

BHAJ GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Civil Engineering

LESSON PLAN

Subject Name: - Concrete Technology

Subject Code: - BTCE-401-18

Year: - 2nd

Semester: - 4th

Lecture No.	Unit	Date/Week	Topic	Teaching Aids	Reference
L-1	UNIT 1: CONCRETE AND ITS INGREDIENTS	1st week	Properties of cement, aggregate	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-2			Properties of Admixtures and water	White/Black Board & Group Discussion	Concrete Technology by M. L. Gambhir
L-3			Introduction to Workability and test to check workability	White/Black Board & Group Discussion	Concrete Technology by M. L. Gambhir
L-4		2nd week	Introduction to Elasticity, Shrinkage, Creep, Fatigue	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-5			Discussion on Strength in Compression, Tension, shear and bond	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-6			Influence of various factors on test to find workability	White/Black Board & Group Discussion	Concrete Technology by M. L. Gambhir
L-7		3rd week	Discussion on Concrete cracking and type of cracks	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-8			Characteristics of concrete including resistance to sulphate & acid attack	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-9			Characteristics of alkali-aggregate reaction, freezing and thawing; Fire resistance	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-10	UNIT 2: PRODUCTION OF CONCRETE	4th week	Introduction to Concreting operations	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-11			Mixing, handling, placing, compaction of concrete and related issues	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-12			Behavior of Concrete in hot weather	White/Black Board & ppt	Concrete Technology by M. L. Gambhir, NPTEL
L-13		5th week	Behavior of Concrete in cold weather	White/Black Board & Group Discussion	Concrete Technology by M. L. Gambhir
L-14			Behavior of Concrete in under water conditions	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-15			Introduction to design mix and different grades of concrete and proportions	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-16		6th week	Effect of various parameters on concrete mix design	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-17	Numerical on Design mix of M30 grade as per IS		White/Black Board & ppt	Concrete Technology by M. L. Gambhir, NPTEL	

			code10262			
L-18			Numerical on Design mix of M35 grade grade as per IS code10262	White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-19	UNIT 3: INSPECTION AND TESTING OF CONCRETE	7th week	Defects and Deterioration of concrete	White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-20			Strength tests including compressive, split tensile, flexural	White/Black Board & ppt	Concrete Technology by M. L. Gambhir, NPTEL	
L-21			Durability tests including permeability, carbonation,	White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-22		8th week	Rapid chlorine ion penetration	White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-23			Destructive testing of concrete	White/Black Board & ppt	Concrete Technology by M. L. Gambhir, NPTEL	
L-24			Non-destructive testing of concrete	White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-25		9th week	Acceptance requirements of concrete as per IS codes	White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-26			Compliance requirements of concrete as per IS codes	White/Black Board & ppt	Concrete Technology by M. L. Gambhir, NPTEL	
L-27		UNIT 4: SPECIAL CONCRETES	10th week	Introduction to Special Concrete	White/Black Board & Group Discussion	Concrete Technology by M. L. Gambhir
L-28				Types and Specification of Special Concrete	White/Black Board & Group Discussion	Concrete Technology by M. L. Gambhir
L-29			11th week	Discussion on Fibre reinforced and steel reinforced concrete	White/Black Board & ppt	Concrete Technology by M. L. Gambhir
L-30	Discussion Polymer concrete; Light weight concrete			White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-31	Discussion on High strength concrete, Pre stressed concrete			White/Black Board & ppt	Concrete Technology by M. L. Gambhir, NPTEL	
L-32			Discussion on Self Compacting Concrete	White/Black Board & ppt	Concrete Technology by M. L. Gambhir	
L-33		Discussion on Pervious Concrete, Self Healing Concrete	White/Black Board & ppt	Concrete Technology by M. L. Gambhir		

