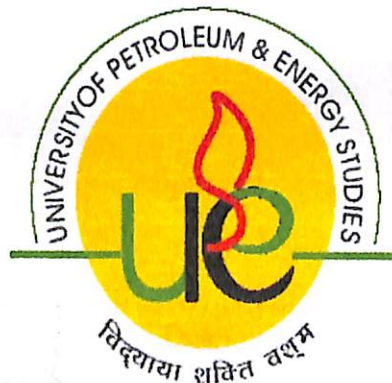


Final Project Report  
(DISASTER MANAGEMENT PLAN FOR UNIVERSITY OF  
PETROLEUM AND ENERGY STUDIES)

By  
VIBHUTI BHARDWAJ

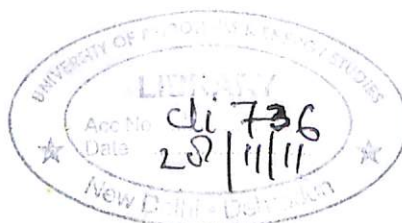


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Dehradun  
April, 2010




(DISASTER MANAGEMENT PLAN FOR UNIVERSITY OF  
PETROLEUM AND ENERGY STUDIES)

A thesis submitted in partial fulfillment of the requirements for the Degree of  
Master of Technology  
(Health, Safety & Environment)

By  
(Vibhuti Bhardwaj)

Under the guidance of

... Internal Guide .....  
... Dr D.V.L Rewal.....  
.....

Approved

.....  
Dean

College of Engineering  
University of Petroleum & Energy Studies  
Dehradun  
April, 2010

## APPROVAL SHEET

This is to certify that the project titled

**“Disaster Management Plan for University of Petroleum & Energy Studies”**

Has been satisfactorily completed by the **Vibhuti Bhardwaj-R070208012** of M. Tech HSE course at the University of Petroleum & Energy Studies during the academic year 2009 - 2010

This report has been submitted in partial fulfilment of the requirement

For the degree of

**Master of Technology (HSE)**

As prescribed and approved by the University of Petroleum & Energy Studies.



Dr.D.V.L Rewal

University of Petroleum & Energy Studies,

Dehradun

## **ACKNOWLEDGEMENT**

- I am writing this final evaluation report during the Final Year Project 2010 in the program of Master of Technology at the division of HSE (Health, Safety and environment Engineering) at UPES , Dehradun.
- One person without his help and continuing support i can't pursue my project is my project guide **Dr.D.V.L Rewal** Thank you sir for continuous advice, Mentoring and kind support.
- And of course University of Petroleum & Energy Studies, Dehradun both staff for all their help and support.  
**Thank You All!**

VIBHUTI BHARDWAJ

## **DECLARATION**

I **Vibhuti Bhardwaj** hereby state that this final evaluation report has been submitted to University of petroleum & energy studies in partial fulfilment of the requirement of Final Year Project in **M.Tech (Master of Technology)** program class of 2010.

The empirical information of this project is based on my experience in Final year project. Any part of this project has not been reported or copied from any report of the university and others.

Vibhuti Bhardwaj (R070208012)

## **PREFACE**

- This is the final evaluation report for Final Year project commenced from the 1<sup>st</sup> of January 2010 and will formally close on May 2010. The duration of the project is approx. 5 months.
- In this report intern is totally free to share all his/her experience during Project, good and bad both. So this report reflects originality, the whole truth about intern's working. And i am also putting these all things in this report.

## **ABSTRACT**

Disaster Management Plan is a master plan containing the emergency response, responsibilities of key members, communication means and response strategies to control a range of major incidents.

This Disaster Management Plan will be the basis to establish policies and procedures which will assure maximum and efficient utilization of all resources on the UPES campus, minimize the loss of life and/or injury to the population, and protect and conserve resources and facilities of UPES during large-scale emergencies considered to be of disaster magnitude.

This project furnishes information about the safety of the students and the staff is maintained during an emergency. The emergency management plan is a means by which this can be achieved.

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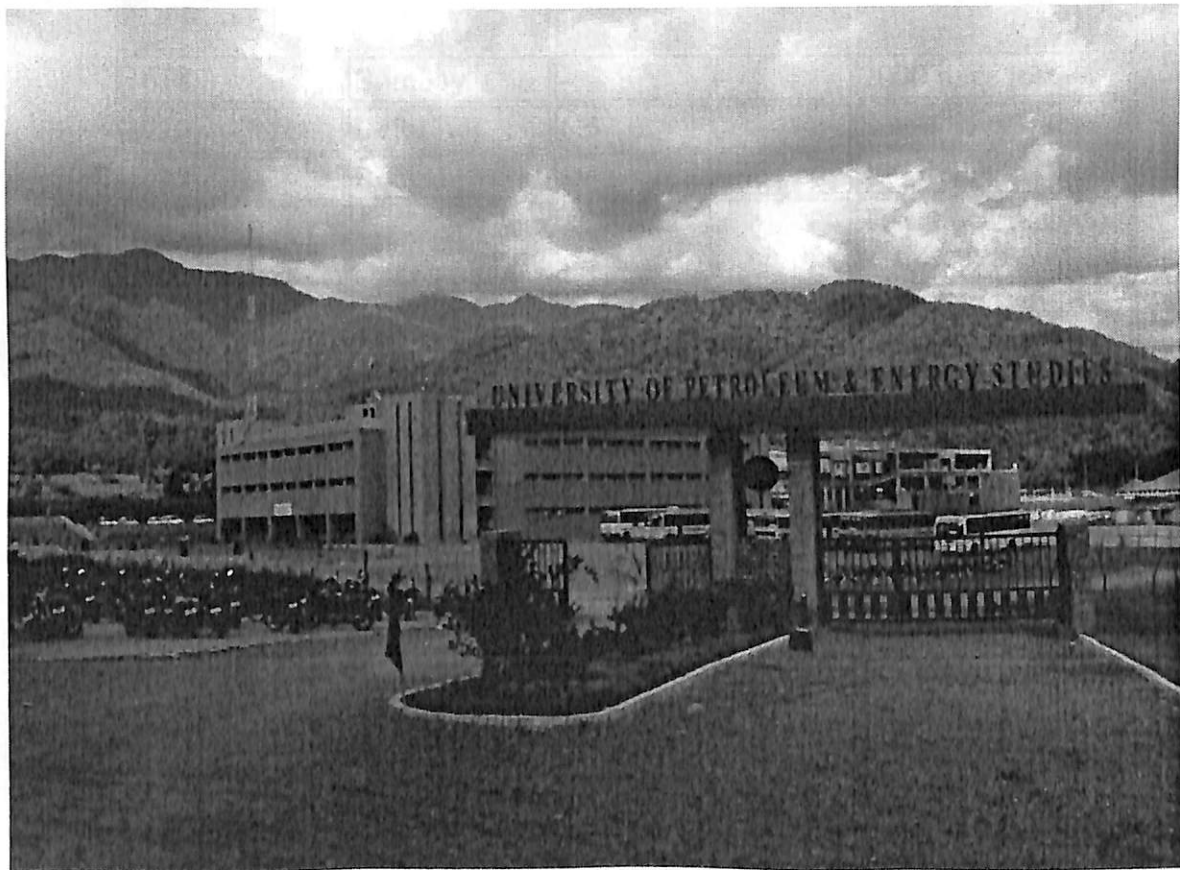


## **Introduction:**

A statutory university (UPES) established at Dehradun through an act the State Legislature of Uttarakhand in the year 2003, UPES started with a 25 acres mother campus in Pondha valley, Dehradun.

UPES is an endeavour of Hydrocarbons Education & Research Society (HERS), a non profit organisation registered under the Societies Act 1860 dedicated to promoting education and training in Energy and allied sectors.

HERS comprises eminent individuals from the Oil & Gas industry including the former Petroleum Secretary, Government of India, senior industry professionals, chiefs of various energy and allied sector companies and specialists from various national and international organisations.



India has witnessed some of the most devastating earthquakes during the last century like the one in Kangra (1905), Bihar-Nepal (1934) and in Assam (1950). In the recent past, earthquakes have caused havoc in Uttarkashi (1991), Latur (1993), Jabalpur (1997), Chamoli (1999) and in Bhuj (2001).

On 26th January 2001, India experienced one of the worst earthquakes in recent times. Measuring 6.9 on the Richter scale, the earthquake caused incalculable damage not just to its epicentre, Bhuj but also to other towns of the district of Kutch and to about 500 villages out of the total of 900 villages. The reported damage to property in Gujarat was about Rs.21,000crore and the number of human lives lost were about 14,000. Of these, more than 500 deaths were reported from Ahmedabad, situated at a distance of about 350 kms from Bhuj. In the same city, close to 150 multi-storied buildings crumbled down. Cities far away from the epicentre, like Surat, too reported damage to property.

### OME DAMAGING EARTHQUAKES IN INDIA AND APPROXIMATE NUMBER OF LIVES LOST

Year and Place of Occurrence	Magnitude	Maximum	Intensity	Other Features
1618	Bombay	-	-	2000 lives lost
1720	Delhi	6.5	-	Some lives lost
1737	Bengal	-	-	300,000 lives lost
1803	Mathura	6.5	-	The shock felt up to Calcutta.
1803	Kumaon	6.5	-	Killed 200-300 people.
1819	Kutchch	8.0	XI	Chief towns of Tera, Kathara and Mothala razed to the ground.
1828	Srinagar	6.0	-	1000 people killed.
1833	Bihar	7.7	X	Hundreds of people killed
1848	Mt.Abu, Rajasthan	6.0	-	Few people killed
1869	Assam	7.5	-	Affected an area of 2,50,000 Sq. miles.
1885	Srinagar	7.0	-	Kamiarary area destroyed.

