

3. Training Module on Disaster Safe Building Codes & Designs

Aim of the Course:

To develop skill and capacity to incorporate building codes and designs for effective mitigation of risks due to natural disasters.

Objectives:

At the end of the course, participants will be able to;

- ✓ Explain the importance of disaster safe building codes and designs
- ✓ Identify various disaster safe building codes and construction methods
- ✓ Plan and design disaster safe buildings as per codes
- ✓ Describe multi-hazard building bye-laws
- ✓ Describe the safety measures for major hazardous industries
- ✓ Describe fire resistant measures in buildings
- ✓ Describe safe techniques for earthquake, landslides, cyclone and flood resistant housing
- ✓ Describe retrofitting techniques for unsafe buildings

Methodology:

The course uses participatory techniques such as desk exercises, case studies, projects, demonstrations, mock drills, action planning, micro-films and lessons in the course.

Expected Outcome:

- Participants would use the disaster safe building codes & designs for improvement of hazard safety of the built environment
- Apply tools for Risk Analysis
- Practice and rehearse the implementation of mitigation measures and response action plans

Target Group:

The target group for this programme would be district and city level officers and functionaries from various line departments of the district involved in activities related to planning, design and construction of habitat.

Validation:

The final session of the programme will be validated by using immediate reaction questionnaires and oral feedback by the participants at the end of the course.

Contents

The following five modules would constitute the course contents;

Module 1: Principles of disaster management (Natural disasters, hazard, risks and vulnerability).

Module 2: Building foundations and multi-hazard building bye-laws.

Module 3: Bureau of Indian Standards, National Building Codes 2005 and code provisions for construction of disaster safe buildings.

Module 3: Construction of earthquake resistant buildings and structural and non-structural measures for risk reduction.

Module 4: Earthquake effects – Ground/building failures and micro-zoning of ground failures.

Module 5: Use of building materials and low cost technology for disaster safe building construction.

Module 6: Landslide risk management - Control measures and code provisions.

Module 7: Industrial fire safety measures and fire resistant techniques to public buildings.

Module 8: Field study of buildings for HRVC analysis and report presentations.

Module 9: Urban floods and storm water drainage management.

Module 10: Disaster management planning using Remote Sensing and GIS technology.

Training Design on Disaster safe Building Codes & Designs

| Day 1 - Session I | |
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| Topic | <i>Introductory Activity</i> |
| Contents | <ul style="list-style-type: none"> - Introduction of Course Team and Faculty - Introductory diversion - Expectations of participants - Expectations of trainers |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> • Share experiences in DM & building construction • List expectations from the course • Introduce themselves • Set ground rules for the course |
| Expected Outcome | Listing of Expectations from the course Setting Ground Rules for Trainees and Trainers Limitations and scope of the training |
| Method | Introductory diversion Eliciting responses and Eliciting reactions |
| Process | <p>Resource persons to introduce themselves, welcome the participants warmly.</p> <p>Introductory games: Participants to pair up and talk to each other - about their work, their families, their interests, their hobbies, etc. Participants will then introduce their partners in the plenary, so that all other participants get to know each other.</p> <p>Resource persons to define the objectives of the course and elicit the expectations of the participants from the course. Based on the above, the resource team may reset the course objectives. It is important that the resource team provide space and time for the participants to freely share their experiences and opinions, since the issues that emerge from their experiences will form the basis of the objectives of the course.</p> |
| Performance Aids | Checklist, Flow Chart |
| Media | White Board/LCD Projector/PPT |

