FARWESTERN UNIVERSITY
FACULTY OF ENGINEERING
MASTER OF SCIENCE DEGREE IN CONSTRUCTION PROJECT MANAGEMENT

Course Title: **Construction Quality Management (Elective)**
Course Code: CPM 733
Year/Semester: I/II
Class Load: 4 hours per week (Theory: 4 Hrs.)
Credits: 4 (60 Hrs)
Evaluation:

	Theory	Practical	Total
Internal	40	-	40
Final (External)	60	-	60
Total	100	-	100

Course Descriptions and Objective:

The objective of this course is to provide student's enhanced understanding of various tools and techniques of quality in managing construction project. After completion of this course students will be able to apply the acquired knowledge and skill of quality standard into real practice in managing construction projects

Course Contents:

UNIT 1: Concept of Quality (4 Hrs.)
- 1.1 Definition and characteristics of quality
- 1.2 Traditional approach of quality
- 1.3 Misconceptions about quality
- 1.4 Dimensions of quality

UNIT 2: Quality Control (6 Hrs.)
- 2.1 Concept of quality control
- 2.2 Specification
- 2.3 Inspection of incoming materials
- 2.4 In process quality inspection and tests
- 2.5 Supervision of works

UNIT 3: Quality Assurance (10 Hrs.)
- 3.1 Introduction of quality awareness
- 3.2 Evolution of quality awareness
- 3.3 Quality awareness program
- 3.4 Quality recognition and awards
- 3.5 Mass awareness
- 3.6 Need for quality awareness in construction
- 3.7 Method of inspection of delivered materials

UNIT 4: Quality Tools (6 Hrs.)
- 4.1 Flow charts, check list, histogram
- 4.2 Pareto analysis, cause and effect diagrams, brain storming
- 4.3 Bench marking
- 4.4 Statistical process control.

UNIT 5: Quality Culture (8 Hrs.)

5.1 Development of quality culture
5.2 Cost of quality
5.3 Quality circle
5.4 Bench marking quality
5.5 Quality training

UNIT 6: Quality Management Approaches (10 Hrs.)

6.1 Evolution of quality management
6.2 Quality management principles
6.3 Cost of quality
6.4 Contribution of W. Edward Deming and 14 points
6.5 Contribution of Philip B. Crosby and 14 steps
6.6 Contribution of A.V. Fiegenbaum, Kaoru Ishikawa and Genichi Taguchi
6.7 Quality management systems

UNIT 7: Total Quality Management (10 Hrs.)

7.1 Definition of total quality management
7.2 Elements of total quality management
7.3 Quality plan
7.4 Quality assurance plan
7.5 Total quality management system
7.6 Quality commitment by top level

UNIT 8: Quality Management Standards (6 Hrs.)

8.1 ISO 9000 for quality management system
8.2 ISO 9000 and TQM
8.3 Benefits of ISO 9000
8.4 ISO certification procedure

PLAGIARISM

Plagiarism means copying or using other' ideas or work without acknowledging the original source and/or author. This can be in a variety of forms, from directly quoting someone without acknowledgment, copying and pasting from any available sources including internet, changing some words without acknowledgment and etc. This type of activities of a student in submitting any assignment will be considered as a serious offence and the university/course instructor will take serious action.

Indicative References:

1. Harrison M. Wadsworth, Kenneth S. Stephens, and A. Blanton Godfrey, *Modern Methods for Quality Control and Improvement*, John Wiley & Sons Inc.
2. James R. Evans and William M. Lindsay, *The Management and Control of Quality*, Cengage Learning India Private Limited, Delhi, India.
3. Kanji Gopal, *Quality Management Process,* Productivity Press, Madras, 1995.
4. Drummond Helga, *The TotalQuality Management Movement,* UPSBD Meeutai, 1994.
5. Juran J. M., *Gryna Frank M. Juran's Quality Control Handbook I.*
6. Jairi Mohamed, *TotalQuality Management for engineers,* Aditya Books Private Limited, Delhi, India.