1897	Shillong	8.7	XII	Wide spread destruction in Shillong.
1905	Himachal Pradesh	8.0	XI	Thousands of people killed.
1906	Himachal Pradesh	7.0	-	Heavy damage.
1916	Nepal	7.5	-	All houses collapsed at Dharchulla.
1918	Assam	7.6	-	Heavy damage.
1930	Dhubri, Meghalaya	7.1	IX	Heavy damage in Dhubri.
1934	Bihar, Nepal	8.3	XI	Large number of border area people killed.
1935	Quetta (in Pakistan)	7.5	IX	25,000 people killed
1941	Andaman	8.1	X	Very heavy damage.
1947	Dibrugarh	7.8	-	Heavy damage.
1950	Assam	8.6	XII	Heavy damage to life and property.
1952	NE India	7.5	-	Heavy damage.
1956	Bulandshahar, U.P.	6.7	VIII	Many people killed
1956	Anjar, Gujarat	7.0	VIII	Hundreds of people killed
1958	Kapkote, U.P.	6.3	VIII	Many people killed
1967	Koyna,	6.1	VIII	Koyna Nagar razed.
1969	Bhadrachalam	6.5	1	Heavy damage.
1986	Dharamshala (H.P)	5.7	VIII	Lots of damage.
1988	Assam	7.2	IX	Few people killed
1988	Bihar- Nepal	6.5	VIII	Large number of people killed.
1991	Uttarkashi	6.6	VIII	Lots of damage to life and property.
1993	Latur	6.4	VIII	Heavy damage to life and property about, 000 people

				killed.
1997	Jabalpur	6.0	VIII	Lots of damage to property, about 39 lives lost.
1999	Chamoli	6.8	VIII	Lots of damage to property about 100 people lost lives.
2001	Bhuj	6.9	X	Huge devastation, about ~ 14000 people lost lives

## EARTHQUAKE HAZARDS IN INDIA

India has had a long history of earthquake occurrences. About 65% of the total area of the country is vulnerable to seismic damage of buildings in varying degrees. The most vulnerable areas, according to the present seismic zone map of India, are located in the Himalayan and sub-Himalayan regions, Kutch and the Andaman and Nicobar Islands. Depending on varying degrees of seismicity, the entire country can be divided into the following seismic regions:

- Kashmir and Western Himalayas - Covers the states of Jammu and Kashmir, Himachal Pradesh and sub-mountainous areas of Punjab
- Central Himalayas - Includes the mountain and sub-mountain regions of Uttar Pradesh and the sub-mountainous parts of Punjab
- North-east India - Comprises the whole of Indian territory to the east of north Bengal
- Indo-Gangetic basin and Rajasthan - This region comprises of Rajasthan, plains of Punjab, Haryana, Uttar Pradesh and West Bengal
- Cambay and Rann of Kutch
- Peninsular India, including the islands of Lakshwadeep
- The Andaman and Nicobar Islands

## MEASURES FOR EARTHQUAKE RISK REDUCTION

For better understanding of all the possibilities of earthquake risk reduction, it is important to classify them in terms of the role that each one of them could play. Therefore, in the pre-earthquake phase, preparedness, mitigation and prevention are concepts to work on. Post-disaster, immediate rescue and relief measures including temporary sheltering soon after an earthquake until about 3 months later and re-construction and re-habilitation measures for a period of about six months to three years need to follow.

To encapsulate, the most effective measures of risk reduction are pre-disaster mitigation, preparedness and preventive measures to reduce vulnerability and expeditious, effective rescue and relief actions immediately after the occurrence of the earthquake. Depending upon the calamity and its consequences, strategies can also be divided into long

term (five to fifteen years), medium term (one to five years) and short term (to be taken up immediately in high risk areas). Since it has been realized that earthquakes don't kill people but faulty constructed buildings do, the task of reducing vulnerability of structures and buildings will be the key to earthquake risk reduction. Also, pre-disaster preparedness through a post-earthquake response plan, including training of the concerned personnel in various roles, is considered essential for immediate and effective response after an earthquake occurrence.

During the past 200 years **Uttaranchal** has experienced **116 earthquakes**. Out of these 28 were of intensity those caused havoc. The studies carried out by GSI reveal that the seismic activity is concentrated along a 50km wide belt in Bhagirathi, Mandakini and Kali river valleys. The earthquakes have cost loss of 1000 precious lives and property worth crores of Rupees.

Uttaranchal has been placed in the zone V and IV as per the Seismotectonic Atlas of India published by the GSI in the year 2000. Prabhas Pande, Director, Earthquake Geology, GSI in one of his recent papers has grouped Uttaranchal and adjoining areas of Nepal into four classes of hazard. Very High Hazard area includes parts of west Nepal and in this area the possibility of an earthquake  $M > 6$  exist every ten years. Next is the High Hazard Zone. This covers almost 36% of Uttaranchal. Major parts of Uttarkashi, Chamoli, Bageshwar, Almora, Pithoragarh and Champawat fall in this zone. Earthquakes of  $M > 6 < 7$  can be expected in this region every 100 years. Yet another 41% of area of Uttaranchal, including Purohita, Tehri, Rudrapur, Gairsain and Haridwar fall in the Moderate Hazard Zone. It is conjectured that an earthquake of  $M > 5 < 6$  can occur in these areas every 100 years. The remaining 23% of the State including Roorkee, Pauri, Nainital and Udham Singh Nagar fall in the Low Hazard Zone. The zoning is based on the available earthquake data and is open to refinement when further data is available.

How grave is the threat of high magnitude earthquake in future can be understood from the fact that Max Wyss of World Agency of Planetary Monitoring and Earthquake Reduction has also estimated that an earthquake of magnitude 8.1 can claim 96,000 to 199,000 lives and 210 to 433 thousand injured in Dehradun alone. Similar views have been aired by Prof A.S. Arya of IIT Roorkee that an earthquake of high magnitude can claim up to 100,000 to 150,000 lives.

It is clear that the State is prone to earthquakes. Safety measures need to be followed keeping in mind the possibilities of a disaster. Uttaranchal has the potential of 18,000 MW of Hydroelectric power generation. Presently only 10% of the potential is being tapped. Power generation is a major source of revenue for the State. While constructing further power generation schemes, the factor of earthquake has to be the foremost consideration.

About 22% of the population of the State lives in the six most earthquake prone districts. The Government has disaster management schemes. Unfortunately most of these schemes have arrangement for post disaster scenario. Relief after the disaster is no doubt invaluable, but a strict control over present construction activity is a must to ensure that the future generations live unscratched in earthquake safe houses. Multistoried, poorly designed and unfavorably located structures in vulnerable areas like Dharchula and Uttarkashi speak volumes about the apathy or ignorance of the authorities. The Central Building Research Institute at Roorkee has designs of safe houses to suit all types of pockets for the people of Uttaranchal.

Pre-disaster mitigation and preparedness for the disaster is vital for the safety and security of the population in disaster prone areas. The local population and the Government both should realize that a poorly designed housing complex spells doom for the residents of tomorrow. It should be noted that an earthquake itself cannot kill people, they die of roof collapse. Therefore, precautions taken now will go a long way in development of Uttaranchal.

A survey of city hospitals and schools is under way to assess how safe these buildings are in the event of an earthquake. In case of a quake measuring 5 on the Richter Scale, hospitals and schools are the only hope. While hospitals serve to provide medical assistance to victims, schools are the sole places for shelter.

The initiative has been taken up jointly by the Indian Institute of Technology, Roorkee, and the State Disaster Management and Mitigation Centre.

Falling in Seismic Zone V, which makes it highly sensitive to earthquakes, Dehradun has seen a deluge of high-rise buildings and shopping malls with little measures to ensure that these buildings are quake-resistant.

One can see plots being sold alongside seasonal rivers, even when the mass of land near the river is risky for any construction and even if construction work is carried on, it should be properly designed with columns and beams. If you have a closer look at houses built within the city, most are without columns and beams.

All the more important to ensure that there are more stringent laws to ensure quake preparedness in hospitals and schools. "If one can't predict a quake, one can at least minimise the loss of lives", he added.

A study conducted by scientists from Dehradun-based Wadia Institute of Himalayan Geology, the Indian Institute of Remote Sensing and International Institute for Geo-information and Earth Observations, the Netherlands, had highlighted the threat posed by quakes to buildings in Dehradun.

With the city falling in the seismic zone and a fault line passing through Rajpur, the region is highly sensitive to quakes

An Accident is a unplanned and unwelcome event which interrupt normal activity while Disasters are major accidents which cause wide spread disruption of human and commercial activities. Normally, common accidents are absorbed by the community, but disasters are major accidents and community cannot absorb them with their own resources. Most of the disasters, natural or technological (man made) have sudden onset and give very short notice or not time to prevent the occurrence.

### **Categorization of Emergencies**

As a general practice, emergency situations are categorized into three levels depending upon their magnitude and consequences. These levels are:

#### ***Level-1***

The emergency situation arising in any section of one particular plant/area in the affected section itself with the help of in-house shift staff.

