

Safety Engineering and Disaster Risk Management

BEG 455 CI

Year:4

Semester:II

Teaching Schedule			Examination Scheme					Total Marks
			Final		Internal Assessments			
			Theory		Practical		Theory Marks	Practical Marks
L	T	P	Duration	Marks	Duration	Marks		
2	1	0	3	80	--	--	20	--
								100

Course Objectives:

This subject has been designed to impart the knowledge to civil engineering students regarding safety in their profession and also the disaster management. After completion of this course, the students will be able to;

- Explain the need of safety in civil engineering works,
- Identify various types of hazards and implement the preventive measures,
- Explain the role of various level of workers and officials, regarding safety,
- Identify various types of disaster and implement the preventive measures

Course content:

1.0 Introduction to Safety Engineering

(3 hrs)

- Introduction to safety engineering and its Scope
- Interrelationships between human/machinery / environmental elements
- Impact of human and machine characteristics on safety
- Safety control devices; Signs, Signals, Instructions and Safety Codes

2.0 Attitude Towards Safety

(2 hrs)

- Attitude towards safety
- Attitude Survey
- Value of safety survey
- Report from safety personal
- The interface between safety problems and concerned parties

3.0 Basic Safety Engineering: Hazard Identification

(5 hrs)

- Mechanical Energy Hazards: Thermal Energy Hazards
- Electrical Energy Hazards: Acoustic Energy Hazards
- Chemical Energy Hazards: Radiant Energy Hazards

3.4 Kinetic (Impact) Energy Hazards: Air/Land/Sea Energy Hazards

3.5 Potential (Stored) Energy Hazards: Biological Energy Hazards

4.0 Basic of Safety Engineering: Hazard Evaluation (1 hrs)

4.1 Acceptable vs Unacceptable Risk

5.0 Basic of Safety Engineering: Hazard Control (4 hrs)

5.1 The First Cardinal Rule of hazard control

5.2 The Second Cardinal Rule of hazard control

5.3 Passive vs Active Hazard Control

5.4 The Third Cardinal Rule of hazard control

6.0 Safety Performance (4 hrs)

6.1 Injury Frequencies Survey (ISR-IFR).

6.2 Factors to be considered for Appraising Plant Conditions

7.0 Safety and Health Standards (3 hrs)

7.1 Health hazards in the construction industries

7.2 Government standards of safety and health

7.3 Development of self applied standards

7.4 Regulatory standards

7.5 Plant standards

8.0 Industrial Safety (4 hrs)

8.1 Introduction

8.2 Employer Liability Laws

8.3 Workmen's compensation Laws

8.4 Agencies rendering safety services

8.5 Industrial Relations, Trade Unions and Safety Representatives

9.0 Safety Management (6 hrs)

9.1 Role of Employees

9.2 Role of Supervisors

9.3 Motivating Management

9.4 Stress Management

9.5 Safety Management

9.6 Consideration of human errors

9.7 Contracts and Legislation

10 Disaster Management (2 hrs)

10.1 Introduction

10.2 Types of Disaster

10.3 Government regulation

11.0 Guidelines for Hazard, Risk Assessment and Vulnerability (2 hrs)

12.0 Impact of Natural Disaster on Environment and Development (2 hrs)

13.0 Disaster Mitigation (3 hrs)

13.1 Earthquake

13.2 Floods and debris flow

13.3 Landslides

13.4 Glacier Lake Outcross Flood (GLOF)

13.5 Fire

13.6 Cold and Hot wave

13.7 Avalanche

14.0 Disaster Management Cycle: Prevention, Preparedness, Disaster Response and Recovery (2hrs)

15.0 Disaster Management in Nepal(2hrs)

References:

- “Disaster Management: a disaster manager’s hand book”, Manila: Asian
- Disaster Mitigation in Asia and Pacific”, Manila: Asian Development Bank, 1991.
- Sharma V.K., “ Disaster Management”, National Center fir Disaster Management, Indian Institute Public Administration, 19941
- U.K, Dewan, J.M. “Safety, Security and Risk Management”, APH Corporation, 1996

Engineering Professional Practice

BEG 456 CI

Year: 4 Semester: II

Teaching Schedule Hours/Week			Examination Scheme						Total Marks	Remarks
			Final				Internal Assessments			
			Theory		Practical		Theory Marks	Practical Marks		
L	T	P	Duration	Marks	Duration	Marks				
0	0	0	1.5	40	--	--	10	--	50	

Course Objectives:

To introduce ethical and legal environment in which engineering is practiced

Course Content:

1.0 Engineering Professionalism:

[4 hrs]

- 1.1 Profession/Professional and Professionalism.
- 1.2 Moral and ethics in engineering profession.
- 1.3 Codes of ethics and guidelines for engineering Profession.
- 1.4 Relationship of the engineering Profession to basic science and technology;
Relationship to other Profession
- 1.5 Key roles of engineers in development activities.
- 1.6 Law of ethics in engineering practices.
- 1.7 Fundamental canons for professional engineers.