FARWESTERN UNIVERSITY
FACULTY OF ENGINEERING
MASTER OF SCIENCE DEGREE IN CONSTRUCTION PROJECT MANAGEMENT

Course Title: **Disaster Risk Management (Elective)**
Course Code: CPM 736
Year/Semester: II/III
Class Load:4 hours per week (Theory: 4 Hrs.)
Credits: 4 (60 Hrs)
Evaluation:

	Theory	Practical	Total
Internal	40	-	40
Final (External)	60	-	60
Total	100	-	100

Course Descriptions and Objective:

The objective of this course is to provide the students enhanced understanding of theprinciples governing the disaster risk management which will be followed by information about the different activities that are performed with respect to the different stages of disaster risk management.After completion of this course students will also learn DRR terminology and will be able to apply the acquired knowledge and skill of disaster principles and Risk Analysis Techniques, assessment and planning for both pre and post disaster using different tools.

Course Contents:

UNIT 1: Introduction to Disaster Risk Management (10 Hrs.)

1.1 Evolution of disaster risk management concept
1.2 Evolution of disaster risk management concept in Nepal
1.3 Historical accounts of different disasters in the country
1.4 Principle and Terminology on DRR
1.5 Integrated and Comprehensive disaster risk reduction approach
1.6 Cultures and Disasters
1.7 Disaster Governance
1.8 International Disaster Governance: Theory and Practice from Hyogo to Sendai
1.9 Strategies, Policies and legislation
1.10 International legal system and guidelines in emergency
1.11 DRM Act of Nepal (central, federal, and local)

UNIT 2: Hazard, risk and vulnerability (10Hrs.)

2.1 Physical dimensions
2.2 Social dimensions
2.3 Economic dimensions
2.4 Disaster , Crisis and emergency : types and level of Impacts
2.5 Vulnerability in changing climate
2.6 Climate change and Disasters

UNIT 3: Disaster Management Cycle (8 Hrs.)

3.1 Predisaster phase
3.2 Prevention, Preparedness, and Mitigation,
3.3 Post disaster Phase
3.4 Relief, Rescue, and Recovery
3.5 Rehabilitation and Reconstruction
3.6 Concept of build back better
3.7 Cluster approach
3.8 Disaster Risk Management approaches adopted in Nepal

UNIT 4 : Risk Analysis Techniques (12 Hrs.)

4.1 Risk Analysis Techniques
4.2 Risk: Identification, reduction and transfer
4.3 Approaches to mapping social vulnerability
4.4 Participatory disaster risk assessment
4.5 Rapid visual damage assessment
4.6 Post disaster Need assessment
4.7 Multi Hazard risk assessment
4.8 Disaster Risk Assessment Tools and Applications
- 4.8.1 HEC RAS
- 4.8.2 MIRA
- 4.8.3 SIERA
- 4.8.4 RADIUS
- 4.8.5 HAZUS
- 4.8.6 CRISIS
- 4.8.7 VCA etc.

UNIT 5: Risk Reduction Approach (10Hrs.)

5.1 Risk reduction approach strategies and policies
5.2 Action plans, Strategy for survival
5.3 Ecosystem-Based Disaster Risk Reduction and Adaptation
5.4 Risk sensitive land use plan
5.5 National building codes and bylaws

UNIT 6: Tutorial and Practical works (10Hrs.)

6.1 Case studies of recent disaster and its management in vicinity
6.2 Project work - hazard, vulnerability and risk of Urban municipality/Rural municipality
6.3 Project work - Post Disaster Management for given scenario

PLAGIARISM

Plagiarism means copying or using other' ideas or work without acknowledging the original source and/or author. This can be in a variety of forms, from directly quoting someone without acknowledgment, copying and pasting from any available sources including internet, changing some words without acknowledgment and etc. This type of activities of a student in submitting

any assignment will be considered as a serious offence and the university/course instructor will take serious action.

Indicative References:

1. Wisner, B. Blaikie, P. Cannon, T. & Davis, I., 2004. At Risk: Natural Hazards, People's Vulnerability and Disasters, (2nd Edition) Routledge
2. Venton, P. & Hansford, B., 2006. Reducing risk of disaster in our communities, TEARFUND
3. Bankoff, G. Frerks, G. &Hilhorst, D., 2004. Mapping vulnerability: disasters, development, and people, Earthscan
4. Leary, N., 2008. Climate change and vulnerability, Earth scan
5. Kreimer, A., Arnold, M., 2000. Managing disaster risk in emerging economies, World Bank Publications
6. Wisner et al, "At Risk: Natural Hazards, peoples Vulnerability and Disaster" Routledge
7. "Manual of International Law and standards Applicable in Natural Disaster Situation" International Development law Organisation, 2009 Http://www.idlo.int
8. Human Rights and Natural Disaster Operational Guidelines and Field Manual on Human Right protection in situation of Natural Disaster , Booking –Bern Project on International Displacement" httb://www.brookings.edu/projects/idp/2006_naturaldisastersaspx
9. Government of Nepal, Nepal Disaster Risk Reduction Portal, Kathmandu, Nepal
10. "Guidelines for Assessment in Emergencies" March 2008 ICRC, IFRC
11. The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response
12. Other websites: Federal Emergency Management Agency, ICRC, IFRC , UNISDR,NDAC, OCHA,World Conference on Disaster Management