#### ***Level-2***

The emergency situation arising in one or more plants/areas which has the potential to cause serious injuries, property loss and/or environmental damage in the installation.

#### ***Level-3***

If level-2 emergency by virtue of its consequences can spread and affect the nearby community outside the premises, it is termed as level-3 emergency.

A list of probable emergency scenarios applicable to University of Petroleum & Energy Studies, Dehradun is given below:

- Fire
- Explosion
- Earthquake
- Landslides
- Food Poisoning
- Road Accident
- Stampedes during festival

Disaster management is the discipline of dealing with and avoiding risks. It is a discipline that involves preparing for disaster before it occurs, Disaster Management Plan is a master plan containing the emergency response, responsibilities of key members, communication means and response strategies to control a range of major incidents.



## **Aim and Objective:**

The aim of emergency planning is to ensure that the safety of the students and the staff is maintained during an emergency. The emergency management plan is a means by which this can be achieved.

In this unit, we will look at

- ❖ How to identify the hazards in the University
- ❖ How to manage the hazards
- ❖ How to mitigate the effects through planning and effective response
- ❖ This Disaster Management Plan will be the basis to establish policies and procedures which will assure maximum and efficient utilization of all resources on the UPES campus, minimize the loss of life and/or injury to the population, and protect and conserve resources and facilities of UPES during large-scale emergencies considered to be of disaster magnitude.
- ❖ It will provide for the protection of students, faculty, staff, visitors, and material resources of the campus in order to minimize injury, loss of life, and damage resulting from any kind of disaster.
- ❖ The administration of UPES will provide for continuity of management function, damage assessment, -- public and private – and immediate attention to the re-establishment of normal operations so as to support the University's academic mission.
- ❖ To minimize damage of university of petroleum & energy studies.
- ❖ To minimize impact on environment of UPES.
- ❖ To provide maximum possible safety to the emergency response personnel.
- ❖ To inform students, faculties about the risks assessed, safeguards provided.

## **Need for the plan:**

The University is a densely populated place and have so many people that are one of the most vulnerable groups and also its situated in the valley so to reduce this vulnerability particularly for University, it is important to have a university Disaster Management Plan. University also have many resources and are community nodes. Therefore, a University also has responsibility towards its immediate locality, just as the neighbouring community is linked to the University.

## **Planning Principles:**

When developing a University/College/ university emergency management plan, observance of the planning principles mentioned below.

**Simplicity:** The plan shall be concise. Roles and responsibilities shall be clearly stated. Emergency procedure which staff shall be expected to remember and implement shall be kept to a minimum.

**Flexibility:** The plan shall be flexible. Emergency procedures shall still work if key personnel are unavailable on the day, or if a pre planned route to an evacuation assembly area is cut off by the hazard.

**Comprehensive:** It shall describe arrangements for preventing, preparing for, responding to and recovering from the effects of an emergency.

**Decision Making Process:** The plan shall describe the decision making process which will be adopted when an emergency occurs. While each emergency will be different, the decision making process shall remain reasonably consistent.

**Consultation:** The plan shall be derived from consultation with the university community of various levels. One shall see to it that the plan suits and is understood by all in the university. The commitment of individuals to the plan is likely to be greatest when they have been involved in its development.

**Dissemination:** All members of the university community shall be familiar with the content of the plan, and shall be trained in and regularly exercise its procedures. Apart from the university community, the plan shall be shared with the parents of the students so that they too are familiar with the emergency planning of the university and there is no chaos.

**Review:** The plan needs to be reviewed on a regular basis, preferably annually and following any significant emergency, to ensure that it remains workable.

**Co-ordination:** Planning in the university shall be coordinated with other agencies, such as the emergency services and local municipalities, who shall have their own plans linked with the plans of the districts/municipalities/surrounding community.

**Policy:** Policy issued shall be resolved during the planning process. The death of the student inevitably raises issues concerning specially media. The stress could be reduced if local policy issues have been considered in advance.

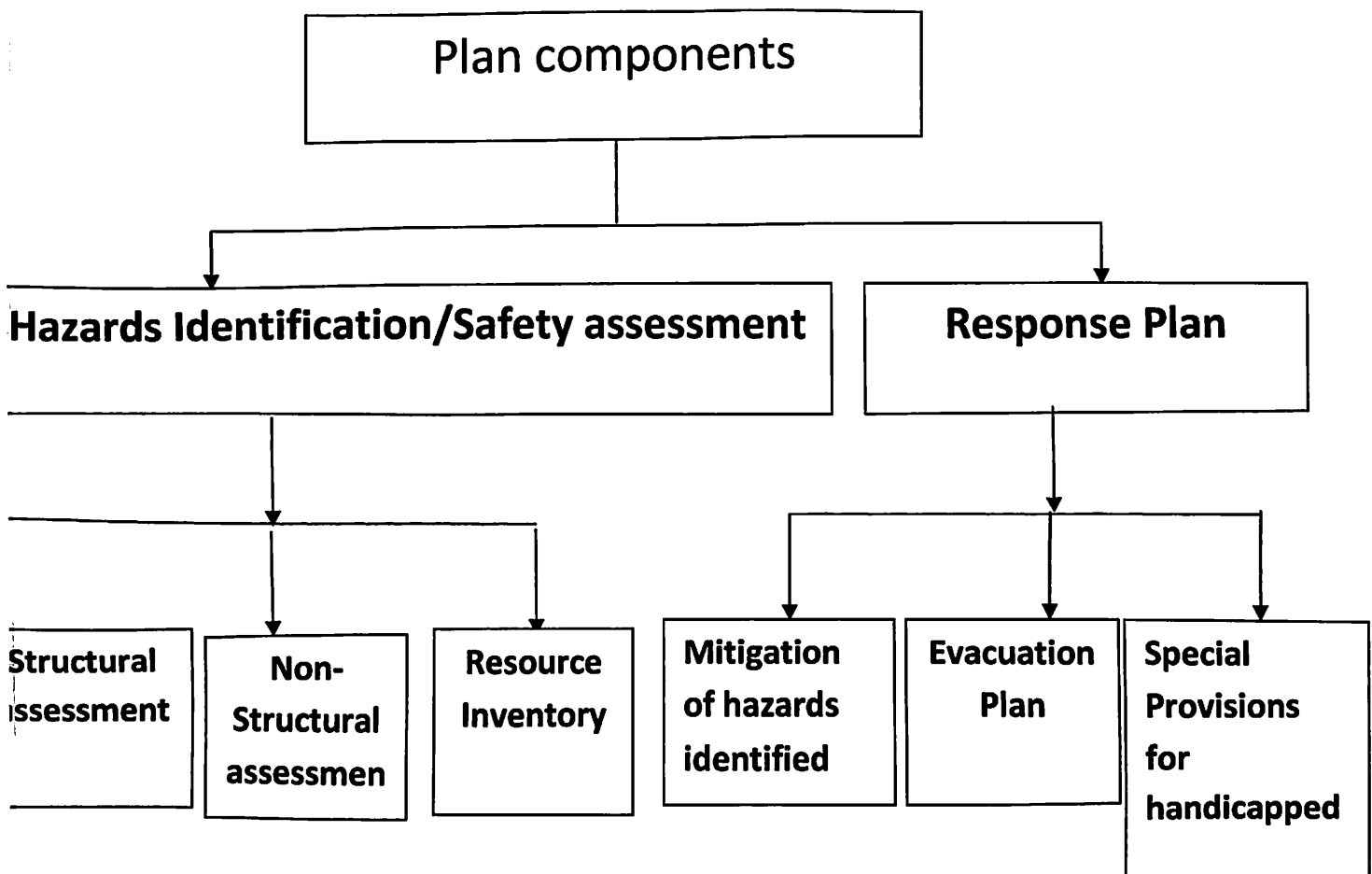
**Consistency:** The plans shall be consistent with the local policies of relevant education authorities. The plan shall not permit a lesser degree of supervision of students during an emergency than regulations required.

**Scope of Responsibilities:** The plan shall describe the scope and the limitations of staff and students responsibilities. The university is responsible for ensuring the ongoing safety of the staff and students for the duration of the emergency. Staff and students shall not be expected to place themselves in danger by combating the emergency themselves.

**Co-operation:** The plan shall also emphasise the role of the university in providing support to the emergency services (i.e. police, fire services, ambulances etc) that are legally responsible for managing the emergency.

The Plan has two components as depicted in the following chart

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While preparing the plan one needs to see to it that the plan prepared has a holistic approach to combat any disaster. A written description of the university and its surroundings shall provide a basis for identifying hazards to which the university might be exposed. Once the hazard has been identified, it become possible to develop preparedness, prevention and a response programme to minimise them.

Not all emergencies can be prevented. Therefore, the plan needs to describe arrangements for responding to those Emergencies that do occur/are at a greater chance of occurring. It shall describe key roles and responsibilities including who will be responsible for coordination, control and communication when responding to an emergency.

As students and Lecturers, there are two very important contributions you can make to reduce disaster risk for yourselves and for your communities:

### **1) Take care of yourself**

Prepare for, mitigate and prevent disasters through a University Disaster Management Plan (UDMP) and at home, through a family disaster management plan. This will ensure that during an emergency, we are free from danger, so that we can be of help to others.

### **2) Spread the word**

Create widespread awareness amongst our families, friends, and neighbourhood and not the least of all, those communities that are lesser privileged than us. Here we are talking about helping others to understand their vulnerabilities, and how to overcome them. We can call this our 'social responsibility' as a student or lecturers, and as a responsible citizen of India.