BHAJ GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Civil Engineering

LESSON PLAN

Subject Name: - Materials, Testing & Evaluation

Subject Code: - BTCE-402-18

Year: - 2nd

Semester: - 4th

Lecture No.	Unit	Date/Week	Topic	Teaching Aids	Reference
L-1	UNIT-I: INTRODUCTION TO ENGINEERING MATERIALS	Week -1	Types, properties	White/Black Board & ppt	'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-2			Advantages and uses of: Cement; Concrete	White/Black Board & Group Discussion	'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-3			Admixtures; Glass and Plastics	White/Black Board & Group Discussion	'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-4			Paints and Varnishes	White/Black Board & ppt	'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-5		Week -2	Acoustical material Geo-synthetics,	White/Black Board & ppt	Various related updated & recent standards of BIS, IRC, ASTM, RILEM, AASHTO, etc., Mechanical Testing of Engineering Materials by Kyriakos Komvopoulos
L-6			Bitumen and Asphalt	White/Black Board & Group Discussion	Various related updated & recent standards of BIS, IRC, ASTM, RILEM, AASHTO, etc., Mechanical Testing of Engineering Materials by Kyriakos Komvopoulos
L-7			Ceramics and Refractory's ;Bricks;	White/Black Board & ppt	Various related updated & recent standards of BIS, IRC, ASTM, RILEM, AASHTO, etc., Mechanical Testing of Engineering Materials by Kyriakos Komvopoulos
L-8			Concrete hollow blocks & Interlocking tiles	White/Black Board & ppt	Various related updated & recent standards of BIS, IRC, ASTM, RILEM, AASHTO, etc., Mechanical Testing of Engineering Materials by Kyriakos Komvopoulos
L-9		Week -3	Sand: Composition, types, Physical Properties, uses	White/Black Board & ppt	Mechanical Behaviour of Materials by .E.N. Dowling, American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards
L-10			Fly ash: Source, types, properties and uses	White/Black Board & ppt	Mechanical Behaviour of Materials by .E.N. Dowling, American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards
L-11			Timbers: Properties, Seasoning,	White/Black Board & ppt	Mechanical Behaviour of Materials by .E.N. Dowling, American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards
L-12			Defects, preservation methods, laminates and adhesives,	White/Black Board & ppt	Mechanical Behaviour of Materials by .E.N. Dowling, American Society for Testing and Materials (ASTM), Annual Book of ASTM Standards
L-13			Week -4	Importance of Structural steel	White/Black Board & Group

	UNIT-II: FERROUS AND NONFERR OUS METALS		Discussion	
L-14			Their characteristics	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-15			Mechanical Behaviour (elastic, plastic and elasto plastic, strength and durability w.r.t climatic variation);	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-16			Creep – Fundaments and characteristics	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-17		Week -5	Concept of fatigue of materials;	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-18			Impact test, toughness – different materials	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-19			Testing Procedures for bricks	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-20			Testing Procedures for reinforcing steel, fine aggregates	White/Black Board & ppt Highway Materials and Pavement Testing by Khanna and Justo
L-21	UNIT-III: TESTING PROCEDU RES FOR BRICKS	Week -6	Physical Identification of tests for soils	White/Black Board & ppt Highway Materials and Pavement Testing by Khanna and Justo
L-22			Physical Identification of tests for soils	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-23			Documenting the experimental program including the test procedures, collected Data	White/Black Board & ppt Highway Materials and Pavement Testing by Khanna and Justo
L-24			Documenting the experimental program including the test procedures, collected Data	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-25		Week -7	Method of interpretation and final results.	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno
L-26			Method of interpretation and final results.	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-27			Quality control- Use of test data/ testing reports in the material selection for various civil engineering Projects /construction,	White/Black Board & Group Discussion 'Building Construction Handbook' by Chudley and Greeno
L-28			Quality control- Use of test data/ testing reports in the material selection for various civil engineering Projects /construction,	White/Black Board & Group Discussion 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-29		Week -8	Construction, Sampling, Acceptance criterion	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno
L-30			Construction, Sampling, Acceptance criterion	White/Black Board & ppt Building Construction Handbook' by Chudley and Greeno
L-31			Construction, Sampling, Acceptance criterion	White/Black Board & ppt 'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-32			Construction, Sampling,	White/Black Highway Materials and Pavement Testing by