FARWESTERN UNIVERSITY
FACULTY OF ENGINEERING
MASTER OF SCIENCE DEGREE IN CONSTRUCTION PROJECT MANAGEMENT

Course Title: **Geographic Information System (GIS) (Elective)**
Course Code: CPM 735
Year/Semester: II/III
Class Load: 6 hours per week (Theory: 3 Hrs. and Hands-on-Session: 3 Hrs.)
Credits:4
Evaluation:

	Theory	Practical	Total
Internal	40	-	40
Final (External)	60	-	60
Total	100	-	100

Course Descriptions and Objectives

This course introduces principles, concepts and applications of Geographic Information Systems (GIS): a decision support tool for planners and managers of spatial information. Database development, manipulation and spatial analysis techniques for information generation will be taught. Students will have the scope of using GIS for applications in their related fields such as construction management, other fields of civil engineering, agriculture, information system, etc will be discussed through mini-project and laboratory exercises.

Course Contents:

UNIT 1: Introduction and Overview of GIS and Software (3 Hrs)

Definition of a GIS features and functions; historical development of GIS; why GIS is important; GIS as an Information System; GIS and cartography; GIS data feeds; how GIS is applied; commercial and open source GIS software.

UNIT 2: GIS and Maps (3 Hrs)

Map Projections and Coordinate Systems; Maps and their characteristics (selection, abstraction, scale, etc.); automated cartography versus GIS; map projections; coordinate systems; precision and accuracy; error in GIS data.

UNIT 3: GIS Data Models (3 Hrs)

Concept of data model; vector data model; topology; TIN data model; raster data model; compression; indexing and hierarchical data structures

UNIT 4: Data Sources (3 Hrs)

Data Input and Data Quality; Major data feeds to GIS and their characteristics; maps, GNSS, images, databases; commercial data; locating and evaluating data; data formats; data quality; metadata.

UNIT 5: Database Concepts (3 Hrs)

Database concepts and components; flat files; database management systems; data modeling; views of the database; normalization; databases and GIS.

UNIT 6: Vector Analysis (6 Hrs)

Data management functions; Data Analysis functions and its application in real field

UNIT 7: Raster data creation and analysis (6 Hrs)

Vector to Raster conversion and vice versa, Spatial interpolation methods; raster analysis including topological overlay; Map calculations; statistics; integrated spatial analysis.

UNIT 8: Surface Model (3 Hrs)

DEM; slope; aspect; other raster functions and its application.

UNIT 9: River network Generation (4 Hrs)

Flow direction; flow accumulation; river network; and watershed boundary delineation.

UNIT 10: GNSS (4 Hrs)

Basic concept of GNSS; How GNSS works; DGNSS; Errors in GNSS; application.

UNIT 11: Introduction to Remote Sensing(4 Hrs)

Concept of Remote Sensing; Electro Magnetic Spectrum and windows; Spectral signature of different features; Introduction to different satellites; Resolutions in RS; Image Processing techniques, Application of Remote Sensing.

UNIT 12: Making Maps (3Hrs)

Map functions in GIS; map design; map elements; choosing a map type; Exporting map in different format printing a map.

Laboratory Sessions (45 Hrs)

1. Spatial GIS data creation, viewing and simple operation 4h
2. Linking non-spatial and spatial database 3h
3. Projection 4h
4. Spatial and Non spatial Database editing and updating 6h
5. GPS data integration in GIS, 2h
6. Geo processing 6h
7. Raster analysis 4h
8. River Analysis 4h
9. Map Layout 2h
10. Mini-project for GIS application in construction Management 10h

PLAGIARISM

Plagiarism means copying or using other' ideas or work without acknowledging the original source and/or author. This can be in a variety of forms, from directly quoting someone without acknowledgment, copying and pasting from any available sources including internet, changing some words without acknowledgment and etc. This type of activities of a student in submitting any assignment will be considered as a serious offence and the university/course instructor will take serious action.

