# LESSON PLAN

**Name of the Faculty :** RIMPI CHOPRA

**Discipline :** CIVIL

**Semester :** $6^{TH}$

**Subject :** DCS-II (CE-302N)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** Lectures - 04

| **WEEK** | **THEORY** | |
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| | **LECTURE DAY** | **TOPIC (including assignment / test)** |
| **1st** | **1st** | Elementary Plastic Analysis and Design: Introduction |
| | **2nd** | Scope of plastic analysis |
| | **3rd** | ultimate load carrying capacity of tension members |
| | **4th** | **Numerical on tension member** |
| **2nd** | **1st** | **Numerical on tension member** |
| | **2nd** | ultimate load carrying capacity of compression members |
| | **3rd** | **Numerical of compression member** |
| | **4th** | **Numerical of compression member** |
| **3rd** | **1st** | flexural members |
| | **2nd** | shape factor |
| | **3rd** | mechanisms, plastic collapse |

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| | **4th** | plastic analysis applied to steel beams |
| **4th** | **1st** | Simple portal frames and design. |
| | **2nd** | **Numerical related to above topic** |
| | **3rd** | **Numerical related to above topic** |
| | **4th** | **Assignment of Unit-I** |
| **5th** | **1st** | Design of Water Tanks: Introduction, |
| | **2nd** | permissible stresses |
| | **3rd** | design of circular tanks |
| | **4th** | Design of rectangular tanks |
| **6th** | **1st** | Design of pressed steel tanks including staging |
| | **2nd** | **Numerical related to above topic** |
| | **3rd** | **Numerical related to above topic** |
| | **4th** | **Numerical related to above topic** |
| **7th** | **1st** | Design of Steel Stacks: Introduction |
| | **2nd** | various loads to be considered for the design of steel stacks |
| | **3rd** | design of steel stacks including foundation |
| | **4th** | **Numerical related to above topic** |
| **8th** | **1st** | **Numerical related to above topic** |
| | **2nd** | **Numerical related to above topic** |
| | **3rd** | **Numerical related to above topic** |
| | **4th** | Assignment of Unit -II |
| **9th** | **1st** | Towers: Introduction |

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| **9th** | **2nd** | Transmission line towers |
| | **3rd** | microwave towers |
| | **4th** | Design loads |
| **10th** | **1st** | Classification of towers |
| | **2nd** | Design procedure and specification. |
| | **3rd** | **Numerical related to above topic** |
| | **4th** | **Numerical related to above topic** |
| **11th** | **1st** | Cold Formed Sections: Introduction |
| | **2nd** | brief description of various types of cold formed sections |
| | **3rd** | local buckling |
| | **4th** | concepts of effective width and effective sections |
| **12th** | **1st** | elements with stiffeners |
| | **2nd** | design of compression and bending elements |
| | **3rd** | **Numerical related to above topic** |
| | **4th** | **Numerical related to above topic** |
| **13th** | **1st** | **Numerical related to above topic** |
| | **2nd** | **Numerical related to above topic** |
| | **3rd** | Assignment of Unit -III |
| | **4th** | Industrial Buildings: Introduction |
| **14th** | **1st** | Loads |
| | **2nd** | general arrangement and stability |
| | **3rd** | design considerations |
| | **4th** | design of purlins |

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| **15th** | **1st** | design of roof trusses |
| | **2nd** | industrial building frames |
| | **3rd** | bracings and stepped columns |
| | **4th** | **Numerical related to above topic** |

# LESSON PLAN

**Name of the Faculty :** Er. SUKHDEV SINGH

**Discipline :** CIVIL

**Semester :** $6^{TH}$

**Subject :** I.E-I (CE-304N)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** Lectures - 03

| WEEK | THEORY | |
|---|---|---|
| | LECTURE DAY | TOPIC (including assignment / test) |
| 1st | 1st | **Introduction:** Irrigation-necessity |
| | 2nd | advantages, disadvantages |
| | 3rd | impact of irrigation on human environment |
| 2nd | 1st | need and development of irrigation in India |
| | 2nd | crops and crop seasons |
| | 3rd | ideal cropping pattern and high yielding varieties of crops |
| 3rd | 1st | **Soil-water relationship and irrigation methods:** Soil-water relationship |
| | 2nd | root zone soil water, infiltration |
| | 3rd | Consumptive use, field capacity, wilting point |
| 4th | 1st | available moisture in soil, GCA, CCA, intensity of irrigation, delta, base period, Kor depth, |