	UNIT-IV: QUALITY CONTROL		Acceptance criterion	Board & ppt	Khanna and Justo
L-33		Week -9	Construction, Sampling, Acceptance criterion	White/Black Board & ppt	Highway Materials and Pavement Testing by Khanna and Justo
L-34			Code of practice and guidelines in this regards for Soils;	White/Black Board & ppt	Highway Materials and Pavement Testing by Khanna and Justo
L-35			Code of practice and guidelines in this regards for Bitumen and asphaltic materials	White/Black Board & Group Discussion	Highway Materials and Pavement Testing by Khanna and Justo
L-36			Code of practice and guidelines in this regards for Timbers; Glass And Plastics	White/Black Board & ppt	Kyriakos Komvopoulos (2011), Mechanical Testing of Engineering Materials, Cognella
L-37		Week -10	Code of practice and guidelines in this regards for Structural Steel	White/Black Board & ppt	Kyriakos Komvopoulos (2011), Mechanical Testing of Engineering Materials, Cognella
L-38			Code of practice and guidelines in this regards for Cements;	White/Black Board & ppt	Kyriakos Komvopoulos (2011), Mechanical Testing of Engineering Materials, Cognella
L-39			Code of practice and guidelines in this regards for Aggregates	White/Black Board & ppt	'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo
L-40			Code of practice and guidelines in this regards for Concrete (plain and reinforced);	White/Black Board & ppt	'Building Construction Handbook' by Chudley and Greeno, Highway Materials and Pavement Testing by Khanna and Justo

BHAJ GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Civil Engineering

LESSON PLAN

Subject Name: - Hydrology & Water Resources Engineering

Subject Code: - BTCE-403-18

Year: - 2ND

Semester: - 4th

Lecture No.	Unit	Week	Topic	Teaching Aids	Reference
Lec-1	UNIT I: INTRODUCTI ON, PRECIPITATI ON	1st Week	Hydrologic Cycle, History of Hydrology, Water-Budget Equation	White/Black Board & Group Discussion	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-2			World Water Balance, Applications in Engineering, Sources of Data	White/Black Board & ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-3			Forms of Precipitation, Characteristics of Precipitation in India	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-4			Measurement of Precipitation, Rain Gauge Network	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-5		2nd Week	Mean Precipitation over an Area	White/Black Board & Group Discussion	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-6			Mean Precipitation over an Area	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-7			Depth Area-Duration Relationships, Maximum Intensity/Depth-Duration-Frequency Relationship,	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-8			Probable Maximum Precipitation (PMP), Rainfall Data in India.	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-9	UNIT II: ABSTRACTIO NS FROM PRECIPITATI ON, RUNOFF	3rd Week	Evaporation Process, Evaporimeters	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-10			Analytical Methods of Evaporation Estimation	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-11			Reservoir Evaporation and Methods for its Reduction	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-12			Evapotranspiration, Interception, Depression Storage	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-13		4th Week	Infiltration, Infiltration Capacity, Measurement of Infiltration	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-14			Modelling Infiltration Capacity, Classification of Infiltration Capacities	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet

Lec-15	UNIT III: WATER WITHDRAWALS AND USES, DISTRIBUTION SYSTEMS		Infiltration Indices	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-16			Runoff Volume, SCS-CN Method of estimating runoff volume	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-17			SCS-CN Method of estimating runoff volume	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-18		5th Week	Flow Duration Curve, Flow-Mass Curve	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-19			Hydrograph, Factors Affecting Runoff Hydrograph	White/Black Board & Group Discussion	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-20			Components of Hydrograph, Base Flow Separation, Effective Rainfall	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-21			Components of Hydrograph, Base Flow Separation, Effective Rainfall	White/Black Board	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-22			Unit Hydrograph Surface Water Resources of India	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-23		6th Week	Unit Hydrograph Surface Water Resources of India, Environmental Flows	White/Black Board & Ppt	K Subramanya, "Engineering Hydrology"; K N Muthreja, "Applied Hydrology"; Internet
Lec-24			Water for Energy Production, Water for Agriculture	White/Black Board & Group Discussion	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-25			Water for Hydroelectric Generation; Flood Control. Analysis of Surface Water Supply	White/Black Board & Ppt	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-26		7th Week	Water Requirement of Crops- Crops and Crop Seasons in India, Cropping Pattern	White/Black Board & Group Discussion	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-27			Duty And Delta	White/Black Board & Group Discussion	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-28			Quality of Irrigation Water; Soil-Water Relationships	White/Black Board	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-29		8th Week	Root Zone Soil Water, Infiltration	White/Black Board & Ppt	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-30			Consumptive use, Irrigation Requirement	White/Black Board	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-31			Frequency of Irrigation; Methods of Applying Water to The Fields: Surface, Sub-Surface, Sprinkler and Trickle / Drip Irrigation	White/Black Board & Ppt	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-32			Canal Systems, Alignment of Canals, Canal Losses	White/Black Board & Ppt	S.K. Garg, "Irrigation Engineering and Hydraulic Structures"; L.W. Mays, "Water Resources Engineering"; Internet
Lec-33			9th	Design of Channels- Rigid	White/Black

