PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (Nil)	Internal (Nil)	Total
DCE16011	Construction Planning and Management	3	1	-			Min: 40 (D Grade)			(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know CPM/PERT with network analysis.
	2. Student should able to know factors affecting selection, investment and operating cost.
	3. Student should able to know notice inviting tenders, contract document.

Unit	Contents (Theory)	Marks Weightage
I	**Preliminary And Detailed Investigation Methods:** Methods of construction, Schedule of construction, Job layout, Principles of construction management, Modern management techniques like CPM/PERT with network analysis.	**14**
II	**Construction Equipments:** Factors affecting, Selection of construction equipment investment and operating cost, Output of various equipments, Brief study of equipments required for various jobs such as earth work, Dredging, conveyance, Concreting, Hoisting, Pile driving, Compaction and grouting.	**14**
III	**Contracts:** Different types of contracts, Notice inviting tenders, Contract document, Departmental method of construction, Rate list, Security deposit and earnest money, Conditions of contract, Arbitration, Administrative approval, Technical sanction.	**14**
IV	**Specifications & Public Works Accounts:** Importance, Types of specifications, Specifications for various trades of engineering works, Various forms used in construction works, Measurement book, Cash book, Materials at site account, Impress account, Tools, Various types of running bills, Secured advance, Final bill.	**14**
V	**Site Organization & Systems Approach To Planning:** Accommodation of site staff, Contractor's staff, Various organization charts and manuals, Welfare facilities, labour laws and human relations, Safety engineering, Problem of equipment management.	**14**

Text Book/References Books/ Websites

1. Roberts Peurify ; Construction planning Equipment and method ; McGraw-Hill Education (India) Pvt Limited.
2. L.S. Srinath ; CPM ; Affiliated East-West Press Pvt Ltd.
3. S. Seetharaman ; Construction Management ; Dhanpat Rai Publication.
4. Weist & Levy ; CPM & PERT ; Phi Learning.
5. Harpal Singh Construction ; Management & Accounts ; Tata McGraw-Hill Publishing Company Limited.

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (Nil)	Internal (Nil)	Total
DCE16012	Traffic Engineering	3	1	-			Min: 40 (D Grade)			(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil

Pre-Requisite	**Transportation Engg. -II**
Course Outcome	1. To give detailed information about the road user's characteristics, vehicular characteristics.
	2. To give detailed information about the traffic studies, traffic capacity, parking studies.
	3. To give the knowledge of traffic operations and control, traffic signals- isolated signals.

Unit	Contents (Theory)	Marks Weightage
I	**Traffic Characteristics:** **(i) Road User's Characteristics** - general human characteristics, physical, mental and emotional factors, factors affecting reaction time, piev theory. **(ii) Vehicular Characteristics**: characteristics affecting road design-width, height, length and other dimensions. Weight, power, speed and braking capacity of a vehicle.	**14**
II	**Traffic Studies**: (i) Spot speed studies and volume studies. (ii) Speed and delay studies: purpose, Causes of delay, methods of conducting speed and delay studies. (iii) Origin and destination studies (O & D): various methods, collection and interpretation of data, planning and sampling. (iv) Traffic capacity studies**:** volume, density, basic practical and possible capacities, level of service. (v) Parking studies: methods of parking studies cordon counts, space inventories, parking practices.	**14**
III	**Traffic Operations and Control:** (i) Traffic regulations and various means of control. (ii) One way streets- advantages and limitations. (iii) Traffic signals-isolated signals, coordinated signals, simultaneous, alternate, flexible and progressive signal systems. Types of traffic signals, fixed time signals, traffic actuated signals, speed control signals, pedestrian signals, flashing signals, clearance interval and problems on single isolated traffic signal.	**14**
IV	**Street Lighting:** (i) Methods of light distribution. (ii) Design of street lighting system. (iii) Definitions- luminarie, foot candle, lumen, utilization and maintenance factors. (iv) Different types of light sources used for street lighting. (v) Fundamental factors of night vision.	**14**
V	**Accident Studies & Mass Transportation**: (i) Accident studies: causes of accidents, accident studies and records, condition and collision diagram, preventive measures. (ii) Expressways and freeways, problems on mass transportation and remedial measures, brief study of mass transportation available in the country.	**14**