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| **4th** | | core period, frequency of irrigation, duty of water, relation between delta |
| | **2nd** | duty and base period, irrigation requirement, flooding methods, border strip method, check basin and furrow method |
| | **3rd** | assessment of irrigation water, sprinkler irrigation, favorable conditions, sprinkler systems |
| **5th** | **1st** | hydraulics of sprinkler irrigation, planning, design and maintenance of sprinkler systems |
| | **2nd** | drip irrigation-components parts, advantages and limitations, suitability of drip irrigation |
| | **3rd** | **Canal irrigation**: Classifications of canals |
| **6th** | **1st** | canal alignment, Inundation canals |
| | **2nd** | Bandhara irrigation, advantages and disadvantages |
| | **3rd** | Silt theories-Kennedy's theory |
| **7th** | **1st** | Lacey's theory, Drawbacks in Kennedy's & Lacey's theories |
| | **2nd** | comparison of Lacey's and Kennedy's theories |
| | **3rd** | Design of unlined canals based on Kennedy & Lacey's theories. |
| **8th** | **1st** | **Lined canals**: Types of lining |
| | **2nd** | selection of type of lining |
| | **3rd** | Economics of lining, maintenance of lined canals, silt removal |
| **9th** | **1st** | strengthening of channel banks, measurement of discharge in channels |
| | **2nd** | Design of lined canals, methods of providing drainage behind lining. |
| | **3rd** | **Losses in canals, water logging and drainage**: Losses in canals-Evaporation and seepage |
| **10th** | **1st** | water logging, causes and ill effects of water logging anti water logging measures |
| | **2nd** | Drainage of land, classification of drains - surface and subsurface drains |
| | **3rd** | Design considerations for surface drains, Advantages and maintenance of tile drains. |

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| **11th** | **1st** | **River Training work:** Classification of rivers |
| | **2nd** | river training and its objectives, classification of river training works |
| | **3rd** | Methods of river training, marginal embankments |
| **12th** | **1st** | guide banks, spurs, cutoffs, bank pitching and launching apron |
| | **2nd** | **Canal outlets:** Classification |
| | **3rd** | requirements of a good outlet, design of pipe, APM and open flume outlet |
| **13th** | **1st** | Flexibility proportionality, setting and sensitivity of outlet |
| | **2nd** | **Tube-well irrigation**: Types of tube wells - strainer type, cavity type and slotted type |
| | **3rd** | Type of strainers, Aquifer, porosity |
| **14th** | **1st** | uniformity coefficient, specific yield & specific retention |
| | **2nd** | coefficients of permeability, transmissibility and storage |
| | **3rd** | Yield or discharge of a tube well, Assumptions |
| **15th** | **1st** | Theim's & Dupuit's formulae, Limitations of Theim's and Dupuit's formulae |
| | **2nd** | Interference of tube wells with canal or adjoining tube-wells, causes of failure of tube wells |
| | **3rd** | Optimum capacity, Duty and delta of a tube well. Rehabilitation of tube well. |

# LESSON PLAN

**Name of the Faculty :**

**Discipline** : CIVIL

**Semester** : $6^{TH}$

**Subject** : DISASTER MANAGEMENT (CE-306N)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** Lectures - 03

| WEEK | THEORY | |
|---|---|---|
| | LECTURE DAY | TOPIC (including assignment / test) |
| 1st | 1st | **Introduction to Disaster Management**: |
| | 2nd | Define and describe disaster, hazard, |
| | 3rd | emergency, vulnerability, risk and disaster management |
| 2nd | 1st | Identify and describe the types of natural and non-natural disasters |
| | 2nd | Important phases of Disaster Management Cycle |
| | 3rd | **Disaster Mitigation and Preparedness:** Natural Hazards |
| 3rd | 1st | causes, distribution pattern, consequences |
| | 2nd | Mitigation measures for earth quake, tsunami |
| | 3rd | cyclone, flood, landslide drought etc |
| 4th | 1st | Man-made hazards: causes |
| | 2nd | Consequences mitigation measures for various industrial hazards/disasters |