Indicative References:

1. Raghunath Jha (2000), *Course Manual for GIS*, IOE, Water Resources Engineering.
2. P.A. Burrough and R. A. McDonnell (1998),*Principles of Geographical Information Systems*, Oxford University Press.
3. J. Star and J. Estes (1990*), Geographic Information Systems: An Introduction,* Prentice Hall, Englewood Cliffs, N.J.
4. J. Lee, D.W.S. Wong (2002), *Statistical Analysis with Arc View GIS,*John Wiley and Sons, Inc., New York.

5. Davide J Maguire, Michael Goodchild and David W RHIND, 1999,*Geographical Information Systems Vol I, Principles*, Longman Scientific Technical.
6. Laura Lang, 2000, *Managing Natural Resources with GIS*, ESRI, Redlands, CA.

FARWESTERN UNIVERSITY
FACULTY OF ENGINEERING
MASTER OF SCIENCE DEGREE IN CONSTRUCTION PROJECT MANAGEMENT

Course Title: **Heritage Conservation and Management (Elective)**
Course Code: CPM 737
Year/Semester: II/III
Credits: 4 (60 Hrs)
Class Load: 4 hours per week
Evaluation:

	Theory	Practical	Total
Internal	40	-	40
Final (External)	60	-	60
Total	100	-	100

Course Descriptions and Objectives:

This course introduces the construction management students about the importance of heritage resources and possible challenges and opportunities of the need of heritage conservation and management in the context of construction planning and management.

By the end of this course, the students shall be able to:
i) List a range of heritage resources at and around a construction project,
ii) Describe general importance of cultural heritage resources and potential issues that may arise while planning or managing a construction project/process,
iii) Articulate legal and social contexts for the protection of cultural heritage sites and properties in a construction process,
iv) Identify remedy measures to avoid the loss of cultural heritage during construction, and
v) List strategies or prepare a schematic plan for avoiding conflict with cultural heritage values for construction management professionals.

Course Contents:

UNITS	TOPIC	SUB-TOPIC/ACTIVITIES	TIME ALLOTED
1	Introduction	Introduce the course, resources, learning activities, assignments and expectations. Assess students' prior familiarity with the subject, and plan rest of the sessions	1hr
2	Context of Construction Management and Intersections of Heritage Issues	Discussion on range of construction activities – these need to be related to each type of heritage that is discussed here onwards	2hrs
3	Introduction to Heritage Resources	Lecture and discussion on following topics: - What is cultural heritage - Different types - Values & Significance Examples in relation to construction activities/projects	3hrs

4	Heritage Conservation and Management Process	Natural Heritage Cultural Heritage Conservation Management	2hrs
5	Documentation and Inventorying of Heritage Resources	Documentation Processes Listing and Inventorying Managing Database	3hrs
6	Heritage Lists and Registers	Locally Significant Sites Nationally Protected Sites World Heritage Sites	3hrs
7	Legislations	Legislative protections for heritage – context of Nepal and other countries (examples) Impact Assessments and Mitigation measures Impact Mitigation Planning	4hrs
8	Natural Heritage	Landscape features Hills and Cliffs Forest and Wildlife Water bodies and aquatic (?) Conflict of Construction and Natural Heritage, and potential remedies Cases: problems and good practices	4hrs
9	Wildlife	Birds, Water creatures, amphibians and animals Their ecosystem and movement patterns Conflict and potential remedies	2hrs
10	Archaeological Sites	Overview of Archaeological Heritage and Sites Management Constructions in and around Archaeological Sites Potential Archaeological Resources in a construction site Cases: Good Practices and Challenges	6hrs
11	Historic Monuments and Sites	Overview New Infrastructure in Historic Sites Adaptive Reuse and Rehabilitation Construction Activities around Historic Sites Cases	6hrs
12	Traditional Villages & Farmlands	Overview New Buildings in Traditional Setting Rehabilitation and Adaptive Reuse Infrastructure developments	6hrs
13	Sensitive Construction Planning	Urban Development Tourism Infrastructure Development	2hrs
14	Fieldwork	This should be an opportunity for students to pursue their fieldwork related to project or final paper.	6hrs

15	Projects Discussion	Key concepts of project or paper to be discussed, feedback given.	6hrs
16	Students' Presentations	Project Presentation	4hrs
17	Conclusion and Reflections		1hr

Textbooks:

There are no textbooks for this course.