Text Book/References Books/ Websites

1 L.R. Kadiyali Khanna ; Traffic Engineering and Transport Planning ; L.R. Kadiyali Khanna Publishers, New Delhi.

2 Matson W.S.Smith & F.W. Hurd ;Traffic Engineering ; Matson W.S.Smith & F.W. Hurd publisher.

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total (100)	External	Internal	Total
DCE16013	Pavement Design	3	1	-	(70)	(30)	Min: 40 (D Grade)	(Nil)	(Nil)	(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil

Pre-Requisite	**Nil**
Course Outcome	1. To give the knowledge of about the Equivalent Single Wheel Load (ESWL).
	2. To give the knowledge of Flexible Pavements.
	3. To give the knowledge of Rigid Pavements.

Unit	Contents (Theory)	Marks Weightage
I	**Equivalent Single Wheel Load (ESWL):** Definition, Calculation of ESWL, Repetition of loads and their effects on the pavement structures.	**14**
II	**Flexible Pavements:** Component parts of the pavement structures and their functions, Stresses in flexible pavements, stress distribution through various layers, Boussinesque's theory, Burmister's two layered theory, Methods of design, Group index method, CBR method, Burmister's method and north Dakota cone method.	**14**
III	**Rigid Pavements:** Evaluation of sub-grade, Modulus-k by plate bearing test and the test details, Westergaard's stress theory stresses in rigid pavements, Temperature stresses, Warping stresses, Frictional stresses, Critical combination of stresses, Critical loading positions.	**14**
IV	**Rigid Pavement Design:** IRC Method, Fatigue analysis, PCA chart method, Joints, Design and construction & types, Aashto-method, Reliability analysis.	**14**
V	**Evaluation And Strengthening of Existing Pavements:** Benkleman beam method, Serviceability index method, Rigid and flexible overlays and their design.	**14**

Text Book/References Books/ Websites;

1 E.J.Yoder & M.W. Witczak ; Principles of Pavement Design ; E.J.Yoder & M.W. Witczak Ltd.
2 Washington, D.C.Aasho Interim Guide for Design Of Pavement Structures ; Washington, D.C.Aasho Interim Guide for Design Of Pavement Structures ; Publication.
3 Code for Flexible Pavement Design IRC:37:2012, Code for Rigid Pavement Design IRC:58:2015.

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total (100)	External	Internal	Total
DCE1602	Irrigation Engineering	3	1	-	(70)	(30)	Min: 40 (D Grade)	(Nil)	(Nil)	(Nil)

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know Definition – Irrigation, advantages of irrigation.
	2. Student should able to know Hydrological cycle, rain gauge, types of rain gauges.
	3. Student should able to know Crop period base period Duty Delta.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction**: Definition – Irrigation, Advantages of irrigation, ill effects of over irrigation, and types of irrigation project purpose wise and administrative wise, Methods of irrigation, Weir and barrages, lift irrigation scheme, Its suitability, advantages and limitations crop Rainfall, Seasonal crops.	**14**
II	**Hydrology :** Hydrological cycle, Rain gauge, Types of rain gauges (names only) average annual rain fall and its calculation , Definition of runoff, Factor affecting run off, Calculation of run off by runoff coefficient, English formula, Maximum flood discharge and methods of calculation. Unit hydrograph ,Yield and Dependable yield and methods of calculation.	**14**
III	**Water Requirement Of Crops:** Cropping seasons and crop in Madhya Pradesh, Definition – Crop period base period Duty Delta , Factors affecting Duty , Relation between Duty Delta and base period Definition – CCA , GCA, IA, Intensity of irrigation time factor capacity factor, Crop rotation, Problems on water requirement and capacity of canal, Assessment of irrigation water.	**14**
IV	**Dams And Spillways:** Types of dams –Comparison of earthen and gravity dams with respect to foundation, Earthen Dams, Methods of constructions, Types of failure of earthen dams and remedial measures, Typical cross section, Drainage gallery, Joint in gravity dam, High dam and low dam Spillways, Type of Spillway.	**14**
V	**Canals:** Classification of canals according to alignment and position in the canal network. Design of most economical canal section. Canal lining : Definition, purpose, types of canal lining Advantages of canal lining properties of good canal lining material, Cross drainage canal- falls, escapes, cross regulators and canal outlets.	**14**

