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 | T | P | Duration | | Marks | Duration | Marks |  |  |  |  |
| 2 | 7 | 0 | --- | | --- | -- | 50 | ---- | 150 | 200 |  |

**Course Objectives:**

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 them 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.

Traffic Engineering Management

(BEG 469 TE)

(Elective)

**Year: 4 Semester I/II**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Teaching Schedule Hours/Week | | |  | Examination Scheme | | | | | | Total Marks | Remarks |
| Final | | | | | Internal Assessments | |  |  |
| Theory | | | Practical | | Theory Marks | Practical Marks |  |  |
| L | T | P |  | |  |  |  |  |  |  |  |
| 3 | 2 | 0 | 80 | |  | -- | -- | 20 | -- | 100 |  |

**Course Objectives:**

The main objective of the course “Traffic Engineering Management” is to impart knowledge about traffic management systematically and scientifically with the use of concept of engineering. Traffic management as a burning issue and is of high importance for the developing cities, it should be followed by the future traffic load analysis. Key topics of the course attempt to impart knowledge in the following contemporary concepts;

* Conceptual knowledge in traffic management system;
* Issues, relative importance and methods of Transport Management;

This course may be good platform for the Graduate (Masters’ degree) course in traffic Engineering and Management.

Course Contents:

1. **Introduction 2 hrs**
   1. Scope and significance of Traffic Engineering Management
   2. Traffic planning and modeling using prototype
   3. Traffic related problems in major cities
   4. Transportation network and their characteristics
2. **Urban Traffic Planning 3 hrs.**

2.1 Introduction to urban traffic planning

2.2 Calculation of traffic volume

2.3 Travel demand forecasting

**3. Traffic Characteristics 3 hrs.**

3.1 Basic traffic characteristics- Speed, volume and concentration.

3.2 Relationship between Flow, Speed and Concentration

**4. Traffic Management And Analysis: 5 hrs.**

4.1 Volume Studies- Objectives, Methods;

4.2 Speed studies- Objectives: Definition of Spot Speed, time mean speed and space mean speed;

4.3 Methods of conducting speed studies

**5. Speed Studies:**

5.1 Methods of conducting speed studies;

5.2 Presentation of speed study data;

5.3 Head ways and Graps;

5.4 Critical Gap;

5.5 Gap acceptance studies.

**6. Highway Capacity And Level Of Service: 5 hrs**

6.1 Basic definitions related to capacity

6.2 Level of service concept

6.3 Factors affecting capacity and level of service

6.4 Computation of capacity and level of service for two lane highways Multilane highways and

free ways.

**7. Parking Studies And Analysis: 5 hrs**

7.1 Types of parking facilities- on street parking and off street Parking facilities;

7.2 Parking studies and analysis.

**8. Traffic Safety: 7 hrs**

8.1 Accident studies and analysis;

8.2 Causes of accidents- The Road, The vehicle, The road user and the Environment;

8.3 Engineering, Enforcement and Education measures for the prevention of accidents.

**9. Traffic Control And Regulation: 5 hrs**

9.1 Traffic Signals- Design of Isolated Traffic Signal by Webster method,

9.2 Warrants for signalization, Signal Coordination methods, Simultaneous, Alternate, Simple progressic and Flexible progression Systems.

**10. Traffic And Environment: 3 hrs**

10.1 Determintal effects of Traffic on Environment;

10.2 Air pollution; Noise Pollution;

10.3 Measures to curtail environmental degradation due to traffic.

**11. Traffic Management In Nepal 2 hrs**

11.1 Overview of existing system and future trend

11.2 National Transport Policy, Five Year Plans

11.3 Existing planning process

**Tutorials:**

1. A case study on traffic measurement and analysis

**References**

1. Traffic Engineering and Transportation Planning- L.R. Kadiyali, Khanna Publishers.
2. Traffic Engineering- Therory & Practice – Louis J. Pignataro, Prentice Hall Publication.
3. Principles of Highways Engineering and Traffic Analysis- Fred Mannering & Walter P. Kilareski, John Wiley & 50ns Publication.
4. Transportation Engineering – An introduction- C. Jotin Khistry, Prentice Hall Publication.
5. Fundamentals of Transportation Engineering- C.S. Papacostas, Prentice Hall India.

Safety Engineering and Disaster Risk Management

(BEG 455 CI)

Year: 4 Semester 2

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |  |  |  |  |
| 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;

i. Explain the need of safety in civil engineering works,

ii. Identify various types of hazards and implement the preventive measures,

iii. Explain the role of various level of workers and officials, regarding safety,

iv. Identify various types of disaster and implement the preventive measures

**Course contents:**

**1.0 Introduction to Safety Engineering 3 hrs.**

1.1 Introduction to safety engineering and its Scope

1.2 Interrelationships between human/machinery / environmental elements

1.3 Impact of human and machine characteristics on safety

1.4 Safety control devices; Signs, Signals, Instructions and Safety Codes

**2.0 Attitude towards safety 2 hrs.**

**2.1 Attitude towards safety**

2.1 Attitude Survey

2.2 Value of safety survey

2.3 Report from safety personal

2.4 The interface between safety problems and concerned parties

**3.0 Basic safety engineering: Hazard Identification 5 hrs.**

3.1 Mechanical Energy Hazards: Thermal Energy Hazards

3.2 Electrical Energy Hazards: Acoustic Energy Hazards

3.3 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 Cardianal Rule of hazard control

5.3 Passive vs Active Hazard Control

5.4 The Third Cardianal 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 recorvery**

**15.0 Disaster Management in Nepal**

**Recommended Books**

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

Engineering Professional Practice

(BEG 456 CI)

Year: 4 Semester 2

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 Contents:

1. **Engineering Professionalism:**
   1. Profession/Professional and Professionalism.
   2. Moral and ethics in engineering profession.
   3. Codes of ethics and guidelines for engineering Profession.
   4. Relationship of the engineering Profession to basic science and technology;

Relationship to other Profession.

* 1. Key roles of engineers in development activities.
  2. Law of ethics in engineering practices.
  3. Fundamental canons for professional engineers.

1. **History of engineering Practices:-**
   1. Concept about society, elements of society and types of society.
   2. History of engineering practice in eastern and western society.
2. **Engineering Professional Practice in Nepal:**
   1. Nepal Engineering Council and Nepal Engineering Association.
   2. Contract Law, Elements and types of Contract Law.
   3. Types of Contract: Sealed quotation and tender.
   4. Quotation and quotation notice.
   5. Tender and Tender notice.
   6. Tender guarantee.
   7. Tender documents and its preparation before inviting tender.
   8. Prequalification works of contractors.

**4.0 Professional Practice Sectors in Nepal: [4 hrs]**

4.1 Onewal Job description of engineers working in public sectors.

4.2 Onewal 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 Publicing House, Kathmandu Nepal 2010

3. M. Govindarajan; S Natrajan and Senthikumar. “Engineering Ethics”- PHI- Learning Pvt. Ltd. New Delhi 2009

Evaluation Scheme

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

|  |  |  |
| --- | --- | --- |
| **Chapter** | **Hours** | **Marks Distribution** |
| 1 | 4 | 5 |
| 2 | 2 | 3 |
| 3 | 12 | 15 |
| 4 | 4 | 6 |
| 5 | 2 | 3 |
| 6 | 6 | 8 |
| Total | 30 | 40 |

**\*\*\* Above mentioned marks distribution can be with minor variation.**