References:

The readings for each session shall be assigned prior to the start of the course.

Note :

Class Load: Total of 60 hours (4 hours per week or preferably a 3 weeks module where Sunday to Thursday 4 hours per day, and Friday full day for field work)

FARWESTERN UNIVERSITY
FACULTY OF ENGINEERING
MASTER OF SCIENCE DEGREE IN CONSTRUCTION PROJECT MANAGEMENT

Course Title: **Management of Construction Plant and Equipment (Elective)**
Course Code: CPM 734
Year/Semester: II/III
Class Load: 4 hours per week
Credits: 4 (60 Hrs)
Evaluation:

	Theory	Practical	Total
Internal	40	-	40
Final (External)	60	-	60
Total	100	-	100

Course Descriptions and Objective

The objective of this course is to enable the students to make appropriate choice of various equipment, match making of equipment in large construction projects by considering operations safety measures. After completing this course, students will be able to select equipment with economic consideration and operations viability.

Course Contents:

UNIT 1: Construction Industry: An Overview (2 hrs)

1.1 Construction Industry in General: Its Nature, Character of Construction, Use of Material, Challenges of the Industry.

1.2 Nepalese Construction Industry: Historical Growth, Material Supply to the Industry, Character of Nepalese Construction Industry, Challenges of the Industry – Delayed Completion and Cost escalation.

1.3 Use of Technology: It's Role in Maintaining of Quality of Construction, Role to Attain Speed of Construction, The Inevitable Devil.

UNIT 2: Tools, Plant and Equipment :(2 hrs)

Tools, Machines, Equipment and Plant. Need for mechanization in construction industry and justification. Need for plant management. Productivity enhancement. History of Growth of Construction Equipment, Modern construction Equipment.

UNIT 3: Familiarization with Construction Plant (8 hrs)

3.1 Equipment for Earth Work Construction:

Dozers: Its Types and Uses, Back Hoe Dozers, Excavators, Scrapers, Jack Hammers, Air Compressors and Pneumatic Drilling Machine, Back Hoes, Drag Line, Clamshell Bucket and Crane, Trenching Machine, Pipe Laying Machine, Loading equipment – Loaders: Its types and Uses, Back Hoe Loaders.

3.2 Compacting equipment.

Rollers: Three Wheel Rollers, Tandem Rollers, Vibratory Rollers – Its Types and Uses, Pneumatic Rollers, Sheep Footed Rollers, Grid Rollers, Padded Drum Rollers, Walk

Behind Rollers, Dynamic Compactors, Vibratory Compactors, Tampers, Monkey Jumpers or Frog Rammers.

3.3 Hauling and Lifting Equipment.
Trucks, Flat Bed Trucks, Dump Trucks, Rail Wagons, Mini Dumpers, Loaders – Short Distance Hauling, Belt Conveyor, Bucket Conveyor, Screw Conveyor, Cranes – Its Types, Capacity and Uses, Hoists.

3.4 Aggregate Production Equipment:
Use of Aggregates in Construction, Source of Aggregates, Washing and Screening Plant, Various types of Screens and their Capacity, Aggregate Crushing Equipment – Jaw Crusher, Roll Crusher, Gyratory Crusher, Cone Crusher, Impact Crusher, Ball Mill, Rod Mill, Hammer Mill.

3.5 Exclusive Equipment for Highway and Airport Construction
Graders, Bitumen Boilers, Bitumen Distributor, Compressor and Bitumen Sprayer, Asphalt Concrete Plant, Aggregate Spreading Machine, Asphalt Concrete Paver, Road Marking Machine, Power Broom.

3.6 Equipment for Deep Foundation Construction
Pile Driving Machine, Vibratory Pile Placing Machine, Pile Boring Rig, Crane and Grab Bucket Attachment for Well Foundation, Micro Pile Construction Rig. Pumps – Various Types and their Capacity.

3.7 Tunnel Construction Equipment
Power Drilling Machine, Hand Drilling Machine, Boomers for Drilling, Tunnel Boring Machine (TBM), Tunnel Loader or Hack Loader, Tunnel Lining equipment, Tunnel Ventilation Equipment.

