Refrigeration Systems; Mechanical Smoke Exhaust systems, Pressurization of staircase and protection of escape routes, arrangements for Smoke Exhaust and Pressurization of Areas Below Ground, Smoke management in Atrium and High Rise Buildings.

Reading List:

1. SP7:2016 National Building Code of India Volume 1 & 2 (Published by Bureau of Indian Standards)
2. NFPA 101 Life Safety Code (Published by National Fire Protection Association, USA).
3. Fire Protection Handbook Volume – I & II (Published by National Fire Protection Association, USA)
4. International Fire Code (Published by International Code Council, INC.)
5. IS codes on 'Fire and Life Safety' published by Bureau of Indian Standards, India
6. NFPA 13 Automatic Sprinkler Systems Handbook (Published by National Fire Protection Association, USA)
7. NFPA70 'National Fire Alarm and Signaling Code (Published by National Fire Protection Association, USA)
8. NFPA92 'Standard for Smoke Control System (Published by National Fire Protection Association, USA)
9. CPWD General Specifications for Electrical Works Part V-(Wet Riser & Sprinkler System) (Published by Central Public Works Department, Govt. of India)



PGDF 109: State Fire Safety Act, Rule and Bye - Laws (L-3 T-0 C-3)

Course Outcome

- CO 1: Importance of Fire Service Act, Model Fire Force Bill and Rules, Indian Constitution Provisions on Subject "Fire".
- CO 2: Fire and Life Safety Act and Rules of Delhi, Maharashtra, Gujarat, Karnataka, Odisha and West Bengal.
- CO 3: Local Bye-Laws of Delhi, Maharashtra, Gujarat, Karnataka, Odisha and West Bengal

Course Content:

Unit I:

Importance of Fire Service Act, Model Fire Force Bill and Rules, Indian Constitution Provisions on Subject "Fire".

Unit II:

Fire and Life Safety Act and Rules of Delhi, Maharashtra, Gujarat, Karnataka, Odisha and West Bengal.

Unit III:

Local Bye-Laws of Delhi, Maharashtra, Gujarat, Karnataka, Odisha and West Bengal

Reading List:

1. Model Fire Service Bill & Rules of 1958 and as amended from time to time, Published by DG FS CD & HG, MHA, GOI
2. Fire and Life Safety Acts, Rules, Local Building Bye Laws published by Government of Delhi, Maharashtra, Gujarat, Karnataka, Odisha and West Bengal.
3. Provision of Indian Constitution on Subject Fire, Indian Constitution



PGDF 111: Causes, Impacts and Management (L-3 T-0 C-3)

Course Outcome:

- CO 1: Understand the Concept of Disasters, Hazard, Vulnerability, Risk, Capacity, Resilience' Natural and Human Induced Disaster; Disaster Profile of India; Types of disasters; Incidents of Mega Disasters in India'
- CO 2: Study Technological Disasters Chemical, Biological, Radiological and Nuclear (CBRN) Disasters, Cyber Disaster, etc.
- CO 3: Understand guidelines on State Disaster Management Plan, Management of Cyclone, Drought, Earthquake, Flood, Land Slide, Avalanches, Urban Flooding and Heat Wave.

Course Content:

Unit I:

Concepts of Disasters, Hazard, Vulnerability, Risk Capacity, Resilience, Natural and Human Induced Disasters; Disaster Profile of India; Types of Disasters; Incidents of Mega Disasters in India.

Unit II: Causes and Impacts of Natural Disasters

Earthquakes

Causes and Effects of Earthquakes, Seismic Zones, Seismic Waves, Epi-Centre, Magnitude, Richter Scale, Intensity, Vulnerability and Damage Potential, Quake Resistant Buildings & Infrastructure.

Volcano

Causes, Impacts and Distribution of Volcanoes.

Climate Change & Disasters

Floods

Causes and Impact of Flood; River and Coastal Floods, Flash Floods, Lake Outburst; Cloud Burst; Urban Floods; Major Flood Incidents in India; Flood Mitigation and Management.

Landslides & Avalanches

Landslides: Types & Causes, Landslide Prevention, Mitigation and Management.

Avalanches: Formulation, Types and Hazard Mitigation.

Cyclones and Tsunami: Differences Between Cyclone, Typhoon, Hurricanes, Tsunami: Causes and Impact; Mitigation of Cyclone & Tsunami.