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| | **3rd** | Preparedness for natural disasters in urban areas |
| **5th** | **1st** | **Hazard and Risk Assessment: A**ssessment of capacity |
| | **2nd** | vulnerability and risk |
| | **3rd** | vulnerability and risk mapping |
| **6th** | **1st** | stages in disaster recovery and associated problems |
| | **2nd** | **Emergency Management Systems (EMS): introduction** |
| | **3rd** | Emergency medical and essential public health services |
| **7th** | **1st** | response and recovery operations |
| | **2nd** | reconstruction and rehabilitation |
| | **3rd** | **Assignment of above topic** |
| **8th** | **1st** | **Capacity Building:** Gender sensitive disaster management approach and inculcate new skills and sharpen existing skills of government officials |
| | **2nd** | voluntary activists, development of professional and elected representative for effective disaster management |
| | **3rd** | role of media in effective disaster management |
| **9th** | **1st** | overview of disaster management in India |
| | **2nd** | role of agencies like NDMA, SDMA and other International agencies |
| | **3rd** | organizational structure, role of insurance sector |
| **10th** | **1st** | DM act and NDMA guidelines.. |
| | **2nd** | **Application of Geo-informatics and Advanced Techniques: Introduction** |
| | **3rd** | Use of Remote Sensing Systems (RSS) in disaster management |
| **11th** | **1st** | Use of GIS in disaster Management |
| | **2nd** | role of knowledge based expert systems in hazard scenario |

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| | **3rd** | Using risks-time charts to plan for the future, early warning systems. |
| **12th** | **1st** | **Assignment of above topic** |
| | **2nd** | **Integration of public policy**: Introduction |
| | **3rd** | Planning and design of infrastructure for disaster management |
| **13th** | **1st** | Community based approach in disaster management |
| | **2nd** | methods for effective dissemination of information |
| | **3rd** | ecological and sustainable development models for disaster management |
| **14th** | **1st** | **Case Studies:** Lessons and experiences from various important disasters with specific reference to Civil Engineering |
| | **2nd** | |
| | **3rd** | |
| **15th** | **1st** | **Case studies** |
| | **2nd** | **Case studies** |
| | **3rd** | Assignment of above topic |

# LESSON PLAN

**Name of the Faculty :**

**Discipline** : CIVIL

**Semester** : $6^{TH}$

**Subject** : G.T-II (CE-308N)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** Lectures - 03

| WEEK | THEORY | |
|---|---|---|
| | LECTURE DAY | TOPIC (including assignment / test) |
| 1st | 1st | **Earth Dams:** Introduction |
| | 2nd | types of sections, earth dam foundations |
| | 3rd | causes of failure and criteria for safe design |
| 2nd | 1st | Control of seepage through the embankment |
| | 2nd | control of seepage through the foundation, drainage of foundations |
| | 3rd | criterion for filter design. Introduction to rock fill dams. |
| 3rd | 1st | **Stability of slopes:** Causes of failure |
| | 2nd | factors of safety, stability analysis of slopes-total stress analysis |
| | 3rd | effective stress analysis, stability of infinite slopes types of failures of finite slopes |
| 4th | 1st | analysis of finite slopes-mass procedure, method ofslices |
| | 2nd | effect of pore pressure, Fellinius method to locate center of most critical slip |

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| | | circle |
| | **3rd** | friction circle method, Tayler's stability number |
| **5th** | **1st** | slope stability of earth dam during steady seepage |
| | **2nd** | During sudden draw down and during and at the end of construction. |
| | **3rd** | **Braced Cuts:** Depth of unsupported vertical cut |
| **6th** | **1st** | sheeting and bracing for deep excavation |
| | **2nd** | movements associated with sheeting and bracing, modes of failure of braced cuts |
| | **3rd** | Pressure distribution behind sheeting. |
| **7th** | **1st** | **Cofferdams:** Introduction |
| | **2nd** | types of cofferdams, design and lateral stability of braced cofferdams |
| | **3rd** | design data for Cellular cofferdams |
| **8th** | **1st** | Stability analysis of cellular cofferdams on soil and rock, inter-lock stresses. |
| | **2nd** | **Assignment of above topic** |
| | **3rd** | **Cantilever Sheet Piles:** Purpose of sheet piles |
| **9th** | **1st** | cantilever sheet piles |
| | **2nd** | depth of embedment in granular soils-rigorous method, simplified procedure |
| | **3rd** | cantilever sheet pile, penetrating clay and limiting height of wall |
| **10th** | **1st** | **Anchored Bulkheads:** Methods of design |
| | **2nd** | free earth support method in cohesion less soil |
| | **3rd** | free earth support method in cohesive soil |
| **11th** | **1st** | fixed earth support method in cohesion less soils-Blum's equivalent beam method |
| | **2nd** | Assignment of unit-III |
| | **3rd** | |