3.8 Equipment for Concrete Construction
Form Work – Mold and Support, Batching Machines, Batching Plants – Its Types and Capacity, Components of a Batching Plant, Concrete Mixers – Its Types and Capacity, Concrete Batching and Mixing Plant, Transit Mixers, Concrete Transit Trucks, Concrete Pumps, Tremie Pipe. Vibrating Screed for concrete compaction, Form Vibrators, Power Floats and Power Trowel for finishing.

UNIT 4: Selection of Construction Equipment (6 hrs)
Background and introduction. Planning for equipment selection. Some careful considerations. Main basis for equipment selection.

UNIT 5: Monitoring and Controlling of Equipment Operation (6 hrs)
Monitoring the Operation, Monitoring Process, Monitoring Tools. Controlling the Equipment Operation. Use of PC in Plant Monitoring and Control.

UNIT 6: Cost of Equipment (6 hrs)
Ownership Cost–Fixed Cost, Operating Cost–Variable Cost, Depreciation of Equipment, Direct Cost, Indirect Cost, Product and Period Cost, Controllable Cost and Un Controllable Cost, Out – of – Pocket and Sunk Cost. Costing Methods and Technique.

UNIT 7: Life of equipment (2 hrs)

Useful life. Actual life. Depreciable life. Taxable life. Economic life.

UNIT 8: Plant Hiring: (6hrs)

History and Justification for Plant Hiring. Plant Hiring Organization or Company, Function of a Plant Hiring Company. Plant Owning Options. Equipment Activity Monitoring and Control in the Company, Organization of Plant Hiring Company, Functions of Different Departments of a Plant Hiring Company, Functioning of a Plant Hiring Company. Plant Hiring Rate and Calculating Plant Hiring Rate.

UNIT 9: Plant Maintenance: (6 hrs)

Introduction, Need for Maintenance Department. Types of Maintenance – Breakdown Maintenance, Preventive Maintenance, Overhauling. Maintenance Procedure. Plant Maintenance Options. Spare Parts Management, inventory management.

UNIT 10: Equipment Safety: (6 hrs)

Equipment Condition, Condition Inspection and Certification, Self-Declaration for Safety of Equipment, General Safety Procedure in Equipment Operation, Operations in Material Handling – Lifting Cranes. Steam Boilers Under Pressure. Bitumen Boilers and Sprayers. Electrical System in Equipment. Filling of Tanks. Some Safety Rules and Precautions.

UNIT 11: Estimating Production Rates of Some Equipment: (10 hrs)

Introduction, Deciding Size and Capacity of Equipment. Fundamentals of Earth Work. Calculating Output of Some Equipment.

PLAGIARISM

Plagiarism means copying or using other' ideas or work without acknowledging the original source and/or author. This can be in a variety of forms, from directly quoting someone without acknowledgment, copying and pasting from any available sources including internet, changing some words without acknowledgment and etc. This type of activities of a student in submitting any assignment will be considered as a serious offence and the university/course instructor will take serious action.

Indicative References:

1. Deepak Bhattarai, *Construction plant Management*, Nepal Engineering College
2. Frank Harris and Ronald McCaffer, *Plant Management,* Butterworth, UK
3. R.L. Peurifoy, *Construction Equipment Planning,* McGraw Hill Book Company

FARWESTERN UNIVERSITY

FACULTY OF ENGINEERING

MASTER OF SCIENCE DEGREE IN CONSTRUCTION PROJECT MANAGEMENT

Course Title: **Principles and Practices of Alternative Dispute Resolution (Elective)**
Course Code: CPM 739
Year/Semester: I/II
Class Load: 4 Hrs. per Week (Theory: 4 Hrs.)
Credits: 4 (60 hrs)
Evaluation:

	Theory	Practical	Total
Internal	40	-	40
Final (External)	60	-	60
Total	100	-	100

Course Description and Objective:

This course aims to enable the students' acquiring in-depth knowledge and understanding of different principles and practices of alternative dispute resolution in the field of construction project management.