Text Book/References Books/ Websites

1. B.C. Punmia ; Irrigation and water power Engineering ; Laxmi Publication, Delhi.
2. B.C. Punmia ; Introductory Irrigation Engineering ; Laxmi Publication, Delhi.
3. S.K. Garg ; Irrigation Engineering. & Hydraulic structures ; Khanna publisher, New Delhi.

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (35)	Internal (15)	Total (50)
DCE1603	Quantity Surveying & Costing	3	1	1			Min: 40 (D Grade)			Min: 20 Grade

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know definition – irrigation, advantages of irrigation.
	2. Student should able to know hydrological cycle, rain gauge, types of rain gauges.
	3. Student should able to know . typical cross section, drainage gallery.

Unit	Contents (Theory)	Marks Weightage
I	**Estimate Of R.C.C. Structure:** Estimate of slab, beam, T-beam, Estimate of R.C.C. column with its footing, Preparation of abstract of above items, Preparation of bar bending schedule, And to calculate amount of steel**.**	**14**
II	**Detailed Estimates:** Preparing detailed estimates of various types of buildings, R.C.C. works, Earth work, Services for building such as water supply, Drainage and electrification, Types of cross drainage structure.	**14**
III	**Estimate of Culverts & Bridges:** Estimate of Hume pipe culvert with splayed type of wing wall, Turn wall and face wall, Estimate of R.C.C. slab bridge, Straight type wing walls.	**14**
IV	**Cost of Works:** Factors affecting cost of work, Overhead charges, Contingencies and work charge establishment, Various percentages for different services in building, Preparation of DPR.	**14**
V	**Valuation & Rent Fixation:** Definition, necessity of valuation, Definition, Cost price, Value, Types of value, Book, Market value, Depreciation, Obsolescence, Sinking fund, Methods of calculation of depreciation, Quantity survey method, Computation of capitalized value, Gross income, Outgoing, Net income, Years purchase, Types of outgoing and their percentages, Valuation of lands & buildings, Factors affecting their valuation, Fixation of rent as per PWD practice.	**14**

Text Book/References Books/ Websites

1. B.N. Dutta ; Estimating and Costing ; S.Datta & Co. Tagroe Path Motilal Bose Road, Lucknow.
2. Rangwala Charotar ; Estimating and Costing & Valuation ; By Publications Station Road, Anand.
3. Birdie, J.C, Kapoor ; Estimating & Costing ; Dhanpat Rai & Sons Delhi and Jullunder.
4. J.C. Malhotra,; Estimating & Costing ; Vol-I & Vol.-II Khanna Publishers New Delhi.

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Suggested List of Laboratory Experiments :- (Expandable):

1. Use of different Schedule of Rates like .PWD,C.P.W.D, D.S.R,RES, HOUSING BOARD, IRRIGATION & PHE.
2. Estimating & abstract and rate analysis with the help of different software eg. QE-PRO, ESTIMATOR, & Print out of report.
3. Taking out quantities of following items for small R.C.C. Hall Concreting for footing, Column, Beam, slab.
4. Reinforcement for above items by preparing Schedule of bars form work for all above items.
5. Preparing Rate analysis of following items: Building work – Brick work, P.C.C., R.C.C., Plastering, Flooring, Doors, Windows
6. Taking out quantities of Steel work for given shed supported on steel trusses & having GI sheet/profile sheet roofing.
7. Taking out quantities of work for pipe culvert. (Drawings shall be provided for the above exercises by subject teacher.)