Drought

Causes, Impact, Affected Areas, Drought Monitoring and Management

Heatwave

Concept of Climate Change and Heatwave; Urban Heat Island; Major Incidents related to Heatwave.

Coldwave

Concept of Coldwave, Formation and Impact, Major incidents related to Coldwave.

Unit III: Technological Disasters

Chemical, Biological, Radiological and Nuclear (CBRN) Disasters, Cyber Disaster.

Unit IV: Causes & Impact of Other Disasters

Industrial Hazards; Road, Rail, Air and Boat Capsize, Urban Fires, Forest Fires, Coal Mine Fires, Oil Spills, Building Collapse and Stampede.

Lightning: Causes and Impact; Safety Measures for human beings and buildings.

Unit V: Guidelines

Guidelines on State Disaster Management Plan, Management of Cyclone, Drought, Earthquake, Flood, Land Slide, Avalanches, Urban Flooding and Heat Wave.

Reading List:

1. Murk, B. W., Skinner, B.J. and Porter, S.C. (1996) Environmental Geology. Wiley, New York.
2. Bohle, H. G., Downing, T. E. and Watts, M. J. (1994) Climate change and social vulnerability: Towards a sociology and geography of food insecurity, Global Environmental Change. No. 4, 37-48.
3. Bocker, E. And Grondille, R. V. (1999) Environmental Physics, John Wiley & Sons Ltd.
4. Khanna, B. K. (2005) All you wanted to learn about disasters, New India Publishing Agencies, New Delhi.
5. Khanna, B. K. (2014) Perils of under preparedness in Sikkim earthquake, IDSA, New Delhi.
6. Wallace, J. M. and Hobbs, P. V. (1977) Atmospheric Science: An Introductory Survey, Academic Press, New York.



PGDF 113: Building Codes and Standards (L-3 T-0 C-3)

Course outcome:

- CO 1: Introduction to Codes, Standards, Good Practice, Handbook and Special Publications, Aspect of Applicability at Local Jurisdiction, Requirements and Regulations of Authority Having Jurisdiction
- CO 2: National Building Code of India - Changes and revision from Inception to 2016, Aspect of IS Codes - Revision and Referencing in NBC, Interrelation of Part and Sections of NBC
- CO 3: Local Building Code, Regulations, Act and Bye-Laws, Changes and Amendments of above by Authority Having Jurisdiction, Gazette Notifications and Adoption of Local Code, issue of NOC, Occupancy Certificate and Renewals, Adoption of NBC by Authority Having Jurisdiction
- CO 4: Cinematography Act State wise aspect of Applicable Act wide Rules and Bye-Laws, Reference and alignment to NBC under Special Occupancy

Course Content:

Unit I:

Introduction to Codes, Standards, Good Practice, Handbook and Special Publications, Aspect of Applicability at Local Jurisdiction, Requirements and Regulations of Authority Having Jurisdiction.

Unit II:

National Building Code of India – Changes and revision from Inception to 2016, Aspect of IS Codes – Revision and Referencing in NBC, Interrelation of Part and Sections of NBC.

Unit III:

Local Building Code, Regulations, Act and Bye-Laws, Changes and Amendments of above by Authority Having Jurisdiction, Gazette Notifications and Adoption of Local Code, Issue of NOC, Occupancy Certificate and Renewals, Adoption of NBC by Authority Having Jurisdiction.

Unit IV:

Cinematography Act State wise aspect of Applicable Act wide Rules and Bye-Laws, Reference and alignment to NBC under Special Occupancy.

Reading List:

1. Model Fire Service Bill & Rules of 1958 and as amended from time to time, Published by DG FS CD & HG, MHA, GOI
2. Fire and Life Safety Acts, Rules, Local Building Bye Laws published by Government of Delhi, Maharashtra, Gujarat, Karnataka, Odisha and West Bengal.
3. NBC 1997, 2005 and 2016.
4. IS Codes and Standards – Various.
5. Development Control Regulation – Greater Mumbai
6. The Cinematography Act, 1952 and Rules (with further Amendments)



PGDF 115: Industrial Fire Safety Risk Assessment (L-3 T-0 C-3)

Course Outcome:

- CO 1: National and International Statutory Provisions of Industrial Fire Safety and Risk Assessment
- CO 2: Factory Acts, Provisions of Fire safety arrangements in Factory.
- CO 3: Implementation of Fire Safety and Risk Assessment in Accordance with the OISD Standards, Provisions of Fire safety arrangements.
- CO 4: PESO Act and Rules and Provisions of Fire safety arrangements
- CO 5: Explosive Act and Rules, Provisions of Fire safety

Course Content:

Unit I:

National and International Statutory Provisions of Industrial Fire Safety and Risk Assessment.