# PREPARING THE DMP FOR UPES

**Sensitisation meeting for awareness amongst Lectures/ University Management**



**Formation of the University Disaster Management Committee (UDMC)**



**Hazard identification and safety assessment**



**Preparation of the University Disaster Management Plan (UDMP) document**



**Formation and Training of the University Disaster Management Teams**



**Awareness activities & Dissemination of the plan to everybody in the university**



**Conduct regular mock drill and report to UDMC**



**Evaluation of the Plan to improve effectiveness**



# STEPS IN UPES DISASTER MANAGEMENT PLANNING

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## STEP -1

### Sensitisation meeting for awareness amongst Lecturers/ University Management

As a first step towards preparing a UDMP and training university Lecturers, on how prepare a plan, the trainer should organise a sensitisation meeting with the university authority where the following should be present from the university side.

- ❖ Pro-Vice chancellor (PVC)
- ❖ Dean Of COLLEGE OF ENGINEERING STUDIES (COE)
- ❖ Dean Of COLLEGE OF MANAGEMENT & ECONOMICS STUDIES ENGINEERING STUDIES (COM)
- ❖ Dean Of COLLEGE OF LEGAL STUDIES (COL)
- ❖ Administrative Staff
- ❖ All Lecturers
- ❖ All Class representatives
- ❖ All Course Coordinators
- ❖ Head of the security guard
- ❖ Presidents of different clubs



In the presentation following points can be covered:

- ❖ Presentation on the potential hazards of university
- ❖ What preparations a university should do for disaster management
- ❖ Why the university should do these preparation
- ❖ And how can they do it

## **STEP -2**

### **Formation of the University Disaster Management Committee & Groups**

Three groups namely: Co-ordination group, Disaster Awareness group, and Disaster Response group need to be constituted, and their roles and responsibilities defined. We will first discuss about the Co-ordination Group / University Disaster Management Committee.

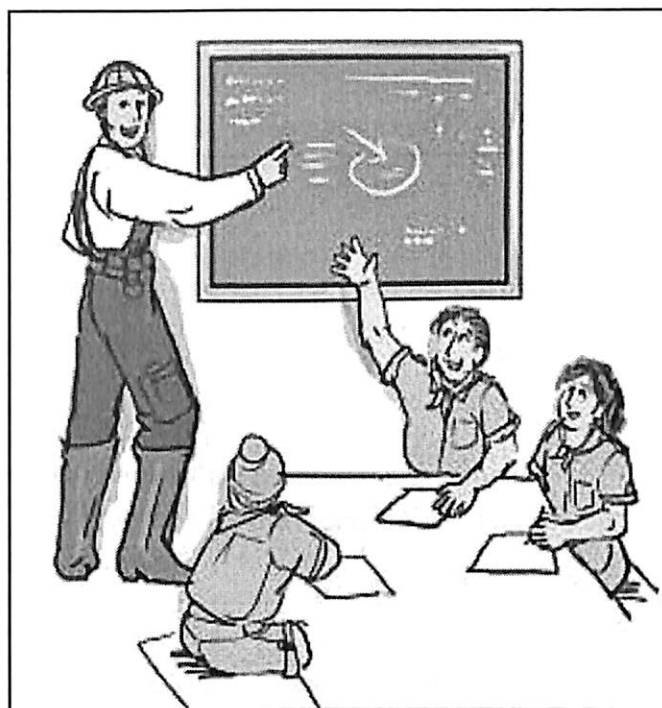
### **University Disaster Management Committee (UDMC) / Co-ordination group**

#### **Member's engine**

- ❖ PVC
- ❖ Dean of COLLEGE OF MANAGEMENT & STUDIES(COM)
- ❖ Dean of COLLEGE OF ENGINEERING STUDIES(COE)
- ❖ Dean of COLLEGE OF LEGAL STUDIES (COL)
- ❖ Administrative staff
- ❖ All course Coordinator
- ❖ 4 Students (Disaster Awareness Group Student Leader, Disaster Response Group Student Leader, Class representative Boy and Girl)
- ❖ Representative of Relief/ Revenue/ Disaster Management Department/ District Administration/ Municipal Corporation
- ❖ Representative of the Fire Services (from Closest Fire Station)
- ❖ Representative of Police (from Closest Police Station)
- ❖ Representative of Health Department
- ❖ A Warden from Civil Defence
- ❖ Representative from Red Cross / Fire Brigade
- ❖ Hostel Warden



- ❖ Administrative/Logistics Officer / Estate Manager from university Office
- ❖ Resident Welfare Association representatives from the local community
- ❖ Locally working NGO representative
- ❖ Market Trader Association representatives from local community
- ❖ Local Doctor(s)
- ❖ Head of the Security



### Roles and Responsibilities of UDMC:

- ❖ The members of the University DMC shall have an understanding of the policy and planning principles, similar to that required for the development of curriculum or a student welfare policy. These members will help the university in preparation of the university disaster management plan.
- ❖ Evaluation of the university Disaster Management plan
- ❖ Carrying out the mock drill twice a year
- ❖ Updating of the plans at regular intervals (at least once a year, and after any significant disaster) to ensure that the plan is workable.
- ❖ Look into the structural safety requirements of the university for various hazards (earthquake, fire, explosion, road accident, landslides etc.). Get the university building assessed for the hazards identified and prompt remedial measures taken, as required.
- ❖ Earmark fund arrangements for carrying out preparedness and mitigation measures in the university through university funds, corporate sectors, civil societies and establishing linkages with various departments and organisations working in the field of disaster management.
- ❖ During a disaster the UDMC shall coordinate the groups and teams.

- ❖ Media management to be carried out by the UDMC
- ❖ Mobilising relief and any external support in case necessary for those who have taken shelter in the university (students and if outsiders)
- ❖ Identify separate shelter places for the university students and also for outsiders in case necessary

**Note:** The committee member's don't need to be experts of emergency management. Expertise from the above mentioned departments like the Fire Services, Police, Health, etc. can be sought through the state and district administration.

## **STEP -3**

### **Hazard identification and safety assessment**

#### **a) Identification of Potential Structural Hazards existing in the area**

Structural safety of the building needs to be assessed with regards to its safety from hazards like earthquakes, landslides, road accident, and stampedes during festival, fire, explosion etc). For this the university authorities need to contact their architect or the nearest local disaster management authority / district administration, which can guide them in getting their building assessed. Is your university building very old? ..... If yes, it is highly likely that the building codes at the time of construction of the university have been updated and the building may not be safe now. Does your university building look safe and strong? ..... If yes, the only way to be certain is to get it assessed by a qualified / trained structural engineer who knows earthquake engineering.

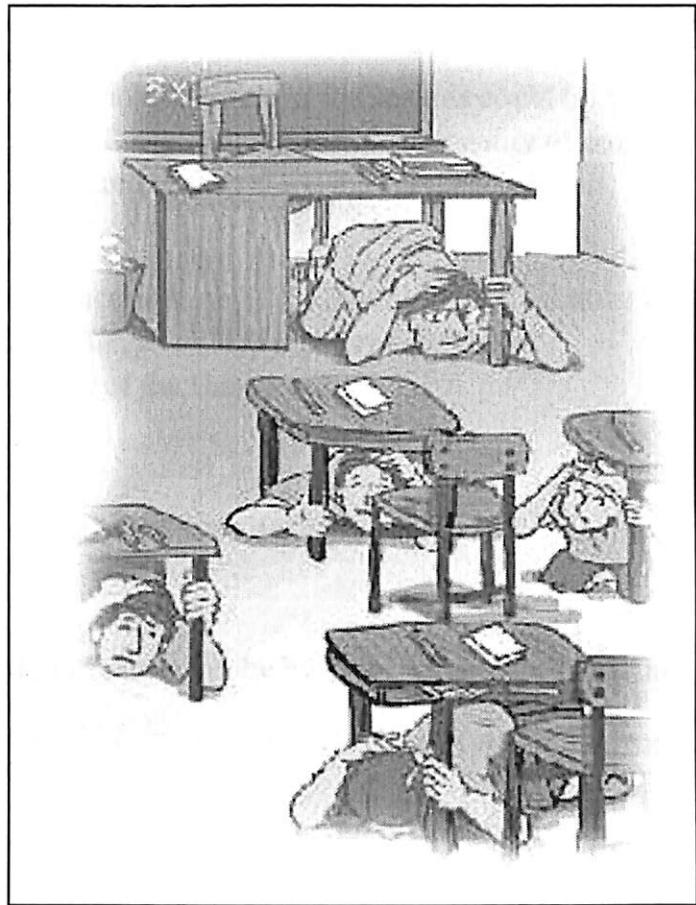
#### **b) Identification of Potential non-structural hazards existing in the area:**

The plan shall identify the potential hazards that frequently occur in that area. It is therefore necessary for us to identify potential hazards to which the University might be exposed. For this a hazard assessment shall be conducted by taking into account the history of disasters that have occurred in that area for the last 20 - 25 years. Based on the hazard assessment, the members of the UDMC will prepare the University Disaster Management Plan. The description shall extend beyond the University and include a description of the neighbourhood in which it is located. This shall include whether the University was located in the urban, residential or industrial environment or a rural and remote area.