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| Trainers | Course Coordinator and Faculty ATI |
| Time | 01:00 Hour |
| Day 1 - Session II | |
| Topic | <i>Inaugural Session : Disaster Management</i> |
| Contents | <ul style="list-style-type: none"> - Overview of Disasters - Experiences of Belgaum Flood Management - Responsibilities of Officers/Functionaries during the disasters - Effective Response mechanism at the local level |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Describe the roles and responsibilities of functionaries during the disasters • Explain the important factors for effective response mechanism at the district and local level |
| Expected Outcome | Roles and Responsibilities to respond to the Disaster Situation |
| Method | PPT, Lesson, case study and Discussion |
| Process | The Resource person will make a Power point presentation followed by discussion and question answer session. |
| Performance Aids | Nil |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Director General , ATI |
| Time | 01:00 Hour |
| Day 1 - Session III & IV | |
| Topic | <i>Disaster Management Concepts & Overview of Disasters in Karnataka</i> |
| Contents | <ul style="list-style-type: none"> • Definition of Disaster, Hazard, Risk, Vulnerability, Preparedness, Prevention, • Types of Disasters • Overview of Disasters in Karnataka and other States |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Explain the meaning of various Disaster Terminology • List the types of Disasters |

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| | <ul style="list-style-type: none"> List the disasters in Karnataka Explain the disaster in other states |
| Expected Outcome | Apply the basic concepts of disaster management |
| Method | PPT, case study and Discussion |
| Process | The resource persons make a pictorial presentation of Basic concepts of Disaster Management and explain the terminology with examples and illustrations. The significance of the terminology in disaster management would be explained. An overview on vulnerability profile of Karnataka and India with instances of disasters will be presented. This will be followed by discussion and question answer session on the topic. |
| Performance Aids | Checklist of types of disasters and copy of DM Act -2005 |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Faculty ATI |
| Time | 01:30 Hours |
| Assessment | Question answer |
| Day 1 - Session V & VI | |
| Topic | <i>Building Foundations in Disaster Prone Areas & Geotechnical Engineering Aspects</i> |
| Contents | <ul style="list-style-type: none"> Earthquake effects on human habitat Foundation Designs Technique on construction of earthquake resistant structures |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> explain the steps in earthquake safe foundation designing Identify the earthquake safe foundations |
| Expected Outcome | Adopt Safe foundation methods in earthquake prone areas |
| Method | PPT, case study and Discussion |
| Process | The RP will make a PPT on different types safe foundations for earthquake prone areas. During the presentation, design parameters and earthquake safety considerations for earthquake zone II to V will be discussed followed by Demo will be presented and question and answer session will be done during last 10 minutes |
| Performance Aids | Types of safe foundations and design steps |
| Media | White Board/LCD Projector/PPT/ Hand outs |

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| Trainers | Professors from SJCE/IIT/NIT/IISC/Tech. University |
| Time | 02:00 Hours |
| Assessment | Question answers |
| Day 2 - Session I, II & III | |
| Topic | <i>Multi-Hazard Building bye-Laws – A Case Study</i> <i>Structural Design : Earthquake Resistant Designs</i> |
| Contents | <ul style="list-style-type: none"> - Case study of a City Corporation - Structural design for Earthquake safe housing - BIS codal provisions for masonry and RCC buildings |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Describe the building byelaws for managing multi-hazards in cities • Describe earthquake safe designs |
| Expected Outcome | Adopt disaster safe construction techniques back home |
| Method | PPT, Demonstration, case study and Discussion |
| Process | <p>The RP will make a PPT on building bye-laws for multi-hazards such as Earthquakes, Fire, Flood, Cyclone etc. This will be followed by PPT and discussion on case study of Mangalore City Corporation. The salient features of manual of byelaws of Mangalore City Corporation will be discussed</p> <p>This will be followed by another important session on Structural design for Earthquake safe housing. Different BIS codal provisions for masonry and RCC buildings will be presented and explained. . During the presentation, design parameters and earthquake safety considerations for earthquake zone II to V will be discussed. A question and answer session would follow during the last 15 minutes.</p> <p>Two resource persons would handle the sessions.</p> |
| Performance Aids | Checklist of BIS codal provisions |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Professor in Civil Engineering /Structural Engg/Earthquake Engg. from IISc/NITK/IIT |
| Time | 03:00 Hours |