2.0 History of engineering Practices:-[2 hrs]

- 2.1 Concept about society, elements of society and types of society.
- 2.2 History of engineering practice in eastern and western society.

3.0 Engineering Professional Practice in Nepal:[12 hrs]

- 3.1 Nepal Engineering Council and Nepal Engineering Association.
- 3.2 Contract Law, Elements and types of Contract Law.
- 3.3 Types of Contract: Sealed quotation and tender.
- 3.4 Quotation and quotation notice.
- 3.5 Tender and Tender notice.
- 3.6 Tender guarantee.
- 3.7 Tender documents and its preparation before inviting tender.
- 3.8 Prequalification works of contractors.
- 3.9 Evolution of tenders and selection of contractors.
- 3.10 Contract acceptance.
- 3.11 Conditions of Contract.

- 3.12 Tort liability, Elements of Tort liability and Types of Tort liability.
- 3.13 Business and labor laws.
- 3.14 Relationship to foreign firms working in Nepal.

4.0 Professional Practice Sectors in Nepal:

[4 hrs]

- 4.1 One Job description of engineers working in public sectors
- 4.2 One Job description of engineers working in private sectors

5.0 Engineering Professional Practice in Other Countries:

[2 hrs]

- 5.1 Other Asian Countries
- 5.2 USSR and Eastern Europe.
- 5.3 Western Europe
- 5.4 North America

6.0 Issues on Engineering Professional Ethics:

[6 hrs]

- 6.1 Intellectual property rights: copy rights, Trademark and Patent protection.
- 6.2 Industrialization and environmental protection.
- 6.3 Risk/benefit considerations in public transportation.
- 6.4 Science and technology for medicine
- 6.5 Engineers in international development.

References:

1. Carson Morrison and Philip Hughes, "Professional Engineering Practice- Ethical Aspects", McGraw- Hill Ryerson Ltd., Toronto 1982
2. Dr. Rajendra Adhikari, "Engineering Professional Practice- Nepalese and International Perspectives" Pashupati Publishing House, Kathmandu Nepal 2010
3. M. Govindarajan; S Natrajan and Senthikumar. "Engineering Ethics"- PHI- Learning Pvt. Ltd. New Delhi 2009

Mark Distribution:

The questions will cover the syllabus. The evaluation scheme will be as indicated in the table below:

Chapter	Marks Distribution	Remark
1	5	
2	3	
3	15	
4	6	
5	3	
6	8	
Total	40	

* Above mentioned marks distribution can be with minor variation

Comment [P1]: To be added

CIVIL ENGINEERING PROJECT
BEG 457 CI

Year: 4

Semester: 2

Teaching Schedule Hours/week			Examination Scheme						Total Marks	Remarks
			Final				Internal Assessments			
			Theory		Practical		Theory Marks	Practical Marks		
L	P	T	Duration	Marks	Duration	Marks				
2	7	0	--	--	--	50	--	150	200	

Course Objective:

This course is designed to apply the acquired knowledge in the real engineering fields and to enhance the students' confidence to work as professional.

Course content:

Under the supervision and guidance of member/members of faculty each student is required to carry out an individual or group project which provides opportunities for tackling problem to Civil Engineering and is required to submit a project report.

The choice of project will depend upon the interests of the student (s), faculty and the facilities available in the campus.

A project may involve:

- a) An experimental investigation,
- b) Preparation of Dissertation involving a literature survey and a correlation of existing knowledge,
- c) Preparation of a design for an extensive Civil Engineering project

Note:

The project will be conducted under the guidance of the member/members of faculty as they fit beneficial to the students. In the initial phase the faculty may conduct a number of lectures and discussions as to the approach of the project. In the later phase the student will be left on his own to pursue his work and to consult the faculty whenever any problem crops up. He should then submit a draft report prior to the final report so the guide can correct gross mistake. The final report should be submitted to the department Head in duplicate. The final report should be defended with presentation by the students.