A hazard assessment could also be carried out by the students of the University under the guidance of their Lecturers within the University premises and outside in the neighbouring area by taking a walk. Walk the class through the designated evacuation route(s) to the appointed reception area(s) outdoors. Ask students to make mental notes, as they go along, of things that might become hazards during an earthquake/fire. When you reach the designated site, talk about what they noticed or hazards they thought of. A list of such Hazards are below:

- ❖ Power failure (is there emergency lighting?)
- ❖ Halls or stairways cluttered with debris from ceiling tiles or plaster from walls
- ❖ Halls blocked by fallen lockers or cabinets
- ❖ smoke in the hallway
- ❖ exit doors and windows that jam and will not open

- ❖ bricks, glass and debris piled up, outside electrical wires on the ground
- ❖ Suspended ceilings
- ❖ Pendant light fixtures
- ❖ Large windows - either exterior or interior - not protected against Shattering.
- ❖ Tall bookcases or cabinets that may topple because they are not bolted to the wall.
- ❖ Classroom equipment such as T.V., VCR's, Stereos and Slide projector.
- ❖ Stairwells
- ❖ Areas where flammable liquids are stored
- ❖ Labs the bottles used for storing the chemicals are not secured or protected against shattering



***Potential hazards outside the University:***

- ❖ Power lines
- ❖ Trees
- ❖ Areas near buildings that may have debris fall on them parapets, roof tiles, chimneys, glass etc.
- ❖ Routes past concrete block walls
- ❖ Covered walkways
- ❖ Places under which large gas mains run.
- ❖ Areas near chain link fences (Which can be electric shock hazard if touched by live wires.)

When you return to the classroom, discuss with the students how the hazards could be reduced, and/or how they could cope with them if they happened. The seasonality of hazards shall also be listed so that the University is prepared to face it and the students are well prepared to face it.

During hazard assessment the existing coping mechanisms of the hazards identified must be reviewed. If the mechanisms are found inadequate, necessary measures should be incorporated while developing the response plan of the University.

### **c) Points to remember while co-ordinating a survey**

Different classes take up responsibility to do the survey of the building, grounds, and rooms

- ❖ A coordination committee consisting of Lecturers and Class Representative Boy, girl, sports prefects etc collect and collate the information.
- ❖ The areas which would cause problems in an earthquake, flood, cyclone, fire are identified and put up in a public place.
- ❖ Report of the work done rewarded on an occasion.

### **d) Inventory of resources available in the University**

All the resources available in the University need to be listed out like:

- ❖ List of skilled human resources (Lecturers and students having a knowledge on first aid, rescue and Evacuation)
- ❖ List of material resources available in the University such as a stretcher, fire extinguishers, ladders, thick ropes, torch, and communication system, and first aid box, open space in the University premises.
- ❖ Inventory of nearest available critical resources
- ❖ Resources present within the locality to be assessed and recorded for easy referencing along with the details - name, address and telephone number. E.g. Hospitals near the University with details about the number of beds, doctors etc.
- ❖ Make an inventory of

- A. Rooms in the University
- B. Open areas where evacuation is possible
- C. Stairs and lifts locations and uses.
- D. Open verandas and roof tops.



# SAFETY ZONES FOR DISASTER EVACUATION





## STEP -4

### Preparation of the UPES Disaster Management Plan document

#### **a) The physical location and demographic details of the university building and its surrounding environs**

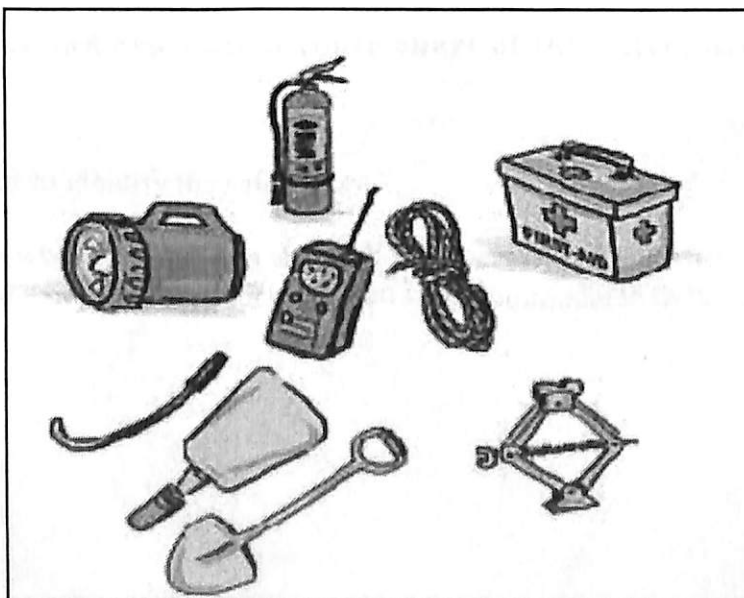
A detailed situational analysis of the university needs to be carried out. This exercise could be carried out by the lecturers and later shared with the students. The map shall indicate the following components:

- ❖ Number of class rooms in the university ( RCC, Tiled)
- ❖ The staff room in the university
- ❖ The laboratories in the university (physics, chemistry, environment etc)
- ❖ The play grounds or open space within the university premises

#### **b) Resource mapping showing the resources available within the University**

- ❖ The human skills present in the class (students and lecturers) to be identified
- ❖ Material resources available in the university such as:

- A. Stretcher
- B. Fire extinguishers
- C. Ladders
- D. Thick ropes



- E. Torch
- F. Communication system
- G. First aid box
- H. Temporary shelters (tents and tarpaulins)
- I. Open space in the university premises.

**c) Map showing nearest available critical resources:**

This can be show the direction and the distance to the nearest available resources like the fire service station, hospital/ Primary Health Centre/Dispensary/ private clinic/ medical college/ medical shop, Red cross, Ambulance, office of the district collector, police station, etc.

**d) Vulnerability mapping and coping mechanisms showing the vulnerable location of the university building**

- ❖ Number of students in each class (male, female, physically challenged, sick and ailing). To be demarcated on the map of each class room.
- ❖ The vulnerable classrooms in the university
- ❖ Taps (for drinking water) located in the vulnerable pockets within the university premises
- ❖ Main switch board and the Electrical wires which are vulnerable
- ❖ If the university are on slopes of the mountain then based on the soil condition the vulnerability is to be decided.
- ❖ Identifying the low-lying areas within the premises.
- ❖ Coping mechanisms for the hazards
- ❖ identified should be listed out

**e) Safe places and evacuation route chart of the university**

In this map we need to identify the safe places

- ❖ Safe places where the students and staff members can take shelter (one need to mention the number of students who can be accommodated in the area identified).



### **Evacuation route:**

Use a detailed map of the university showing the all stairs, doors, and windows.

- ❖ The exits shall be clearly demarcated in the map in case of a fire / earthquake.
- ❖ Show the various exit routes by arrows on the map.
- ❖ Post the map at various points in the university mark the location on the map with “You are here” in bold and red. This will help give an orientation of the nearest exits and the evacuation route to anyone who looks at the map.
- ❖ Also work on developing alternative exit routes in case the main exits are damaged / not accessible.

## **STEP -5**

### **Formation & Training of the Disaster Management Teams**

#### **DISASTER AWARENESS GROUP**

##### **1. Awareness Generation Team**

###### **Members**

- ❖ Lecturers from college of engineering
- ❖ Lecturers from college of management studies
- ❖ Lecturers from college of Legal studies
- ❖ Class representatives
- ❖ Head of the security guard
- ❖ Students active in the creative arts and public speaking

The members of this group should be creative and have an inclination for art and culture. While developing the materials for awareness generation, kindly note that the cultural background of the area should be kept in mind. Both the rural and the urban community should be targeted, based on where the university is located.

###### **Materials Required**

- ❖ All the IEC (Information, Education and Communication) material available with the district administration and other authorities in the form of posters, pamphlets, films, etc. on disaster management.
- ❖ Additional material will be developed by this team simple do's and don'ts, street plays, posters, cartoon strips, songs, etc.
- ❖ The team will require:
  - a) Map of the university
  - b) Evacuation Plan
  - c) Information on number of students and classes
  - d) Information on number of employees
  - e) Contact information of nearest fire station, civil defence warden(s), nearest medical facility, local Red Cross/Fire brigade
  - f) Contact information of the RWA representatives in the immediate neighbourhood.

## Training Required

- ❖ A thorough orientation on different aspects of Disaster Risk Management.

## Roles and Responsibilities:

### Before the disaster

- ❖ Develop IEC materials posters, pamphlets, simple tips on do's and don'ts in different disasters, street plays
- ❖ Conduct awareness generation activities systematically in the whole university, targeting different classes and also staff and lecturers.
- ❖ Conduct awareness generation activities in the neighbouring areas in coordination with the RWA representatives, the local police station, and any local NGOs.
- ❖ Organise innovative activities and exercises for students and lecturers on Disaster Management to ensure continuing interest on the issue during normal time. The university can organize:

- Art Work: Posters, bulletin boards, exhibitions, wallpaper, cards, bookmarks etc.
- Creative writing competitions Essays, Poetry, Slogans
- Drama Street plays
- Song writing
- Debates



- ❖ Organise demonstrations on fire safety, first aid, and search and rescue through linkages with the appropriate agencies.
- ❖ Assist in organisation of the Evacuation Drills for various hazards
- ❖ Work with the Warning & Information Dissemination Team in making students, faculty, and staff aware about the different warning levels and the colours and locations of flags / signs that will be used.