Unit II:

Factory Acts, Provisions of Fire Safety arrangements in Factory.

Unit III:

Implementation of Fire Safety and Risk Assessment in Accordance with the OISD Standards, Provisions of Fire safety arrangements.

Unit IV:

PESO Act and Rules and Provisions of Fire Safety arrangements.

Unit V:

Explosive Act and Rules, Provisions of Fire Safety arrangements.

Reading List:

1. OISD Standards Published by OISD, Ministry of Petroleum
2. Factory Act Published by GOI
3. PESO Acts and Rules, Published by Ministry of Petroleum



PGDF 117: Management Concepts for Risk Reduction (L-3 T-0 C-3)

Course Outcome:

- CO1: Understand the concepts of Management, Strategic alliances between Fire Services and Business organisation and Case studies of Fire Disaster Management.
- CO2: Understand the concept of Fire Resilient Community and Principles & Framework of CBDM, Community Based Fire Risk & Vulnerability Assessment; Disaster Response Teams at Community Level.
- CO3: Study about Fire Services Logistics, Evolution and Components, Performance metrics of logistic operations and International Best Practices.

Course Content:

Unit I:

Concepts of Management: Project Management, Strategic Management, Operations Management; Change Management; Business Community Plan & Crisis Management, Corporate Social Responsibility, Strategic alliances between Fire Services and Business organizations, Best Practices and Case studies of Fire Disaster Management.

Unit II:

Finance and Accounting in Disaster: Fire related Disasters and Economy, Micro credit and Micro finance in Disaster Management, Source of funding and accountability measures during disaster. **Financial Instruments available for Fire Risk Reduction;** Role of Government in Investment for Fire Risk Reduction.

Unit III:

Concepts of Fire Resilient Community, Principles of CBDM, Hyogo Framework for CBDM, **Community Based Fire Risk & Vulnerability Assessment;** Community Motivation and Participation theories, Capacity Building in Life and Fire Safety of employees and community; Disaster Response Teams at Community Level, Composition and Rules; Factors affecting leadership; Fire Risk and Resilient Cities; Cities resilience strategy- UNISDR

Unit IV:

Fire Service Logistics: Evolution and Components, Drivers of Fire Services logistics management, **Fire Services and logistics decisions related to procurement, inventory and transportation, Performance metrics of logistic operations. Benchmarking and International Best Practices.**

Conduct of Table-Top and Mock Exercises to Test the Fire Disaster Management Plans.

Reading List:

1. Kovacs and Spens (2011) Relief Supply chain Management for disaster, IGI Global
2. Tomassini and Wassenhove (2009) Humanitarian Logistics, INSEAD Business Press
3. Dangi (2014) Disaster Management: Humanitarian logistics in Relief operations. Index International, India
4. Bryman (2003) Social Research Methods Oxford University Press, UK
5. Harvard Business Essential (2004) Crisis Management: Master the Skill to prevent Disasters. Harvard Business School Press



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PGDF 151: Field Visits/ Presentation (L-0 P-1 T-1 C-2)

Course Outcome:

The course involves the field visit of students to different industrial sites or vulnerable areas to see and understand the process of Fire and Life Audit.



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PGDF 153: Project Work (L-0 P-5 T-0 C-5)



Detailed Syllabus – Semester II

One Year Post Graduate Diploma in Fire & Life Safety Audit

PGDF 102: International Building Codes and Standards (L-3 T-0 C-3)

Course Outcome:

- CO 1: Introduction to International Building Code, International Fire Code, International Mechanical Code published by Research Society and Associations International Societies and Associations.
- CO 2: Issue of Draft for Wide Circulation and Comments Information in Public Domain and not classified by the ISO organization.
- CO 3: Global impact and acceptance of International Building code and standards Reference of International Building Code and Standards by Companies operating outside their Parent Location and in Regional Offices

Course Content:

Unit I:

Introduction to International Building Code, International Fire Code, International mechanical Code published by Research Society and Associations International Societies and Associations in US, UK, EU, South East Asia and ME. Region wise acceptance and applicability of the Standard Body Codes in the Local Jurisdiction.