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| Assessment | Question and answering and list out learning points |
| Day 2 - Session IV & V | |
| Topic | <i>Demonstration & Mock Drill at HPCL on Safety Measures in Major Hazardous Industry</i> |
| Contents | <ul style="list-style-type: none"> - Safety measures systems - Fire Safety Measures : Fire Services - Rescue and First Aid : Health Services and Fire Services |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Define the safety measures • Explain the fire safety measures • Describe the techniques for first aid |
| Expected Outcome | Participants will be able to demonstrate the safety measures and techniques of fire safety and first aid including search and rescue. |
| Method | PPT, Case study, demonstration, mock drill and Discussion |
| Process | <p>The Sr Plant Manager of HPCL will make brief presentation on safety measures being followed in the industry and existing system in the HPCL plant. The teams of officers at HPCL industry will conduct a mock drill on fire safety measures being taken by different departments like fire services and health services and finally find out the lapses if any for further improvement on the same.</p> <p>This will be followed by demonstration of the HPCL plant unit process.</p> |
| Performance Aids | Checklist/chart on safety system and first aid procedures |
| Media | White Board/LCD Projector/PPT/Equipments and Machines |
| Trainers | HPCL Plant Manager & Team RFO & Team |
| Time | 02:00 Hours |
| Assessment | Question – Answer |
| Day 3 - Session I & II | |
| Topic | <i>National Building Codes 2005 – An Overview</i> |
| Contents | <ul style="list-style-type: none"> - Bureau of Indian Standards - Divisions & functions |

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| | <ul style="list-style-type: none"> - NBC of India 2005 - Salient features |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Describe the BIS • List out NBC – 2005 • Explain salient features on construction practices |
| Expected Outcome | Will be able to apply the NBC 2005 for construction of disaster safe buildings |
| Method | PPT, Case study and Discussion |
| Process | <p>The resource person will make a presentation on the national Building Codes of India 2005 which includes BIS, divisions & functions and salient features on construction practices.</p> <p>The Resource person also provides an outline for construction of disaster safe buildings</p> |
| Performance Aids | NBC - 2005 |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Professor in Civil/Structural Engineering from NIDM/SJCE |
| Time | 02:00 Hour |
| Assessment | Quiz for 5 minutes to test the talent of learning |
| Day 3 - Session III | |
| Topic | <i>Structural & Non structural Measures in Disaster Risk Mitigation</i> |
| Contents | <ul style="list-style-type: none"> - Challenges of earthquake disaster - Structural & non structural measures - Prevention & mitigation strategies - Do's & Don'ts |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Identify the structural & non structural measures • Describe the mitigation measures • List out Do's & Don'ts |
| Expected Outcome | Will be able to apply the structural & non structural measures for |

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| | earthquake safety |
| Method | PPT, Case study and Discussion |
| Process | The resource persons will make a PPT to explain the structural and non structural measures being followed for the earthquake safety. And also he will list out Do's & Don'ts and family disaster plan as well for disaster risk mitigation. |
| Performance Aids | List of Do's & Don'ts |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Scientist/Professor in Civil Engineering from IISc/NIDM |
| Time | 01:00 Hour |
| Assessment | Quiz for 5 minutes to test the talent of learning |
| Day 3 - Session IV | |
| Topic | <i>Innovative building Materials & Low Cost Technology with Disaster Perspectives</i> |
| Contents | <ul style="list-style-type: none"> - Building materials - Disaster safe innovative building materials - Low cost housing |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> • Describe the innovative building materials • Explain low cost housing technology |
| Expected Outcome | Will be able to use the innovative low cost building materials for construction of disaster safe houses |
| Method | PPT, Case study and Discussion |
| Process | The resource person will give the brief presentation on the technology available on innovative low cost building materials for construction purposes. He will also explain the benefits of using these materials in disaster prone areas. |
| Performance Aids | Nil |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Scientist/Professor in Civil Engineering from IISc/NIDM |