		Week	Boundary Channels	Board & Group Discussion	Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-34			Design of Channels- Alluvial Channels	White/Black Board & Group Discussion	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-35			Kennedy’s and Lacey’s Theory of Regime Channels	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-36			Kennedy’s and Lacey’s Theory of Regime Channels	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-37			Canal Outlets: Non-Modular, Semi-Modular and Modular Outlets.	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-38	UNIT IV: WATER LOGGING, DAMS AND SPILLWAYS	10th Week	Water Logging: Causes, Effects and Remedial Measures	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-39			Lining of Canals, Types of Lining	White/Black Board & Group Discussion	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-40			Drainage of Irrigated Lands: Necessity, Methods.	White/Black Board & Group Discussion	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-41			Embankment dams: Classification, design considerations	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-42		11th Week	Estimation and control of seepage, slope protection.	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-43			Gravity dams: forces on gravity dams, causes of failure	White/Black Board	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-44			Stress analysis, elementary and practical profile	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-45			Stress analysis, elementary and practical profile, Arch and buttress dams	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-46		12th Week	Spillways: components of spillways, types of gates for spillway crests	White/Black Board	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-47			Reservoirs- Types, capacity of reservoirs, yield of reservoir	White/Black Board & Ppt	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet
Lec-48			Reservoir regulation, sedimentation, economic height of dam, selection of suitable site.	White/Black Board & Group Discussion	S.K. Garg, “Irrigation Engineering and Hydraulic Structures”; L.W. Mays, “Water Resources Engineering”; Internet

BHAJ GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Civil Engineering

LESSON PLAN

Subject Name: - Transportation Engineering

Subject Code: - BTCE-404-18

Year: - 2nd

Semester: - 4th

Lecture No.	Unit	Week	Topic	Teaching Aids	Reference
Lec-1	UNIT I: INTRODUCTION, TRANSPORTATION SYSTEMS	1st Week	Importance of Transportation, Different Modes of Transportation, Characteristics of Road Transport	White/Black Board & Group Discussion	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of HighwayEngineering"; Internet
Lec-2			Multi modal transportation system, Characteristics of Mass Transit systems including technical, demand operational and economic problems	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-3			Characteristics of Mass Transit systems including technical, demand operational and economic problems	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-4		2nd Week	Characteristics of Mass Transit systems including technical, demand operational and economic problems	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-5			Fixed Track Facility, Mass Rapid Transit System-Elevated, Surface, and Underground construction	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-6			Mass Rapid Transit System-Elevated, Surface, and Underground construction	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-7			Express Bus System, integrated Operating Characteristics of Terminal and Transfer facilities.	White/Black Board & Group Discussion	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-8	3rd Week	Principles of Highway Planning, Road Development in India	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet	
Lec-9		Road Development in India	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet	
Lec-10	UNIT II: HIGHWAY DEVELOPMENT & PLANNING:	4th Week	Classification of Roads, Road Patterns	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-11			Planning Surveys	White/Black Board & Group Discussion	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-12			Highway Construction: Right of way, Earthen Road	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-13		5th Week	Highway Construction: Water Bound Macadam	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet

Lec-14			Highway Construction: Wet Mix Macadam	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-15			Highway Construction: Bituminous Pavements	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-16			Highway Construction: Bituminous Pavements, Cement Concrete Pavements	White/Black Board & Ppt	Khanna S.K., and Justo, C.E.G. "Highway Engineering";Kadiyali, L.R. "Principles and Practice of Highway Engineering"; Internet
Lec-17		6th Week	History of Railways, Development of Indian Railway	White/Black Board & Ppt	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-18			Organization of Indian Railway, Important Statistics of Indian Railways.	White/Black Board & Ppt	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-19			Railway Gauges: Definition, Gauges on World Railways, Choice of Gauge, Uniformity of Gauge, Loading Gauge, Construction Gauge.	White/Black Board & Ppt	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-20		7th Week	Railway Track: Requirements of a Good Track, Track Specifications,	White/Black Board & Ppt	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-21			Detailed Cross-Section of Single/Double Track used in Indian Railways.	White/Black Board & Ppt	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-22			UNIT III: RAILWAY ENGINEERING, RAILWAY TRACK	Components of permanent way - Rails, Sleepers, Ballast, Sub-grade and Formation	White/Black Board & Ppt
Lec-23	Components of permanent way - Rails, Sleepers, Ballast, Sub-grade and Formation	White/Black Board & Ppt		Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet	
Lec-24	Track Fixtures & Fastenings	White/Black Board & Ppt		Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet	
Lec-25		9th Week	Coning of Wheels, Tilting of Rails, Adzing of Sleepers,	White/Black Board & Ppt	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-26			Rail Joints	White/Black Board & Ppt	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-27			Creep of Rails	White/Black Board & Group Discussion	Chandra S., and Aggarwal, "Railway Engineering";S.C. Saxena and S.P. Arora "A Text Book of Railway Engineering"; Internet
Lec-28		10th	Introduction, Air Transport Scenario	White/Black	Khanna, S.K., Arora, M.G., and

	UNIT IV: AIRPORT ENGINEERING, AIRCRAFT PARKING SYSTEM & VISUAL AIDS	Week	in India and Stages of Development	Board & Ppt	Jain, S.S., "Airport Planning and Design"; Internet
Lec-29			National and International Organizations	White/Black Board & Group Discussion	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet
Lec-30			Airport planning - Site selection, Runway Configuration.	White/Black Board & Ppt	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet
Lec-31		11th Week	Runway orientation, Concept of Head Wind, Cross Wind	White/Black Board & Ppt	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet
Lec-32			Wind Rose Diagram	White/Black Board & Ppt	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet
Lec-33			Main Taxiway, Exit Taxiway, Separation Clearance, Holding Aprons.	White/Black Board & Ppt	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet
Lec-34		12th Week	Marking and Lighting of Runway and Taxiway	White/Black Board & Ppt	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet
Lec-35			Landing Direction Indicator, and Wind Direction Indicator	White/Black Board & Ppt	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet
Lec-36			IFR/VFR	White/Black Board & Group Discussion	Khanna, S.K., Arora, M.G., and Jain, S.S., "Airport Planning and Design"; Internet

BHAI GURDAS INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Civil Engineering

LESSON PLAN

Subject Name: - Disaster Preparedness & Planning

Subject Code: - BTCE-405-18

Year: - 2nd

Semester: - 4th

Lecture No.	Unit	Date/Week	Topic	Teaching Aids	Reference
L-1	UNIT I: INTRODUCTION TO DISASTER MANAGEMENT	Week-1	Define and describe disaster, hazard,	Group Discussion & ppt	Disaster Management, R.B. Singh
L-2			Vulnerability, risk-severity, frequency and details, capacity	White/Black Board & ppt	Disaster Management, R.B. Singh
L-3			Impact, prevention, mitigation	Group Discussion & ppt	Disaster Management, R.B. Singh
L-4		Week- 2	Disasters: Identify and describe the types of natural and manmade disasters, hazard and vulnerability profile of India, mountain and coastal areas,	White/Black Board & ppt	Disaster Management, R.B. Singh
L-5			Factors affecting vulnerability such as impact of development projects and environment modifications (including dams, land-use changes, urbanization etc.),	Group Discussion & ppt	www.http//ndma.gov.in
L-6			Disaster impacts (environmental, physical, social, ecological, economic etc.); health, psycho-social issues;	Group Discussion & ppt	www.http//ndma.gov.in Disaster Management, R.B. Singh
L-7			Demographic aspects (gender, age, special needs), Lessons and experiences from important disasters with specific reference to civil Engineering.	White/Black Board & ppt	www.http//ndma.gov.in Disaster Management, R.B. Singh
L-8	UNIT II: DISASTER MITIGATION AND PREPAREDNESS	Week-3	Disaster Management Cycle-its phases; prevention, mitigation, preparedness, relief and recovery;	Group Discussion & ppt	Natural Hazards in the Urban Habitat by Iyengar,
L-9			Structural and non structural measures; Preparedness for natural Disasters in urban areas.	White/Black Board & ppt	Natural Hazards in the Urban Habitat by Iyengar,
L-10		Week-4	Risk Assessment: Assessment of capacity, vulnerability and risk mapping	Group Discussion & ppt	Natural Hazards in the Urban Habitat by Iyengar, Natural Disaster management, Jon Ingleton
L-11	Stages in disaster recovery and associated problems;		Group Discussion & ppt	Natural Hazards in the Urban Habitat by Iyengar, Natural Disaster management, Jon Ingleton	
L-12	Use of Remote Sensing Systems (RSS) and GIS in disaster Management, early warning systems		White/Black Board & ppt	Natural Disaster management, Jon Ingleton	
L-13		Week-4	Emergency medical and public health services; Environmental post disaster response (water, sanitation, food safety, waste management, disease control, security, communications)	White/Black Board & ppt	Natural Disaster management, Jon Ingleton