Unit II:

Issue of Draft for Wide Circulation and Comments Information in Public Domain and not classified by the ISO organization.

Unit III:

Global impact and acceptance of International Building Code and Standards

Reference of International Building Code and Standards by Companies operating outside their Parent Location and in Regional Offices.

Reading List:

1. International Building Code by ICC
2. International Fire Code by ICC
3. NFPA 101 – Life Safety Code
4. NFPA 5000 – Building Construction and Safety Code
5. CIBSE Guide E – Fire Safety Engineering
6. UAE Fire and Life Safety Code of Practice – 2018



PGDF 104: International Fire Service Acts (L-3 T-0 C-3)

Course Outcome:

- CO 1: Introduction to Institutional and Legal framework in certain developed and developing.
- CO 2: Understanding Global Practices and Regulations of International Fire Services Act. Applicability of International Fire Services Act in other regions and geographic locations.
- CO 3: Understanding Aspect of Insurance review and coverage for Projects based on International Fire Services Act.
- CO 4: Study and understand Local codes and Act alignment and conflict with International Fire Services Act Roles of Code Consultant in establishing aspect of Local Codes and Act and comparative analysis with International Fire Services Act

Course Content:

Unit I:

Institutional and Legal framework in certain developed and developing countries such as USA, UK Australia, Hong Kong, Bangladesh etc.

Unit II:

Global Practices and Regulations of International Fire Services Act. Applicability of International Fire Services Act in other regions and geographic locations.

Unit III:

Aspect of Insurance review and coverage for projects based on International Fire Services Act.

Unit IV:

Local Codes and Act alignment and conflict with International Fire Services Act
Roles of Code Consultant in establishing aspect of Local Codes and Act and comparative analysis with International Fire services Act

Reading List:

1. International Building Codes
2. International Fire Code published by Research Society and Associations
3. International Research Society and Associations US, UK and EU
4. Act of USA, UK, Australia, Hong Kong, Bangladesh
5. Federal Fire Prevention and Control Act of 1974
6. Insurance Act, 1938



PGDF 106: Building Services Design (L-4 T-0 C-4)

Course Outcome:

- CO 1: Understanding the Basics of Design and Planning of Safe Electrical Services, Drainage Systems, Water Supply Systems, Energy Conservation
- CO 2: Study the Elementary Building Management System –It's basics architecture, DDC controller and field devices, etc. Understanding the design basis and requirements Fuel Gas systems: Codes and Practice for household and Industries
- CO 3: Understanding the design basis and requirements of Mechanical Services - Aspect of Smoke Mitigation approach from pressurization and Ventilation consideration.

Course Content:

Unit I:

Basics of Electrical and definition, Design and Planning of Safe Electrical Services, distribution of electric supply, safety devices in electrical circuits, Emergency Lighting Design to meet egress and Evacuation requirements, Electrical Load Estimation & Lighting Design, Transformer & DG Selection & Sizing, Switchgears Selection & Sizing, Panel & Distribution Board Types & Designing, Cables, Wires & Conduit Selection & Sizing, Introduction to Codes & Standards, Exit and Emergency Lighting Design to meet egress and Evacuation requirements, Lightning and Earthing Systems.

Unit II:

Heating, ventilation and Air conditioning systems: Introduction, Refrigeration Cycle and Types of Air-Conditioning System, General Heat Load Calculation, Psychrometric Chart, Chillers/ DX Systems, Cooling Towers, VR System, District Cooling and Coil Selection Air Distribution System, Ventilation System, Heating System, Hydronic System, Fire Protection, Case Study and Project Discussion.

Unit III:

Water supply system in the buildings: Drainage Systems, Water Supply Systems, Pipe Material & Insulation of Piping Systems, Energy Conservation, Introduction to Codes & Standards, Case Study & Project Discussion.

Unit IV:

Fuel gas systems: Codes and Practice for household and Industries.

Unit V:

Elementary Building Management System – Basics of BMS, Studying BMS Architecture, Input Output Summary, DDC controllers & Field Devices, Understanding cause and effect matrix, Graphical representation, Maintenance and regular building services health check. Vital measurements and record keeping (log books).