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (50)
DCE1604	Soil Mechanics & Techniques -II	3	1	1	External (70)	Internal (30)	Min: 40 (D Grade)	External (35)	Internal (15)	Min: 20 Grade

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test - Max Marks: 15	Assignment/Quiz/Attendance - Max. Marks: 15
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Nil**
Course Outcome	1. Student should able to know type of foundations shallow and deep
	2. Student should able to know estimation of individual and group
	3. Student should able to know factors affecting compaction

Unit	Contents (Theory)	Marks Weightage
I	**Shallow Foundations:** Type of foundations, Bearing capacity of foundation on cohesion less and cohesive soils, General and local shear failures, Factors effecting B.C, Theories of bearing capacity - Prandle, Terzaghi, Balla, Skempton, Meyerhoff and Hansan. I.S. code on B.C. Determination of bearing capacity, Plate load test.	**14**
II	**Deep Foundation:** Pile foundation, Types of piles, estimation of individual and group capacity of piles in cohesion less and cohesive soils, Static and dynamic formulae, Pile load test, Settlement of pile group, Negative skin friction, under- reamed piles caissons, well foundation.	**14**
III	**Soil Improvement Techniques:** Compaction, Field and laboratory methods, Proctor compaction tests, Factors affecting compaction, Properties of soil affected by compaction, Various equipment for field compaction and their suitability, Field compaction control, Soil stabilization : Mechanical, Lime, Cement, Bitumen, Chemical, thermal, Electrical-stabilization and stabilization by grouting, Geo-synthetics, types, Functions, Materials and uses.	**14**
IV	**Soil Exploration and Foundations on Expansive and Collapsible Soils:** Methods of soil exploration. Planning of exploration programme for buildings, highways and earth dams. Disturbed and undisturbed samples and samplers for collecting them. Characteristics of expansive and collapsible soils, their treatment, Construction techniques on expansive and collapsible soils. CNS layer.	**14**
V	**Sheet Piles/Bulkheads:** Classification of sheet piles/bulkheads. Cantilever and anchored sheet piles, Cofferdams, materials, types and applications.	**14**

Text Book/References Books/ Websites

1. Dr. K.R. Arora, Soil Mechanics & Foundation Engg, Std. Publishers Delhi
2. B.C. Punmia ,Soil Mechanics & Foundation Engg, Laxmi Publiscations Delhi
3. Dr. Alam Singh ,Modern Geotech. Engg.IBT Publishers Delhi.
4. C.Venkatramaiah ,Geotech. Engg, New AGe International Publishers, Delhi

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Suggested List of Laboratory Experiments :- (Expandable):

1. Determination of field density by core cutter method.
2. Determination of field density by sand replacement method.
3. Determination of field density by water displacement method.
4. Modified Proctor test.
5. Triaxial compression test.
6. Vane shear test.
7. C.B.R. test.
8. Demonstration of plate load test.

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total	External	Internal	Total (250)
DCE1605	Major Project	-	-	5	(Nil)	(Nil)	(Nil)	(175)	(75)	Min: 100 D Grade

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: Nil
Practical Internal Max Marks: 75	Lab work & Sessional – Max Marks: 70	Assignment/Quiz/Attendance Max. Marks: 05

Pre-Requisite	**Knowledge of concerned subject.**
Course Outcome	The student will be able to-An ability to utilize technical resources:
	1. Identify, analyze & define the problem.
	2. Generate alternative solutions to the problem identified.
	3. Compare & select feasible solutions from alternatives generated.
	4. Design, develop, manufacture & operate equipment/program.
	5. Acquire higher-level technical knowledge by studying recent development in Engineering field.
	6. Compare machines/devices/apparatus for performance practices.
	7. Work effectively in a team.