L-14	UNIT III : POST DISASTER RESPONSE		Emergency medical and public health services; Environmental post disaster response (water, sanitation, food safety, waste management,	White/Black Board & ppt	Handbook of disaster management: Techniques & Guidelines by B.K. Singh, Disaster Management, R.B. Singh
L-15			Environmental post disaster response (disease control, security, communications)	Group Discussion & ppt	Handbook of disaster management: Techniques & Guidelines by B.K. Singh, Disaster Management, R.B. Singh
L-16		Week-5	Environmental post disaster Response (disease control, security, communications	Group Discussion & ppt	Handbook of disaster management: Techniques & Guidelines by B.K. Singh, Disaster Management, R.B. Singh
L-17			Reconstruction and rehabilitation;	White/Black Board & ppt	Handbook of disaster management: Techniques & Guidelines by B.K. Singh, Disaster Management, R.B. Singh
L-18			Reconstruction and rehabilitation;	Group Discussion & ppt	Handbook of disaster management: Techniques & Guidelines by B.K. Singh, Disaster Management, R.B. Singh
L-19		Week-6	Roles and responsibilities of government	White/Black Board & ppt	Disaster Management, R.B. Singh, Internet
L-20			Roles and responsibilities community, local institutions	White/Black Board & ppt	Disaster Management, R.B. Singh, Internet
L-21			Role of agencies like NDMA International agencies	White/Black Board & ppt	Disaster Management, R.B. Singh, Internet
L-22		Week-7	Role of agencies like SDMA and other International agencies	White/Black Board & ppt	Disaster Management, R.B. Singh, Internet
L-23			Organizational structure	Group Discussion & ppt	Disaster Management, R.B. Singh, Internet
L-24			Organizational structure	Group Discussion & ppt	Disaster Management, R.B. Singh
L-25			Role of insurance sector, DM act and NDMA guidelines	White/Black Board & ppt	Natural Disaster management, Jon Ingleton, Handbook of disaster management: Techniques & Guidelines by B.K. Singh,
L-26			Role of insurance sector, DM act and NDMA guidelines	White/Black Board & ppt	Natural Disaster management, Jon Ingleton, Disaster Management, R.B. Singh
L-27			What is Integration of public policy	Group Discussion & ppt	Natural Disaster management, Jon Ingleton, Disaster Management, R.B. Singh
L-28	Planning of infrastructure for disaster management		White/Black Board & ppt	Natural Disaster management, Jon Ingleton, Disaster Management, R.B. Singh	
L-29	UNIT IV: INTEGRATION OF PUBLIC POLICY	Week-8	Design of infrastructure for disaster management	Group Discussion & ppt	Natural Disaster management, Jon Ingleton, Disaster Management, R.B. Singh

L-30			Community based approach in disaster management,	White/Black Board & ppt	Natural Disaster management, Jon Ingleton, Disaster Management, R.B. Singh
L-31			Methods for effective dissemination of information	Group Discussion & ppt	Natural Disaster management, Jon Ingleton, Disaster Management, R.B. Singh
L-32		Week-9	Ecological and sustainable development models for disaster management.	White/Black Board & ppt	Natural Disaster management, Jon Ingleton, Disaster Management, R.B. Singh