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| Time | 01:00 Hour |
| Assessment | Quiz for 5 minutes to test the talent of learning |
| Day 3 - Session V & VI | |
| Topic | <i>Inventory of Fire Resistant Measures in Buildings, demonstration & Mock Drill</i> |
| Contents | <ul style="list-style-type: none"> - Fire hazards - Types of fire & Classification - Fire resistant measures in buildings - Types of equipments, application & Demonstration - Tools for rescue - Mock drill |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Describe the causes for fire hazards • Define the fire resistant measures in buildings • Recognize the application of fire control equipments • Rehearsal through mock drill |
| Expected Outcome | Will be able to prepare preparedness plan for fire fighting and rescue during disasters |
| Method | PPT/Case study/Demonstration/Rehearsal/Discussion |
| Process | <p>The resource person will give the brief presentation about the fire hazards, define fire, types of fire, method of fire resistant measures for building safety using case studies and also explain the role of Fire & emergency Service during disasters.</p> <p>Further a mock drill on fire fitting and rescuing will be conducted at a open space for rehearsal for effective management during disasters.</p> |
| Performance Aids | Checklist/Equipments/Materials for fire |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Regional Fire Officer, Fire & Emergency Services, Mysore |
| Time | 02.15 Hours |
| Assessment | Practice, Question and answering and list out learning points |

| Day 4 - Session I & II | |
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| Topic | <i>Codal Provisions for Landslide Risk Mitigation and Control Measures</i> |
| Contents | <ul style="list-style-type: none"> - Landslides - Causes & Types of Landslide - Precautionary measures - Codal provisions - Control measures |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> • Define landslide • List types & causes for landslides • Define codal provisions • Explain the remedial measures for landslides |
| Expected Outcome | Landslide management techniques |
| Method | PPT, case study and Discussion |
| Process | The RP will make a PPT on landslide management comprises types, causes, codal provisions and mitigation measures with case illustrations in India & Karnataka. The measures to prevent landslides in western ghats regions of Karnataka will be discussed. The landslide hazard map of India & Karnataka will be explained. This will be followed by question answer session. |
| Performance Aids | Landslide hazard map of India & Karnataka |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Faculty ATI |
| Time | 01:30 Hours |
| Assessment | Question answers |
| Day 4 - Session III | |
| Topic | <i>Screening of film 'Surviving Nature's Fury' followed by discussions on learning points</i> |
| Contents | <ul style="list-style-type: none"> - Earthquakes - Effect of Bhuj earthquake |

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| | <ul style="list-style-type: none"> - Earthquake studies in India - Construction of earthquake safe buildings - Precautionary measures for earthquake |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> • Describe the earthquake safe construction practices |
| Expected Outcome | Participants will be able to apply the earthquake safe construction and retrofitting techniques to new/old buildings |
| Method | Film show on case study and Discussion |
| Process | <p>The resource persons will describe the aim of the film ‘Surviving Nature’s Fury’ and will show the film to the participants. It is mainly gives the information on the Bhuj earthquake and its effect, construction of earthquake safe buildings and strengthening of existing buildings.</p> <p>This will be followed by the discussion, question and answers between the participants and resource person on the earthquake safe construction practices and list out the learning points.</p> |
| Performance Aids | Film on ‘Surviving Nature’s Fury’ |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Faculty ATI |
| Time | 01:00 Hour |
| Day 4 - Session IV | |
| Topic | <i>Understanding Building failures</i> |
| Contents | <ul style="list-style-type: none"> - Scenario on building failures - Earthquake effects - Causes for failure of structures |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> • Define the earthquake effects on buildings • And explain the causes for failure |
| Expected Outcome | Participants will be explain the building failures during disasters |
| Method | PPT, Case study and Discussion |
| Process | The Resource Person will discuss the different types of building failures occurring in the past in our country and also give the causes for building |