Unit VI:

Mechanical Services – Aspect of Smoke Mitigation approach from pressurization and Ventilation consideration. Control and Logic of Smoke Mitigation System, Aligning Mechanical Design Systems and Services to Compartmentation Design to avoid spread of fire with Passive Fire Rating over Duct Work, Duct Work Construction, Dampers and their controls.

Unit VII:

Fire Protection and Fire Fighting – Design and Planning of Water Storage, Fire Pumps, Hydrants, Sprinkler System, Selection and location planning of Fire Extinguishers, Aspect of Kitchen Hood, Server, IT Rooms and Helipads Fire Protection System, Design and Planning of Fire Alarm System with PA System including Cause and Effect Integration.

Reading List:

1. NBC 2016
2. IS 15105, 2189, 2190 & 3844
3. ASHRAE fundamentals of HVAC 2017
4. ISHRE HVAC Data Book 2017
5. ASHRAE Design Guide for Tall Buildings 2018
6. FSAI Suraksha Index (FSI) – Building Rating System Published by FSAI



PGDF 108: Performance Based Fire Design (L-4 T-0 C-4)

Course Outcome:

- CO 1: Introduction to Prescriptive and Performance based Design Approach, Specific aspect of Performance based design of Fire and Life Safety Services for Large and Mixed-use Projects.
- CO 2: Introduction to Fire Evacuation Modelling, Principles and Practice of Evacuation modelling, theory of Occupant Behaviour during Building Fires.
- CO 3: Introduction to Fire Dynamic Simulation Fundamental processes, Fuel and combustion processes and fundamentals Limits of flammability Heat transfer.

Course Content:

Unit I:

An Introduction to Prescriptive and Performance based Design Approach

Criteria for Prescriptive and performance based Design for fire and life safety systems in buildings. Specific aspect of Performance based design of Fire and Life Safety Services for Large and Mixed-use Projects.

Assessing on aspect of Prescriptive Design and Results as obtained as so compared with Performance based design Special Considerations on Performance Based Design on Evacuation Simulation, Smoke Mitigation and Control, Building Structural Fire Rating, Passive Fire Rating System on L and T Rating, Façade Design, Building Separation and Setbacks, Elevator Evacuation, Public Address System and Campus Fire Strategy.

Unit II: FIRE Evacuation Modeling

Principles and Practice of Evacuation Modeling (PPEM)

- Introduction
- Scope
- Building Evacuation Models
- Theory of Occupant Behavior during Building Fires
- Explain RSET – models that are commonly used in guidelines and regulations
- Describe different theories of human behavior in fire (e.g. role-rule model, affiliation, social influence, affordances, help in emergencies, panic, etc.)
- Understand the representation of evacuation movement
- Explain the basic assumptions behind evacuation models (space representation, modeling methods, uncertainties, verification and validation) and understand their main strengths and limitations.
- Apply evacuation model for the simulation of evacuation scenarios.

Unit III: Fire Dynamic Simulation

Fundamental Processes

- Physical concepts
- Fuel and combustion processes and fundamentals
- Limits of flammability
- Heat transfer: Conduction and convection

Radiation, ignition and flame spread

- Radiation from fires
- Ignition – general, gaseous/ liquid fuels and solids
- Spread of flame
- Fire behavior and modern buildings

Pool fires, jet fires and cloud fires

- Steady burning diffusion fires
- Pool fires in the open
- Jet fires
- Radiation from flames
- Example calculations: radiation flux from flare on escape route
- Pool and jet fires, large-scale tests
- Cloud fires
- Pool and jet fires in compartments.

Compartment fires

- The growth period
- Flashover
- The post-flashover period and back draughts
- Fire performance of structures
- Smoke movement
- Fire combustion products and toxicity as a function of ventilation conditions

Compartment fire modeling

- Overview of fire models
- A zone model in detail – CFAST
- Using CFD models
- Hands on experience with a zone model

Reading List:

1. Performance – based fire safety design by Morgan J Hurley and Eric R. Rosenbaum (Published by CRC Press)
2. SFPE Engineering guide to Performance – based fire protection, 2nd Edition
3. CFAST of NIST USA
4. FDS of NIST USA



PGDF 110: Institutional and Legal Framework for Disaster Management (L-3 T-0 C-3)

Course Outcome:

- CO 1: Understanding the Role of National and International Agencies in Disaster Management
- CO 2: Understanding the Disaster Management Framework under the umbrella of Constitution of India and case studies related to Disaster Management
- CO 3: Understanding the International Framework & Initiatives for Disaster Management in selected developed & developing countries.