### **During the disaster**

- ❖ Duck, cover and hold at first sign of earthquake. Hold on to furniture legs if furniture moves. If outside, move away from buildings.
- ❖ In case of other hazards, assist the Evacuation Team in evacuation of the university building.
- ❖ For a chemical hazard, assist the Warning Team in disseminating the required safety tip to the entire university.

### **After the disaster**

- ❖ Disseminate information on do's and don'ts so that the situation doesn't worsen, in coordination with the Warning and Information Dissemination Team.

## 2. Warning and Information Dissemination Team

### Members

- ❖ Computer Lecturers (or a lecturers who is familiar with computers and surfing the internet)
- ❖ Electronics lecturers
- ❖ Geology lecturers
- ❖ 1-2 parents (preferably working in IMD, CWC, Office of the District Magistrate, Police, etc.)
- ❖ 4-6 students (know how to operate a VHF set)



### Materials required

- ❖ Computer with Internet access and e-mail, telephone, fax machine, radio, television, mobile phone, VHF set .
- ❖ Siren
- ❖ Flags of different colours
- ❖ Battery operated radio and batteries
- ❖ Contact information of the various local authorities district magistrate, police, fire services, health department, Red Cross, etc.

### Training Required

- ❖ A thorough orientation on different types of hazards
- ❖ Training in the operation of VHF wireless equipment.

- ❖ Familiarity with the Internet and disaster information websites.

## **Roles and Responsibilities:**

### **Before the disaster**

- ❖ Monitoring and taking regular updates from TV/ Radio/Internet on the potential hazard that university can face, e.g. weather updates in case of floods, landslide, cyclones etc.
- ❖ Inform the university authorities of any impending hazardous situation
- ❖ Maintain contact with district authorities and communicate any directions to the university authorities
- ❖ Post warning signs / flags of appropriate colour for different warning level at prominent and designated places in the university.
- ❖ Disseminate the information to all the classrooms and lecturers
- ❖ Coordinate with the other teams and inform them about the latest weather / warning situation

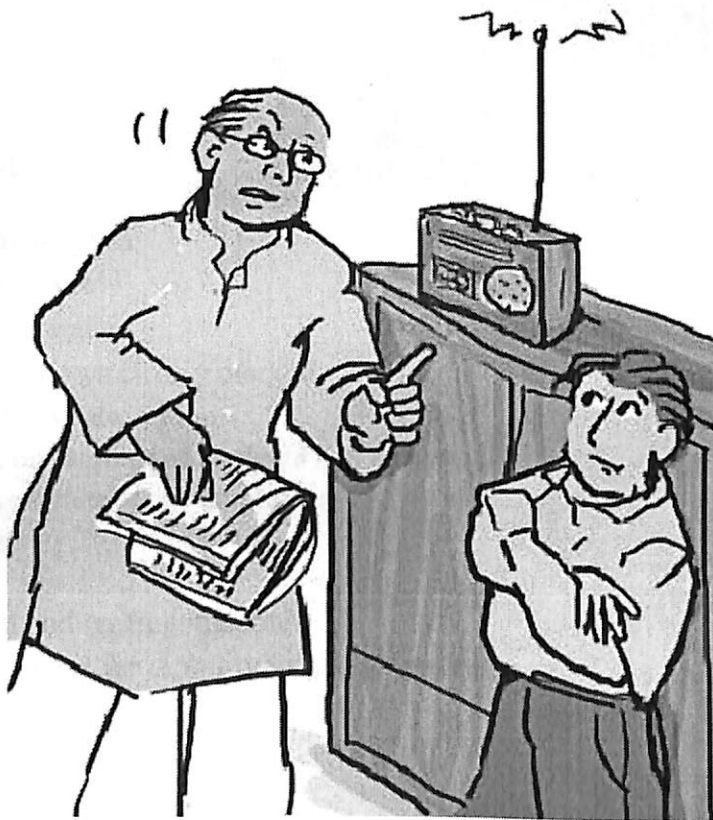
### **During disaster**

- ❖ Duck, cover and hold at first sign of earthquake. Hold on to furniture legs if furniture moves. If outside, move away from buildings
- ❖ Cross check the warning received from various sources
- ❖ Warning the university in case of an emergency by either ringing a bell/siren or on the public address system or through a messenger, whatever is available in the university
- ❖ Reporting to the university disaster management committee about the disaster in the university building
- ❖ Reporting to the government emergency response departments (Fire, SDM, Police etc.)
- ❖ In case of the university being used as a shelter, inform the shelter staff about the latest updates and weather reports.

### **After disaster**

- ❖ Continue monitoring the various information sources

- ❖ Keep reporting on the situation of the disaster to all concerned teams and coordinate with them
- ❖ Disseminate safety tips in coordination with the Awareness Generation Team
- ❖ Work with the Incident Management Team from the district administration in preparing updates and disseminating information



# DISASTER RESPONSE GROUP

## 1. Evacuation Team

### Members

- ❖ All Lecturers
- ❖ All Class representatives
- ❖ Prefects

### Materials Required

- ❖ A detailed map of the university with the different exits, stairs, doors, and windows clearly marked.
- ❖ University Evacuation Plan
- ❖ Information on number of students and classes
- ❖ Information on number of employees
- ❖ Master keys
- ❖ Siren
- ❖ Signs to post and writing materials
- ❖ Special equipment for mobility-impaired students



### Training Required

- ❖ Training in evacuation procedures through local fire services



## **Roles and responsibilities:**

### **Before a disaster**

- ❖ Check the exits
- ❖ Identify the open areas where the university can assemble after evacuation in an emergency
- ❖ Make sure there are no hazards present for evacuating to the designated area
- ❖ Make sure that necessary supplies are accessible
- ❖ Assist the Planning Committee in developing options in the event evacuation is required during inclement weather
- ❖ Be prepared for special equipment needs for mobility-impaired students
- ❖ Any special response procedure for special needs students must be tested during drills
- ❖ Conduct regular drills in coordination with the other teams and practise the different evacuation procedures used in different hazards
- ❖ These different procedures have to be disseminated to the entire university and separate drills to be conducted for them

### **During disaster**

- ❖ Duck, cover and hold at first sign of earthquake. Hold on to furniture unless if furniture moves. If outside, move away from buildings
- ❖ Evacuate in an orderly fashion as practised in the drills

### **After disaster**

- ❖ Ensure that emergency assembly area is accessible and safe
- ❖ Determine if any additional assistance is required for evacuation.
- ❖ Take roll call and report group status to Administrator (Emergency Operations Centre).

## 2. Search and Rescue Team

### Members

- ❖ Sports instructor
- ❖ Civil Defence Trainer
- ❖ Fire Service representative
- ❖ 1-2 parents (preferably from the Armed / Paramilitary forces / Police / Fire Services / Civil Defence)
- ❖ Able-bodied students

### Materials Required

- ❖ A detailed map of the university with the different exits, stairs, doors, and windows clearly marked.
- ❖ Information on number of students and classes
- ❖ Information on number of employees
- ❖ Torches with spare batteries
- ❖ Master keys
- ❖ Hard hats
- ❖ Stretchers, ropes and ladders

### Training Required

- ❖ Training through local Civil Defence / Fire Services in basic search and rescue techniques



## **Roles and responsibilities:**

### **Before a disaster**

- ❖ Make sure needed supplies are on site
- ❖ Make sure team members stay current with their training
- ❖ Any special response technique for special needs students must be tested during drills

### **During disaster**

- ❖ Duck, cover and hold at first sign of earthquake. Hold on to furniture legs if furniture moves. If outside, move away from buildings
- ❖ Start rescue and search operations in case of another disaster

### **After disaster**

- ❖ According to pre-established pattern, check (visually, vocally, physically) every room in the building.
- Report location of injured to First Aid Team.
- Report location of other problems to UDMC.
- ❖ Look for obvious structural problems/significant structural damage as sweep is made through the building(s)
- Report any damage to the Administrator (EOC).

### **3. First Aid Team**

#### **Members**

- ❖ University Doctor
- ❖ Fire Brigade / Red Cross volunteers
- ❖ Civil Defence Volunteers
- ❖ 1-2 parents (preferably from the Medical / Paramedical profession)
- ❖ Students interested in health issues

#### **Materials Required**

- ❖ A medical kit for the entire university
- ❖ Classroom first aid kits
- ❖ Health Cards containing information on Special medicines being regularly taken by any student(s) / employees
- ❖ Emergency Cards containing information on medical resources in the area

#### **Training Required**

- ❖ Training through local Civil Defence / Fire Services / Fire Brigade / Red Cross / Health Department in basic first aid techniques and CPR (cardio-pulmonary resuscitation)

### **Roles and responsibilities:**

#### **Before a disaster**

- ❖ Make sure that first aid supplies are up to date and always complete
- ❖ Keep emergency cards and health cards up-to-date
- ❖ Ensure training for all new members and refresher training for existing members (every year)
- ❖ Be aware of special medical requirements of students / employees and ensure that some stock medication (maybe 1-2 days medicines) are kept in the university and regularly updated
- ❖ Participate in regular drills

## During disaster

- ❖ Duck, cover and hold first sign of earthquake. Hold on to furniture legs if furniture moves. If outside, move away from buildings.



## After disaster

- ❖ Administer first aid and record all cases and treatments.
- ❖ Determine need for further medical assistance. Coordinate requests for assistance through the Administrator.
- ❖ Assign First Aid Team members to accompany Search and Rescue Teams during their search operations.