Course Contents:

UNIT 1: Basics of engineering contracts (5 hrs)
Civil Engineering law and contract formations, Standard contract documents and contract models – FIDIC, ICE, PPMO, WB, ADB

UNIT 2: Contract and risks (3 hrs)
Risks in contracts, risk allocation in contracts, Employer risk and Contractor's risk

UNIT 3: Important Contract clauses (4 hrs)
Extension of time, Variations, Compensation events, termination

UNIT 4: Claims in Contract (6 hrs)
Early warning, notices of claim, EoT Claim and cost claim, claim procedures, Claim evaluation

UNIT 5: Avoiding conflicts (4 hrs)
Conflict Management, Negotiation skill

UNIT 6: Dispute (8 hrs)
Types and Sources of disputes, Alternate Dispute Resolution (ADR) and their uses, ADR–practices in Nepal and international practices

UNIT 7: Adjudication (6 hrs)
Adjudicator, their fees and Adjudication procedures, DRE, DRB or DB, DB agreement, Implementation of adjudication decisions

UNIT 8: Arbitration (6 hrs)
Differences of Arbitration and adjudication, formation of arbitration tribunal, Arbitrators their fees and Arbitration procedures, Arbitral award, Arbitration Act 2055

UNIT 9: UNCITRAL, ICC and other rules of Arbitration, Implementation of arbitration awards, court appeal and court decisions (6 hrs)

UNIT 10: NEPCA, Society of mediation other societies for ADR, Institutional arbitration and International arbitration - SIAC etc (4 hrs)

UNIT 11: Case studies (8 hrs)

Adjudication and arbitration, Drafting dispute clauses in contract documents

PLAGIARISM

Plagiarism means copying or using other' ideas or work without acknowledging the original source and/or author. This can be in a variety of forms, from directly quoting someone without acknowledgment, copying and pasting from any available sources including internet, changing some words without acknowledgment and etc. This type of activities of a student in submitting any assignment will be considered as a serious offence and the university/course instructor will take serious action.

Indicative References:

1. Hugh Beale (Ed.), *Chitty on Contracts*, Sweet and Maxwell
2. Robert Clay Barrister & Nicholas Dennys (Ed.), *Hudson's Building and Engineering Contracts*, Sweet and Maxwell
3. John W Hinchey & Troy L. Harris*, International Construction Arbitration Handbook*, Thomson West
4. V V L Gayathri, *International Commercial Arbitration? Claims and Counterclaims*, icfai University Press
5. Standard Bidding Documents of Public Procurement Monitoring Office (PPMO), Nepal, the World Bank (WB), Asian Development Bank (ADB), FIDIC etc.
6. Websites of relevant institutions – ICC, UNCITRAL, NEPCA, SIAC
7. Arbitration Act 2055
8. Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York, 1958)
9. Journal of International Arbitration, Kluwer Law Online
10. Arbitration International, OXFORD Academic

FARWESTERN UNIVERSITY
FACULTY OF ENGINEERING
MASTER OF SCIENCE DEGREE IN CONSTRUCTION PROJECT MANAGEMENT

Course Title: **Sustainable Cities and Regions (Elective)**
Course Code: CPM 738
Year/Semester: II/III
Class Load: 4 hours per week
Credits: 4 (60 Hrs)
Evaluation:

	Theory	Practical	Total
Internal	40	-	40
Final (External)	60	-	60
Total	100	-	100

Course Descriptions and Objectives:

This course aims to familiarize the students about the concept of Sustainable cities and regions. The students will acquire both theoretical and practical knowledge enabling them to generate an in-depth analysis of relevant case studies as well as practical experiences using relevant data sources and tools. It also highlights on the importance of sustainable approach to city development.

Course Contents:

UNIT 1: Introduction (4 Hrs)

1.1 Development discourses and paradigms, and the emergence of sustainable development
1.2 Conceptualizing sustainable development
1.3 Principles of sustainability planning
1.4 Reconfiguring planning for sustainable development

UNIT 2: Discourse, Sustainable Development and Related Conceptual Models (4hrs)

` 2.1 Environmental Discourse
2.2 Sustainability Discourse
2.3 Treadmill of Production
2.4 Risk Society
2.5 Ecological Modernisation

UNIT 3: Sustainable Production and Consumption (4hrs)

UNIT 4: Ecological Footprints, Carrying Capacity and its limits (4hrs)

4.1 Concept of Ecological Footprint and Carrying Capacity
4.2 Issues related to Ecological Footprint Calculation
4.3 Advantages and Criticism of Foot printing

UNIT 5: Sustainability Assessment (4Hrs)

5.1 Checklists
5.2 Indicators
5.3 Systematic Approach

UNIT 6: Sustainable Cities: Models and Criteria (4Hrs)