Course Content:

Unit I: Disaster Management Framework in India

Constitution of India, Prime Minister Agenda of 10 Points, NPDRR; Disaster Management Act 2005, Environment Protection Act, 1986, Section 135 of Company Act 2013, India – Corporate Social Responsibility, National Disaster Management Policy 2009, National Disaster Management Plan 2016.

Judicial Case Studies Related to Disaster Management.

Unit II: International Framework for Disaster Management

International Initiatives by UN – UNDRR, ARISE, Yokohama Strategy, Hyogo Framework for Disaster Risk Reduction (2005-2013), Sendai Framework (2013-2030), Sustainable Development Goals, COP21 – Paris Agreement 2015, Its Scope, Utility and Initiative Taken for DRR; Human Rights and Humanitarian Laws.

Unit III: Role of National and International Agencies

National Disaster Management Authority (NDMA), Disaster Management Framework at National, State, District and Local Level, Constitution of DDMA's and Roles and Responsibilities; Armed Forces, CAPF and State Police, Medical Services, Civil Defence, Home Guards, NCC, NYK, NSS, Volunteers and Fire Services, etc. – Role of Each Stakeholder; UN Agencies, IFRC & National Red Cross Society.

Unit IV: Disaster Management Framework in Select Countries.

Institutional and Legal Framework in Certain Developed and Developing Countries, such as USA, Japan, Singapore, South Africa and Bangladesh.

Reading List:

1. Arnold, M. and Kreimer, A. (2000) Managing Disaster Risk in Emerging Economies”, Disaster Risk Management Series No. 2, World Bank, Washington, D.C.
2. Collins, L. R. and Schneid, T. D. (2000) Disaster Management and Preparedness, Taylor and Francis.
3. Disaster Management Act (2005).
4. Goel, S. L. and K. Ram (2001) Disaster Management, Deep and Deep Publications.
5. Hyogo Framework for Action (2005-2015).
6. National Disaster Management Plan (2016).
7. National Disaster Management Policy (2009).
8. Parasuraman, S. (2004) India Disaster Report: Towards a Policy Initiatives, Oxford University Press.
9. Sendai Framework for DRR (2015-2030).
10. UNISDR – ARISE (2015).
11. Vision, United Nations (2004).



PGDF 112: Fire Risk and Hazard Analysis of Cities (L-3 T-0 C-3)

Course Outcome:

- CO I: Understanding the Fire Hazard and Risk Analysis, Methods and procedures for conducting Fire Hazard and Risk Analysis of the City.
- CO 2: Understanding the recommended guidelines and scale for setting up fire services in India as per SFAC
- CO 3: Understanding the Hazard Mapping of Cities Based on SFAC Scale and Other Standards
- CO 4: Understanding the use of GIS in Establishing the Requirement of Fire Services i.e., Fire Station etc.

Course Content:

Unit I:

Fire Hazard and Risk Analysis, **Methods and Procedures for conducting Fire Hazard and Risk Analysis of the City**

Unit II:

The recommended guidelines and scale for setting up fire services in India as per SFAC

Unit III:

Requirements of Number of Fire Stations, Firemen, Fire Fighting Equipment and Appliances as per guidelines of SFAC

Unit IV:

Hazard Mapping of Cities Based on SFAC Scale and Other Standards

Unit V:

Use of GIS in Establishing the Requirement of Fire Services i.e. Fire Station etc.