## 4. Fire Safety Team

### Members

- ❖ Lecturers (2)
- ❖ 1-2 parents (preferably from fire services / civil defence)
- ❖ Students (10)

(Teams comprising 1 lecturer and 5 students each may be formed)



### Materials Required

- ❖ Fire extinguishers
- ❖ Hard hats, Gloves
- ❖ Map of university showing location of all exits, doors and windows, the electric main switches and the fire extinguishers
- ❖ Training Required
- ❖ Training through local Civil Defence / Fire Services in basic fire fighting and fire safety techniques

## **Roles and responsibilities:**

### Before a disaster

- ❖ Make sure fire-fighting equipment (extinguishers, etc.) is in working order and that staff has received training in its use
- ❖ Ensure that all non-structural earthquake hazards that can be cause of fire (i.e. Chemical Laboratories, Cafeteria Kitchens, hot water tank) are properly secured
- ❖ Coordinate with the UDMC in ensuring that a fire safety assessment of the university premises is conducted by the local fire department and that the recommendations are implemented

### During disaster

- ❖ Duck, cover and hold at first sign of earthquake. Hold on to furniture legs if furniture moves. If outside, move away from buildings.

### After disaster

- ❖ Check for and confirm existence of fire. Report location to Administrator (EOC) and Site Security team
- ❖ Control fire, if possible (ensure personal safety)
- ❖ Look for conditions that may cause a fire to develop and seek maintenance staff assistance in removal of condition.
- ❖ In case of electrical fire, turn off the electric main switches

## 5. Site Security Team

### Members

- ❖ University Estate Manager
- ❖ University Security Staff
- ❖ Local Police Station representative
- ❖ 1-2 parents
- ❖ Lecturers (1)
- ❖ Students (5)



### Materials Required

- ❖ Map of facility / university
- ❖ Evacuation Plan
- ❖ Master keys
- ❖ Signs to post and writing implements
  
- ❖ Identification badge or armband

### **Roles and responsibilities:**

#### Before a disaster

- ❖ Work with the Planning Committee, the University Administrator and the District authorities to establish a release policy and communicate this policy to parents and staff.
- ❖ Develop procedures for how release will be handled.

#### During disaster

- ❖ Duck, cover and hold at first sign of earthquake. Hold on to furniture legs if furniture moves. If outside, move away from buildings.

#### After disaster

- ❖ Lock all external gates and doors, and secure buildings. (Note: Be sure locked doors can be opened from inside to prevent entrapment.)
- ❖ Station one team member at main gate/front door to deal with community/parents. Have that member route fire, police, rescue and medical to area of need.
- ❖ Keep the Administrator (EOC) informed of activities. Release students according to pre-arranged policy.

## 6. Bus Safety Team (for each bus)



### Members

- ❖ Lecturers going in the respective buses
- ❖ Student getting down on the last stop
- ❖ One senior most student
- ❖ Trained Security guard

### Materials Required:

- ❖ Emergency Cards containing contact information of the local authorities' district magistrate, police, fire services, health department, Red Cross, etc.

### Training Required:

- ❖ Basic First Aid training (if no first aid team member goes in a particular bus) through local civil defence / fire services / Fire Brigade / Red Cross



## **Roles and responsibilities:**

### **Before a disaster**

- ❖ Know university policy for procedures in the event a damaging earthquake occurs while buses with students are enroute to or from university.
- ❖ Assist UDMC in providing 2-way radio communications capability between buses and university Administrators.
- ❖ Carry emergency cards with information on contact numbers for the university EOC, and important district contact numbers (district administration, police, fire, medical, etc.)
- ❖ Take First Aid Training.
- ❖ Develop plans to assist special needs students.

### **During disaster**

- ❖ Pull over to side of road if possible in the open. (Not under an overpass or bridge or alongside buildings or trees.)
- ❖ Instruct the passengers to crouch down between seats and in isle until shaking has stopped.
- ❖ Ensure special needs students are assisted.

### **After disaster**

- ❖ Assist any injured students providing First Aid as needed.
- ❖ Establish communications with University EOC
- ❖ Implement university policy for earthquake occurrence while students are enroute to or from university
- ❖ If condition of bus and transportation routes, allow movement of bus proceed cautiously.
- ❖ If crossing a bridge is necessary; stop bus, get out and physically inspect bridge if damage is apparent to make judgment that bridge is safe for bus passage. If not, follow established university policy regarding the continued movement/ release of the students.

## **STEP -6**

### **Dissemination of the plan to everybody in the university**

It is important that after plan preparation the plan is disseminated to its participants and university students through innovative and interesting activities like: Art Work, Creative, Poetry writing, Slogan writing, Drama, Games and Sports, Rescue drill, Evacuation drills, simple quickness of Reflexes games, Memory games and observation games etc.

## **STEP – 7**

### **Conduct regular mock drills**

Mock drills are conducted to train students and lecturers and to test the various elements of your response plan in order to evaluate and revise it. During a disaster, life-protecting actions must be taken immediately. There will not be time to decide what to do next; everyone must already know how to react appropriately. After a disaster, further life protecting actions such as emergency evacuation or first aid administration may be necessary; well trained staff and students will guarantee that these crucial steps are taken as quickly as possible. Drills and exercises are an extremely important part of your preparedness plan because they

- 1) Teach students, staff and parents how to respond to the complications of an actual disaster, and
- 2) Help you evaluate how well all parts of your emergency plan work together, and how well your staff and students have been trained.

### **1. Safety Considerations**

Explain to the class that if there is a strong earthquake, each student's first responsibility is for his or her own personal safety. Every student should learn, however, how to help someone else who is injured.

Present some "what if" questions to provoke discussion.

- ❖ What if the lecturer is injured?
- ❖ What if a student is cut by shattered glass and is bleeding?
- ❖ What if someone is hit by a falling light fixture or heavy object and knocked out?
- ❖ What if a student is very upset by the earthquake?

## **2. Emotional Considerations**

Lead a discussion with the students about the reactions they may have to a disaster. Mention that it is normal to feel very frightened, worried, or even physically sick. Some people respond to the fear by crying and some by laughing. Have the students talk about what they can do after disaster to help themselves and their classmates feel less scared and worried.

It may take a long time for parents or caretakers to get to the university, so everyone should be prepared to wait patiently. Students may be very concerned about their parents or siblings; they may in fact be "worried sick". Have students discuss what they can do to help each other pass the time and not worry so much. Point out that if their family has made a "Family Disaster Plan", they will have a better idea of what to expect from each family member.

## **3. Drill**

### **Earthquake**

- ❖ Practice drop, cover, and hold
- ❖ Evacuate classroom in less than 1 minute without pushing or falling.
- ❖ Evacuate university in less than 4 minutes using different exits.
- ❖ Look out for friends.
- ❖ Stay away from weak areas.
- ❖ Help those who need assistance.
- ❖ Escort young students or elders.



### **Fire/ Chemical Accident / Drill**

- ❖ The need to prepare for sudden accidents needs

awareness and sufficient knowledge.

- ❖ To know Why and how to handle an accident is important
- ❖ Information.
- ❖ Write what to do clearly in the Laboratories and Kitchen area in the university  
Practice mock drills every month Quiz the students every week on what they would do if

- i. The chemical in the test tube caught fire
- ii. The gas was leaking and someone lit a match.
- iii. The acid splashed on the floor.
- iv. Glass broke
- v. Someone drank nitric acid by mistake

## STEP – 8

### **Evaluation and Updating of the Plan to improve effectiveness**

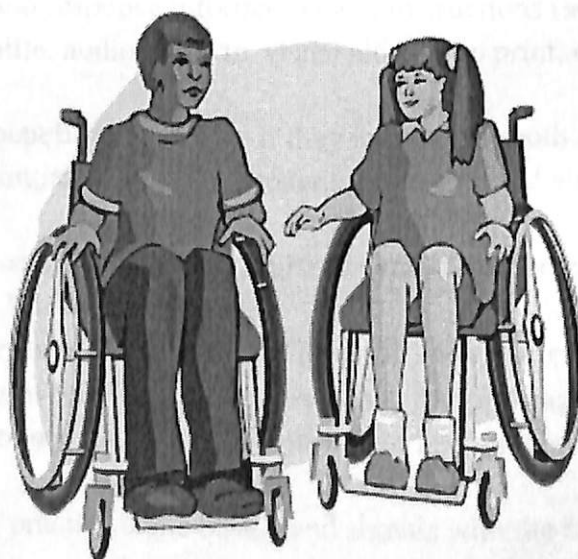
The university plan needs to be periodically evaluated and updated. The suggested period for plan updating is quarterly. This is the responsibility of the UDMC to make sure that the plan is effective and is taken seriously by all concerned. First mock drill when conducted in any organisation will have many loop holes. This drill needs to be evaluated and made more efficient. Following check list can be used to evaluate the university plan: (refer given check list in the project).

### **Earthquake Considerations for students with special needs**

One of the segments of the university population that has been left out of the written university guidelines for earthquake preparedness has been those students with special needs. Students with diabetes, hypertension or any of the maladies that require special diets, daily periodic medications or special equipment and supplies in order to sustain life, activities, dignity or reasonable comfort have not been given adequate considerations in planning for disasters that cause isolation. What could be a mere inconvenience for able bodied students could become a major threat to the students who have special needs.