Unit	Contents (Theory)	Marks Weightage
I	The student should prepare a working system or some design or understanding of a complex system that he has selected for his project work using system analysis tools and submit the same in the form of a write-up i.e. detail project report. The student should maintain proper documentation of different stages of project such as need analysis, market analysis, concept evaluation, requirement specification, objectives, work plan, analysis, design, implementation and test plan wherever applicable. Each student is required to prepare a project report based on the above points and present the same at the final examination with a demonstration of the working system, if applicable. Evaluation will be based on his performance in technical work pertaining to the solution of a small size problem, project report, and presentation of work and defending it in a viva-voce.	**250**

Text Book/References Books/ Websites: Nil

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total	External	Internal	Total (50)
DPE1606	Development of Professional Ethics	-	-	1	(Nil)	(Nil)	(Nil)	(35)	(15)	Min: 20 Grade

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test - Max Marks: Nil	Assignment/Quiz/Attendance - Max. Marks: Nil
Practical Internal Max Marks: 15	Lab work & Sessional - Max Marks: 10	Assignment/Quiz/Attendance - Max. Marks: 05

Pre-Requisite	**Nil**
Course Outcome	Ability to use of presentation aids, Presentation skills, Interview Technique and ethics.

Unit	Contents (Theory)	Marks Weightage
I	**Presentation Skills** Body Language - Dress like the audience. Posture, Gestures, Eye contact and facial expression. Presentation skill – Stage fright, Voice and language – Volume, Pitch, Inflection, Speed, Pause; Pronunciation, Articulation, Language, Practice of speech; Use of aids –OHP,LCD projector, White board	**50**
	Group Discussion and Interview Technique – Introduction to group discussion, Ways to carry out group discussion. Parameters— Contact, Body language, Analytical and logical thinking, Decision making **Interview Technique** Necessity, Tips for handling common questions.	
	Working in Teams: Understand and work within the dynamics of a groups, Tips to work effectively in teams, Establish good rapport, Interest with others and work effectively with them to meet common objectives, Tips to provide and accept feedback in a constructive and considerate way, Leadership in teams, Handling frustrations in group.	
	Professional Ethics: The foundations and norms of professional ethics, The need for separate code of conduct for professionals, The relation between professional and general ethics, Moral conflict and the issue of autonomy of professional ethics, Impact of violation of professional ethics on society, Remedies.	

Text Book/References Books/ Websites

1. Michael Hatton ;Presentation Skills (Canada – India Project) ;ISTE New Delhi.
2. Richard Hale ,Peter;Target setting and Goal Achievement; Whilom Kogan page India.
3. Chakravarty, Ajanta ;Time management ;Rupa and Company.
4. Harding ham; Working in Teams;.A Orient Longman.
5. Koehn, D.; The Ground of Professional Ethics, Routledge, 1995.
6. Wuest, D.E; Professional Ethics and Social Responsibility, Rowman & Little field, 1994.

PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Diploma in Engineering** **Semester –VI**

Suggested List of Laboratory Experiments :- (Expandable):

1. Deliver a seminar for 10-12 minutes using presentation aids on the topic given by your teacher.
2. Watch/listen an informative session on social activities. **Make a report** on topic of your interest using audio/visual aids.
3. **Mini Project** on Task Management. Decide any task to be completed in a stipulated time with the help of teacher. Write a report on the group task assigned by teacher related to social and technical activities.
4. Conduct an interview of a personality and write a report on it.
5. Discuss a topic in a group and prepare minutes of discussion. **Write thorough description** of the topic discussed.
6. **Arrange an exhibition**, displaying flow-charts, posters, paper cutting, photographs etc on the topic given by your teacher.