Reading List:

1. Compendium of Instruction of Standing Fire Advisory Council (SFAC) and Minutes for SFAC, Published by DG FS CD & HG, MHA, GOI.
2. RMSI report on Fire Hazards and Risk Analysis conducted by GOI and published by GOI, MHA, DG FS CD & HG.
3. British Standard BS: IEC61882: 2002 Hazard and operability studies (HAZOP studies) – Application Guide British Standards Institution.
4. Swann, C. D., & Preston, M. L., (1995) Journal of Loss Prevention in the Process Industries, vol 8, no 6, pp 349-353 “Twenty-five years of HAZOPs.
5. Kietz, T. A., (1983) HAZOP & HAZAN Notes on the Identification and Assessment of Hazards IChemeE Rugby
6. Kietz, T., (2000) By Accident – a life preventing them in industry PVF Publications ISBN 0-9538440-0-5.
7. Kietz, Trevor (2006). Hazop and Hazan (45h ed.). Taylor & Francis. ISBN 0852955065.
8. Gould, J., (2000) Review of Hazard Identification Techniques, HSE
9. Hazard and Operability Studies Explanation by a software supplier



PGDF 114: Fire Risk and Hazard Analysis of Industries (L-3 T-0 C-3)

Course Outcome:

- CO 1: Understanding the Fire Risk and Hazard Analysis of Industries using latest software
CO 2: Understanding the Provisions under the Various Statutory Acts and Rules
CO 3: Understanding the Audit of Industries, Methodology, Report Preparation and implementations
CO 4: Calculation of Fire Fighting Equipment's, Extinguishing Media, Manpower and Response Time in the industries.

Course Content:

Unit I:

Fire Risk and Hazard Analysis of Industries.

Unit II:

Provisions under the Various Statutory Acts and Rules

Unit III:

Fire Risk and Hazard Analysis of Industries Using Latest Software

Unit IV:

Audit of Industries, Methodology, Report Preparation and Implementations.

Unit V:

Calculation of Fire Fighting Equipments, Extinguishing Media, Manpower and Response Time in the Industries.

Reading List:

1. Compendium of Instruction of Standing Fire Advisory Council (SFAC) and Minutes for SFAC, Published by DG FS CD & HG, MHA, GOI.
2. RMSI report on Fire Hazards and Risk Analysis conducted by GOI and published by GOI, MHA, DG FS CD & HG.
3. British Standard BS: IEC61882: 2002 Hazard and operability studies (HAZOP studies) – Application Guide British Standards Institution.
4. Swann, C. D., & Preston, M. L., (1995) Journal of Loss Prevention in the Process Industries, vol 8, no 6, pp 349-353 “Twenty-five years of HAZOPs.
5. Nolan, D. P. (1994) Application of HAZOP and What-If Safety Reviews to the Petroleum, Petrochemical and Chemical Industries.
6. Kietz, T. A., (1983) HAZOP & HAZAN Notes on the Identification and Assessment of Hazards IChemeE Rugby
7. Kietz, T., (2000) By Accident – a life preventing them in industry PVF Publications ISBN 0-9538440-0-5.
8. Chemical Industries Association (1977) A Guide to Hazard and Operability Studies.
9. Kietz, Trevor (2006). Hazop and Hazan (45h ed.). Taylor & Francis. ISBN 0852955065.
10. Gould, J., (2000) Review of Hazard Identification Techniques, HSE
11. Hazard and Operability Studies Explanation by a software supplier
12. OISD Standards Published by OISD, Ministry of Petroleum
13. Factory Act Published by GOI
14. PESSO Acts and Rules, Published by Ministry of Petroleum.



PGDF 116: Fire Forensics (L-3 T-0 C-3)

Course Outcome

- CO 1: Introduction to Fire Forensic Science, Terminologies, Fire and Arson investigation etc.
CO 2: Understanding Fire Development, Factors Affecting Fire Growth, Compartment Fires, fire Spread, Human Behaviour in fire
CO 3: Understanding Fire Analysis and Investigation, Evidence Collection and Preservation, Examining and Securing the Fire Scene, Safety at fire scene. Modern Laboratory Techniques Involved in the Analysis of Fire Debris Samples, Reporting, Reconstructions.

Course Content:

Unit I:

Introduction to Fire Forensic Science, Terminologies, Fire and Arson Investigation etc.

Unit II:

Understanding physics and Chemistry of Fire, Fire Ignition and Fire Dynamics, Types of Fires, Methods of Heat Transfer, Premixed and diffusion flames, Properties of building construction Materials

Unit III:

Fire Development, Factors Affecting Fire Growth, Compartment Fires, fire Spread, Human Behaviour in fire

Unit IV:

Fire Analysis and Investigation, Evidence Collection and Preservation, Fundamentals of Fire Investigation, Examining and Securing the Fire Scene, Safety at fire scene.