UNIT 7: Sustainable City Initiatives: Developments in Policy and Practice (4hrs)

7.1 Planning and environmental quality
7.2 Garden city concept and application
7.3 Sustainability considerations in urban planning: some case studies

UNIT 8: Sustainable Transport (4Hrs)

UNIT 9: Sustainable Housing (4Hrs)

UNIT 10: Urban Resilience, Adaptation and Sustainable Communities (4Hrs)

UNIT 11: Sustainability, Civil Society and Governance (4Hrs)

UNIT 12: Sustainability thinking – where to in the future? (6 Hrs)

12.1 Smart Cities and Smart Urban System: Achieving Sustainability?

UNIT 13: Critiquing Sustainable Development Initiatives: Case Studies from Asia, Europe and America (10 Hrs)

PLAGIARISM

Plagiarism means copying or using other' ideas or work without acknowledging the original source and/or author. This can be in a variety of forms, from directly quoting someone without acknowledgment, copying and pasting from any available sources including internet, changing some words without acknowledgment and etc. This type of activities of a student in submitting any assignment will be considered as a serious offence and the university/course instructor will take serious action.

Indicative References:

1. Anthony M. Townsend (2013). *Smart Cities: Big Data and the Quest for a New Utopia.* ISBN: 978-0-393-08287-6

2. Brand, Peter (2005) Urban environmentalism: global change and the mediation of local conflict. Routledge, London, New York.

3. Florida, Richard (2002), The Rise of the Creative Class, Basic Books.

4. Friedman, Thomas (2005), The World is Flat: A brief history of the globalized world in the Twenty-first Century. Allen Lane, Penguin Books

5. Hall, P. (2002), Cities of Tomorrow: an intellectual history of urban planning and design

in the 20th century, U.K.: Blackwell

6. Hills Peter (2005), Environmental Reform, Ecological Modernisation and the Policy Process in Hong Kong: An Exploratory Study of Stakeholder Perspectives, *Journal of Environmental Planning and Management*, Vol.48, No.2, pp.209-240.

7. Hills Peter (2004), Administrative Rationalism, Sustainable development and the Politics of environmental Discourse in HongKong, pp.13-41, in Mottershead Terri (ed.), *Sustainable Development in Hong Kong*, Hong Kong University Press.

8. Hopkinson, Lisa(2004), Sustainable Transport,pp.353-385 in Mottershead, Terri(ed.),*Sustainable Development in Hong Kong*, Hong Kong University Press.

9. Jacobs, J. (1961), The Death and Life of Great American Cities, New York: Vintage Books.

10. Lin, G.C.S. (1994), Changing Theoretical Perspectives on Urbanisation in Asian Developing Countries. Third World Planning Review. 16(1), pp.1-23.

11. Manuel Pedro Rodriguez-Bolivar(ed). (2015). *Transforming City Governments for Successful Smart Cities*, ISBN: 978-3-319-03166-8

12. Mottershead Terri (ed.)(2004), *Sustainable Development in Hong Kong*, Hong Kong University Press.

13. Newman, P., Sustainable Transport For Sustainable Cities, Website: http://www.susdev.gov.hk/html/en/leadership_forum/peter_newman_paper.pdf

14. Ng, M.K. and A. Chan (2005), A Citizen's Guide to Sustainable Planning in Hong Kong: Concepts and Processes, Hong Kong: Community Participation Unit, Department of Architecture, The Chinese University of Hong Kong and CUPEM, The University of Hong Kong, 242p.

15. Nijkamp, P and Perrels A.,(1994),Sustainable Cities in Europe, London: Earthscan Publications Ltd.

16. Portney, K.E. (2003), Taking Sustainable Cities Seriously, Cambridge, Massachusetts: The MIT Press.

17. Shark, A., Toporkoff, S., and Levy, S. (2014). *Smart Cities for a Bright Sustainable Future: A Global Perspective.* ISBN: 978-1-4973-3945-6

18. Shipley, R. (2000), "The origin and development of vision and visioning in planning," International Planning Studies, Vol.5, No.2, pp.225-236.

19. Tim Campbell (2012). *Beyond Smart Cities: How Cities Network, Learn and Innovate.*

ISBN: 978-1-84971-426-6

20. Voula, Mega (2005), Sustainable Development, Energy and the City; A civilization of Concepts and Actions, New York: Springer.