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| | collapses during major disasters like earthquake. And also he will briefly explain on the different strengthening measures being taken for different kind of buildings. |
| Performance Aids | Nil |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Professor in Civil/Structural Engineering from IISc/SJCE/NIDM/NITK |
| Time | 01:00 Hour |
| Assessment | Question & answers |
| Day 4 - Session V & VI | |
| Topic | <i>Filed Visit – HRVC Analysis of Buildings</i> |
| Contents | <ul style="list-style-type: none"> - Hazard, Risk, Vulnerability Analysis - Exercises on hazard, Risk, Vulnerability |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Use tools to assess the hazard, risk and vulnerability of an area (Mysore City Market & Buildings) • Make group presentation of the HRVC reports Explain HRVC |
| Expected Outcome | HRVC reports |
| Method | Field visit followed Group work |
| Process | Participants will be divided into four groups. Each group will be assigned with a specific buildings/area in City Market. Groups will visit the buildings/area and apply the tools and analyze the buildings and area under the scale of 1-5 for Hazard, Risk and Vulnerability. Reports on H-R-V-C, Seasonality and resource map will be prepared by the groups and presentation would follow. Feedback will be given by the resource persons. |
| Performance Aids | Steps in HRVC analysis |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Faculty ATI |
| Time | 02:00 Hours |
| Day 5 - Session I & II | |
| Topic | <i>Filed Visit Report –Group Presentations on HRVC Analysis of</i> |

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| Contents | <p><i>Buildings</i></p> <ul style="list-style-type: none"> - Hazard, Risk, Vulnerability Analysis - Exercises on hazard, Risk, Vulnerability |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • Use tools to assess the hazard, risk and vulnerability of an area (Mysore City Market & Buildings) • Make group presentation of the HRVC reports Explain HRVC |
| Expected Outcome | HRVC reports |
| Method | Field visit followed Group work |
| Process | <p>Participants will be divided into four groups. Each group will be assigned with a specific buildings/area in City Market. Groups will visit the buildings/area and apply the tools and analyze the buildings and area under the scale of 1-5 for Hazard, Risk and Vulnerability. Reports on H-R-V-C, Seasonality and resource map will be prepared by the groups and presentation would follow. Feedback will be given by the resource persons.</p> |
| Performance Aids | Steps in HRVC analysis |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Faculty ATI |
| Time | 02:00 Hours |
| Day 5 - Session III | |
| Topic | <i>Urban Floods & Storm Water Drainage in Bangalore – A Case Study</i> |
| Contents | <ul style="list-style-type: none"> • Flood situation in Bangalore • Problems in existing storm drainage system • Preventive measures • Project undertaken to revamp the SWD |
| Session Objective | <p>Participants will be able to;</p> <ul style="list-style-type: none"> • describe the reasons for floods in cities • prepare the plan for flood mitigation and Preparedness |
| Expected Outcome | Steps in Flood mitigation and preparedness plan |

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| Method | PPT, Demonstration, case study and Discussion |
| Process | The RP will make a PPT on Flood situation in Bangalore. He will quote pictures, drainage maps of different areas prone to flood in Bangalore. Particular focus will be given to discussion on ; <ul style="list-style-type: none"> • Problems in existing storm drainage system • Preventive measures • Project undertaken to revamp the SWD |
| Performance Aids | Storm Water Drainage Maps of Bangalore and Project Documents |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | CE / Senior Engineers of BBMP |
| Time | 01:00 Hour |
| Assessment | Random questioning with 5 questions and answering |
| Day 5 - Session IV | |
| Topic | <i>Seismic Microzonation for Urban Areas</i> |
| Contents | <ul style="list-style-type: none"> - Define earthquake - Classification & Causes - Methods for identification of vulnerable areas - Mitigation measures |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> • Identify hazards and vulnerability • Explain the causes & mitigation measures • Prepare seismic micro zones • Apply the techniques for mitigation measures |
| Expected Outcome | Will be able to prepare seismic microzonation maps for preparedness and mitigation plan for earthquake management. |
| Method | PPT, Case study and Discussion |
| Process | The resource person will give the brief presentation on the process of occurrence of earthquake hazards and causes and the related issues will be discussed. This will be followed by a pictorial presentation by the resource person |