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| **12th** | **1st** | **Soil Stabilization:** Soil improvement |
| | **2nd** | shallow compaction, mechanical treatment, use of admixtures |
| | **3rd** | lime stabilization, cement stabilization, lime fly ash stabilization, |
| **13th** | **1st** | dynamic compaction and consolidation, bituminous stabilization |
| | **2nd** | Chemical stabilization, pre-compression, lime pile and column |
| | **3rd** | stone column, grouting, reinforced earth |
| **14th** | **1st** | **Basics of Machine Foundations:** Terminology |
| | **2nd** | characteristics elements of a vibratory systems, |
| | **3rd** | analysis of vibratory motions of a single degree freedom system-undamped free vibrations, undamped forced vibrations |
| **15th** | **1st** | criteria for satisfactory action of a machine foundation |
| | **2nd** | degrees of a freedom of a block foundation, Barken's soil spring constant |
| | **3rd** | Barken's method of a determining natural frequency of a block foundation subjected to vertical oscillations |

# LESSON PLAN

**Name of the Faculty :** MANISH

**Discipline :** CIVIL

**Semester :** 6TH

**Subject :** T.E-I (CE-310N)& TRANSPORTATION ENGG-I (P) (CE-314N)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** Lectures – 03, Practical - 04

| WEEK | THEORY | | PRACTICAL | |
|---|---|---|---|---|
| | LECTURE DAY | TOPIC (including assignment / test) | PRACTICAL DAY | TOPIC |
| 1st | 1st | **Introduction:** Transportation and its importance | 1st and2nd | 1. To determine the toughness of the aggregate by aggregate Impact Test. |
| | 2nd | Different modes of transportation | | |
| | 3rd | Brief review of history of road development in India and abroad: Roman, Tresagne, Telford and Macadam constructions | | |
| 2nd | 1st | Road patterns. Classification of roads | 1st and2nd | 2. To determine the hardness of the aggregate by Los-Angeles Abrasion Test. |
| | 2nd | Objectives of highway planning, Planning surveys | | |
| | 3rd | Saturation system of planning | | |
| 3rd | 1st | **Highway Plans, Highway Alignment and Surveys: Introduction** | 1st and2nd | 3. To determine the hardness of the aggregate by Dorry's Abrasion Test on Aggregates. |
| | 2nd | Main features of 20 years road development plans in India. | | |

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| | **3rd** | Requirements of an ideal highway alignment | | |
| **4th** | **1st** | Factors affecting alignment. | **1st and2nd** | **COPY CHECK AND VIVA VOCE** |
| | **2nd** | Surveys for highway alignment | | |
| | **3rd** | **Assignment of Unit-I** | | |
| **5th** | **1st** | **Cross Section Elements and Sight Distance Considerations:** Cross section elements | **1st and2nd** | 4. To determine the hardness of the aggregate by Deval Attrition Test on Aggregates. |
| | **2nd** | friction, carriageway, formation width, land width, camber | | |
| | **3rd** | IRC recommended values. Types of terrain Design speed | | |
| **6th** | **1st** | Sight distance, stopping sight distance | **1st and2nd** | 5. To determine the Crushing Strength Test on Aggregates. |
| | **2nd** | overtaking sight distance, overtaking zones, | | |
| | **3rd** | intermediate sight distance, sight distance at intersections | | |
| **7th** | **1st** | Head light sight distance, set back distance | **1st and2nd** | 6. To determine the grade and hardness of the bitumen by Penetration Test. |
| | **2nd** | Critical locations for sight distance | | |
| | **3rd** | **Design of Horizontal and Vertical Alignment:** Effects of centrifugal force | | |
| **8th** | **1st** | Design of super-elevation | **1st and2nd** | **COPY CHECK AND VIVA VOCE** |
| | **2nd** | Providing super elevation in the field. Radius of circular curves | | |
| | **3rd** | Extra-widening. Type and length of transition curves | | |
| **9th** | **1st** | Gradient, types, values. Summit curves and valley curves | **1st and2nd** | 7. To determine the elastic property of the bitumen by Ductility Test. |
| | **2nd** | Their design criterion. Grade | | |