Unit V:

Electrical Fire Investigation, Motor Vehicle Fire Investigation, Modern Laboratory Techniques Involved in the Analysis of Fire Debris Samples, Reporting, Reconstructions.

Unit VI:

Fire Investigation methodology, Role of Fire Investigator, Arson Motives and Pathology, Fire Problems and Precautions, Determining Origin and Cause, Eliminating Accidental Causes, Documenting the Fire/ Scene, Surveillance.

Reading List:

1. NFPA 921 Guide for Fire and Explosion Investigation 2014, Published by National Fire Protection Association, USA.
2. Fire Investigation published by HMSO publication UK
3. Kirks Fire Investigation
4. Forensic Fire Science Reconstruction, By David J Icove, John D DeHaan, Gerald a Haynes Published by Pearson/ Prentice Hall
5. Principal of Fire Behavior by James G Quintiere, Published by Delmer



PGDF 118: Geinformatics for Fire Risk Assessment (L-3 T-0 C-3)

Course outcomes:

- CO 1: Introduction to Remote Sensing (RS), GIS & GPS Basic and Principles of Remote Sensing, Electromagnetic Spectrum, Resolution Types, EMR Interaction, Spectral Signatures of Different Objects, Platforms and Sensors.
- CO 2: Understanding Spatial Information Technologies and Disaster Management Concepts of Spatial Information and Data; Spatial Data Platforms for Disaster Information. Spatial Decision Support System (SDSS) for Fire Risk Assessment and Management; Fire Risk Modelling. GIS based On-Site and Off-Site Plans.

Unit I: Introduction to Remote Sensing (RS), GIS

Basic and Principles of Remote Sensing, Electromagnetic Spectrum, Resolution Types, EMR Interaction, Spectral Signatures of Different Objects, Platforms and Sensors. Digital Image Processing (DIP) Techniques. Visual Image Interpretation Tools and Techniques; Basic, Principles and Components of GIS, Spatial Information and Spatial Data Types; Geographic Phenomena, Geographic Field, Geographic Objects and Boundaries; Raster- Based GIS data Processing with Both Regular and Irregular Tessellations, Vector-Based GIS Data Processing and Topology, Spatial Relations, Spatial Analysis.

Unit II: Global Positioning Systems (GPS)

Basic Principles of GPS, Functions and Positioning Services. Map Projections and Coordinate Systems. Types of Survey of India (SOI) Topographical Maps. Numbering Systems and Interpretation of SOI Topographical Maps.

Unit III: Spatial Information Technologies and Disaster Management

Concepts of Spatial Information and Data; Spatial Data Platforms for Disaster Information: Government, Private & Community Sourced; Spatial Digital Data Collection and Processing: Pre-Disaster, During Disaster and Post-Disaster Phase; Spatial Information Accessibility and Authorization Issues in Disaster Management; Real time Spatial Data Availability: Requirements for Emergencies.

Unit IV: Applications

Geospatial Urban Planning and Fire Risk Resilience; GIS based Fire Response Planning, Remote Sensing for Fire Risk Potential Mapping; Unmanned Aerial Vehicle (UAV) for 3-D based Fire Detection and Monitoring. Spatial Decision Support System (SDSS) for Fire Risk Assessment and Management; Fire Risk Modeling. GIS based On-Site and Off-Site Plans. Map creation for action plan identification of risk and planning needs.

Reading List:

1. Janssen, Lucas L.F. and Grit C. H. (2001) Principle of Remote Sensing. ITC Educational Text Book series 2. International Institute of Geo information Science and Earth Observation (ITC). Enschede.
2. Jensen, J. R. (2004) Introductory Digital Image Processing: A Remote Sensing Perspective Prentice Hall.
3. Jensen, J. R. (2009) Remote Sensing of the Environment: An Earth Resource Perspective, 2nd Edition, Dorling Kindersley.
4. Joseph and George. (2005) Fundamentals of Remote Sensing, 2nd Edition. University press India.



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PGDF 152: Field Visits/ Presentation (L-0P-1 T-1 C-2)

Course Outcome:

The course involves the field visit of students to different industrial sites or vulnerable areas to see and understand the process of Fire and Life Audit.



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PGDF 154: Dissertation (L-0P-6 T-0 C-6)

Course Outcome:

The course involves the students to pick occupancy and leverage the skills learnt during the theoretical classes to assess and prepare a report on Fire and Life Safety performance.