It is the objective of this appendix to provide major considerations that students with special needs should have in earthquake preparedness, response and recovery planning. In some cases, such considerations could mean the difference between life and death, during and after, an earthquake.

Although some of the following considerations have been provided in above Sections it is felt that by providing all considerations in this appendix it will emphasize their importance and at the same time provide a document that concentrates them for the review of university emergency planners, rather than their having to review the total in order to access them.



## **BEFORE THE EARTHQUAKE**

- ❖ Evacuation plans must provide for problems involved in students with mobility, visual and hearing impairments. Special evacuation transportation provisions may be necessary - both from the university building to the assembly area(s) and away from the university area. And plans must also address assistance that will be provided to mentally retarded students during and after the earthquake.
- ❖ Special needs students should have a back-up supply of vital medication, equipment or supplies with them, at university or enroute. Those students or their Lecturers should be prepared to bring the extra medication or supplies if evacuation from the university premises is ordered.
- ❖ Parents or guardians of these students should be consulted concerning care considerations if the student is isolated at university for either a short term or long term basis.
- ❖ These students should have in their possession an individual emergency card describing their special needs. The cards should list information such as; disability, medications and their application frequencies, mobility constraints, attendant needs allergies, primary physician, etc.
- ❖ Any power requirements for special sustaining equipment, if normal power is off for a long period of time, should be considered.
- ❖ Assignments must be made to a staff member or a special team along with training for managing the special needs of these students.
- ❖ Allow for individual self sufficiency of these students as much as possible by getting them involved in preparedness and response activities. Include in response planning obvious ways in which special needs students can assist others in response to disastrous conditions - include them in your drill. Many of the special needs students can learn and administer first aid.
- ❖ Also communicate preparedness and response information and instructions (according to need) to these students with braille, audio cassette, visual aids, large print, etc. Don't let them out of the process.
- ❖ Alarm systems for fire, etc. will benefit most people if they incorporate both audible and visual elements. The hearing impaired and deaf students would be best alerted by flashing light alarms.
- ❖ Emergency back-up lighting systems, especially in stairwells and other dark areas would benefit those students with limited visual acuity.
- ❖ Students with hypertension, dyslexia or learning disabilities will have difficulty reading complicated directions for evacuation or response plans. Simple diagrams or pictures will give non-reading or overstressed students sufficient information to get to safety.
- ❖ Hearing impaired students should practice some basic hand signals with the Lecturers and other students for emergency communication.

- ❖ Mobility impaired students should practice moving their wheel chairs or having them move into doorways (or other designated safe area), locking their wheels and covering their heads with a book or with their arms or hands.
- ❖ Partnerships should be established between the able bodied and special needs students. The able bodied partners should be prepared (and practice during drills) to assist the special need student.
- ❖ Rescue teams should be made aware of the best way to rescue special needs students. As an example, mobility impaired students should be allowed to instruct rescue team members on the best way to move them from the hazardous area. The fireman's carry may be dangerous to someone with respiratory problems.
- ❖ Special response provisions may have to be made for ensuring duck and cover protection for these students. Barriers to earthquake safety are highly individual for them and accommodation plans may have to fit the requirements. The guidance provided by this document should be modified to fit each special situation of each special needs student. **NOTE: ANY SPECIAL RESPONSE PROCEDURE MUST BE TESTED DURING EARTHQUAKE DRILLS.**

## DURING THE EARTHQUAKE

Special needs students or able bodied partners should implement special duck and cover actions. An example; mobility impaired students should know how (through practice) to get in doorways, lock wheel chair wheels and cover head with book, arms or hands.



## AFTER THE EARTHQUAKE

- ❖ Hearing impaired or deaf students need face to face contact in order to read lips. Writing on a note pad is only practical if there is enough light to see.

- ❖ For mobility impaired students, evacuation by themselves may be extremely difficult or impossible because of obstacles in their paths or because electric dependant machines are not functioning (i.e., elevator). Special pre planned assistance must be provided.
- ❖ Any special medications, supplies and equipment for the special needs students must be transported with them during evacuation.
- ❖ If evacuation from university area is called for, utilize special transportation arrangements.
- ❖ If special needs students, for some reason, become separated from university authorities during evacuation, they should inform other authorities of their special needs as soon as possible so that proper considerations can be provided.
- ❖ Re-establish special power requirements for the equipment of special needs students as soon as possible.
- ❖ Rescue of special needs students should be accomplished utilizing special techniques as practiced.



# EMERGENCY MANAGEMENT PLAN CHECKLIST

Location.....

Date.....

**Yes**      **Remarks**

- Have the emergency numbers been confirmed  
With the Concerned departments
- Are the emergency contact numbers prominently  
Displayed on the plan
- Does the plan clearly specify procedures for  
Reporting emergencies to the government  
Services and the relevant education authority
- Are the potential risks within and up to a kilometre  
From the workplace identified?
- Does the plan clearly mention about the evacuation  
Plan ?
- Are the roles and responsibilities of key personnel's  
Clearly defined task force team leaders, Lecturers  
Staff and students, guards.
- Are the staff responsibilities to account for and  
Supervise students during and following the emergency  
Clearly described?
- Does the plan address the students with special physical,  
mental and medical needs?

• Does the plan describe about how the staff will be trained  
And when exercise will be conducted?

• Has the plan been endorsed by local police and fire brigade?

• Are arrangements for reviewing the plan described?

**UNIVERSITY EVACUATION PLAN SHOULD GIVE DETAILS OF  
THE FOLLOWING**

TO BE FILLED BY UNIVERSITY AUTHORITIES ONLY

NAME OF UNIVERSITY.....  
 ADDRESS.....  
 OWNED BY.....  
 MAINTAINED BY.....  
 TOTAL NO. OF STAFF.....  
 TOTAL NO. OF STUDENTS.....  
 TOTAL NO. OF CLASSROOMS.....  
 TOTAL NO. OF LABORATORIES.....  
 OTHER ACTIVITY ROOMS.....

**BUILDING WISE DETAIL**

	<b>BUILDING NAME</b>	<b>NO OF ROOMS</b>	<b>NO OF CLASS ROOMS</b>	<b>AGE GROUP OF STUDENTS</b>	<b>TYPE OF ROOF CONSTRUCTION</b>	<b>AGE OF BUILDING</b>
<b>BLOCK-I</b>	Low faculty block					
<b>BLOCK-II</b>	Chitrakoot					
<b>BLOCK-III</b>	Parijaat					
<b>BLOCK-IV</b>	Academic block					
<b>BLOCK-V</b>	Hostel					
<b>BLOCK- VI</b>	R & D block					
<b>BLOCK-VII</b>	Placement Block					
<b>BLOCK-VIII</b>						

**DETAIL OF OPEN SPACES**

S.NO	TYPE OF OPEN SPACE	APPROX SIZE (L XB)	ACCESSIBILITY FROM ROAD
1.	Play Ground		
2.	Academic block open space		
3.	Nescafe		
4.	Parking		
5.	Amphi theatre		

**TEAM—I: UNIVERSITY DISASTER MANAGEMENT COMMITTEE**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—II AWARENESS GENERATION TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—III WARNING AND INFORMATION DISSEMINATION TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—IV EVACUATION TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—V SEARCH & RESCUE TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—VI FIRST AID TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—VII FIRE SAFETY TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—VIII SITE SECURITY TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—IX BUS SAFETY TEAM**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**TEAM—X TEAM FOR STUDENTS WITH SPECIAL NEEDS**

S.NO	NAME	DESIGNATION	CONTACT NOS.	
			(O)	Res./Mobile

**DRILLS CONDUCTED**

S.NO	NAME OF DRILL	DATE	DRILL WAS CONDUCTED	NO. OF PARTICIPANTS
1.	DROP COVER HOLD DRILL			
2.	EVACUATION DRILL			
3.	SAFETY CONSIDERATION			
4.	EMOTIONAL CONSIDERATION			
5.	TERACHERS TRAINING			

- ❖ Prepare floor wise building plans and display in corridors and other important areas.  
Mark Evacuation routes on this map.
- ❖ Attach a copy of the following maps along with document.
- ❖ Resource Map
- ❖ Vulnerability Map
- ❖ Safe Places and Evacuation Route Map



## **Conclusion:**

- ❖ Prepare floor wise building plans and display in corridors and other important areas. Mark Evacuation routes on this map.
- ❖ Vulnerability mapping and coping mechanisms showing the vulnerable location of the university building shall be prepare
- ❖ Map showing nearest available critical resources shall be prepare
- ❖ Physical location and demographic details of the university building and its surrounding environs shall be done
- ❖ Safe Places and Evacuation Route
- ❖ Prepare emergency management plan checklist
- ❖ Prepare site security team
- ❖ Prepare first aid and rescue team
- ❖ Prepare evacuation team
- ❖ Awareness generation team shall be made
- ❖ Resource mapping showing the resources available within the University shall be prepared
- ❖ University disaster management committee/coordination group shall be made
- ❖ Sensitisation meeting for awareness shall be done time to time amongst lectures and university management
- ❖ Identification of Potential Structural Hazards existing in the area
- ❖ Identification of Potential non-structural hazards existing in the area

- ❖ The plan is disseminated to its participants and university students through innovative and interesting activities like: Art Work, Creative
- ❖ Mock drills are conducted to train students and lecturers and to test the various elements of your response plan in order to evaluate and revise it.
- ❖ The university plan needs to periodically evaluated and updated. The suggested period for plan updating is quarterly.