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| | on the methods available for mitigation measures and tools of vulnerability assessment, steps to mitigate the impact of hazards. A few case studies will be illustrated during discussion. |
| Performance Aids | Seismic Microzonation Maps of Urban areas and Project Documents |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Faculty ATI |
| Time | 01:00 Hour |
| Assessment | Question – Answer |
| Day 5 - Session V | |
| Topic | <i>Remote Sensing and GIS Applications in DM</i> |
| Contents | <ul style="list-style-type: none"> • Introduction to GIS and Remotes sensing • Uses of GIS and Remote sensing • Preparation maps • Steps to adopt GIS |
| Session Objective | Participants will be able to; <ul style="list-style-type: none"> • Explain the uses of GIS and Remote Sensing in DM • Describe the steps in preparing maps/data base using GIS • Adopt GIS in DDMP preparation |
| Expected Outcome | Use of GIS in DDMP |
| Method | PPT and Discussion/ Question answer |
| Process | The RP will make a pictorial presentation on GIS and Remote sensing applications. During presentation, instances of how the GIS and Remote sensing data are synchronized to prepare maps will be presented. Particular focus on the use of GIS in preparing DDMP will be illustrated with examples. |
| Performance Aids | Nil |
| Media | White Board/LCD Projector/PPT/ Hand outs |
| Trainers | Faculty ATI |
| Time | 01:00 Hour |
| Assessment | Question – Answer |

Programme Schedule

| Day/Sessions | Topic |
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| Day 1 | |
| 09.30 AM - 10.30 AM | Registration Introduction & Course Objectives Expectations & Setting Ground Rules |
| 10.30 AM - 11.30 AM | Inauguration Disaster Management |
| 11:30 AM – 11:45 AM | Tea Break |
| 11.45 AM - 01.45 PM | Disaster Management Concepts and Overview of Disasters in Karnataka |
| 01:45 PM – 02:30 PM | Lunch Break |
| 02.30 PM – 04.45 PM | Building Foundations in Disaster Prone Areas and Geotechnical Engineering Aspects |
| Day 2 | |
| 09.30 AM – 11.30 AM | Recap of day 1 Multi-Hazard Building Bye-Laws – A Case Study |
| 11:30 AM – 11:45 AM | Tea Break |
| 11.45 AM – 01:45 PM | Structural Design : Earthquake Resistant Designs |
| 01:45 PM – 02:30 PM | Lunch Break |
| 02.30 PM – 04:45 PM | Demonstration and Mock drill at HPCL on Safety Measures in major Hazardous Industry |
| Day 3 | |
| 09.30 AM - 11.30 AM | Recap of day 2 Screening “Nature’s Fury” followed by discussion on learning points |
| 11:30 AM – 11:45 AM | Tea Break |
| 11.45 AM - 12.45 PM | Structural and Non structural Measures in Disaster Risk Mitigation |
| 12.45 PM – 01.45 PM | Innovative Building Materials and Low Cost Technology with Disaster Perspectives |
| 01:45 PM – 02:30 PM | Lunch Break |

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| 02.30 PM – 04.45 PM | Inventory of Fire Resistant Measures in Public Building and Mock drill |
| Day 4 09.30 AM-10.30 AM | Recap of day 3 |
| | Codal Provisions for Landslide Risk Mitigation and Control Measures |
| 10.30 AM – 11.30 AM | Understanding Building failures |
| 11:30 AM – 11:45 AM | Tea Break |
| 11.45 AM- 01:45 PM | National Building Code 2005 – An overview |
| 01:45 PM – 02:30 PM | Lunch Break |
| 02:30 PM – 04:45 PM | Filed Visit – HRVC Analysis of Buildings |
| Day 5 09.30 AM-11.30 AM | Recap of day 4 |
| | Field Study Report Presentations by Participants |
| 11:30 AM – 11:45 AM | Tea Break |
| 11:45 AM – 12:45 PM | Urban Floods and Storm Water Drainage in Bangalore – A Case Study |
| 12:45 PM – 01:45 PM | Seismic Microzonation for Urban Areas |
| 01:45 PM – 02:30 PM | Lunch Break |
| 02:30 PM – 03:30 PM | RS & GIS Applications in Disaster Management |
| 03:30 PM – 03:45 PM | Tea Break |
| 03:45 PM – 04:45 PM | Internal validation |