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| | | compensation on curves | | |
| | **3rd** | **Assignment of unit-II** | | |
| **10th** | **1st** | **Traffic Characteristics and Traffic Surveys:** Road user and vehicular characteristics. | **1st and2nd** | 8. To determine the grade and hardness of the bitumen by Viscosity Test. |
| | **2nd** | Traffic studies such as volume, speed and O & D study | | |
| | **3rd** | Parking and accident studies. Fundamental diagram of traffic flow. | | |
| **11th** | **1st** | Level of service. PCU. Capacity for non-urban roads | **1st and2nd** | **COPY CHECK AND VIVA VOCE** |
| | **2nd** | Causes and preventive measures for road accidents | | |
| | **3rd** | **Traffic Control Devices:** Traffic control devices: signs, signals, markings and islands. | | |
| **12th** | **1st** | Intersections at grade and grade separated intersections. | **1st and2nd** | 9. To determine the Softening Point Test on Bitumen. |
| | **2nd** | Design of a rotary. | | |
| | **3rd** | Types of grade separated intersections | | |
| **13th** | **1st** | Design of an isolated fixed time signal by IRC method. | **1st and2nd** | 10. To determine the Flash and Fire Point Test on Bitumen. |
| | **2nd** | Types of signals. Types of signs. | | |
| | **3rd** | **Highway Materials: Soil and Aggregates:** Sub grade soil evaluation: CBR test,. | | |
| **14th** | **1st** | plate bearing test | **1st and2nd** | **Final copies check** |
| | **2nd** | Desirable properties of aggregates. Various tests, testing procedures and IRC/IS specification for suitability of aggregates. | | |

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| | **3rd** | Proportioning of aggregates for road construction by trial and error and Routhfuch method. | | |
| **15th** | **1st** | **Bituminous Materials and Bituminous Mixes:** Types of bituminous materials: bitumen, tar, cutback and emulsions. | **1st and2nd** | **Internal viva** |
| | **2nd** | Various tests, testing procedures and IRS/IS specifications for suitability of bituminous materials in road construction.<br>Bituminous mix, desirable properties. | | |
| | **3rd** | Marshall' method of mix design. Basic concept of use of polymers and rubber modified bitumen in bituminous mixes. | | |

# LESSON PLAN

**Name of the Faculty :**

**Discipline** : CIVIL

**Semester** : $6^{TH}$

**Subject** : W.S.T (CE-312E)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** Lectures - 03

| WEEK | THEORY | |
|---|---|---|
| | LECTURE DAY | TOPIC (including assignment / test) |
| 1st | 1st | **Water Quantity:Introdction** |
| | 2nd | Importance and necessity of water supply scheme requirement.... |
| | 3rd | Water demands and its variations |
| 2nd | 1st | Estimation of total quantity of water |
| | 2nd | Population forecasting |
| | 3rd | Quality and quantity of surface and ground water sources |
| 3rd | 1st | Selection of a source of water supply |
| | 2nd | Types of intakes. |
| | 3rd | Assignment of Unit- I |
| 4th | 1st | **Water Quality:Introduction** |

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| **4th** | **2nd** | Impurities in water and their sanitary significance |
| | **3rd** | Physical, chemical and bacteriological analysis of water |
| **5th** | **1st** | **Numerical of above topic** |
| | **2nd** | **Numerical of above topic** |
| | **3rd** | Assignment of Unit- II |
| **6th** | **1st** | **Water Treatment: Introduction** |
| | **2nd** | Objectives, treatment processes and their sequence in conventional treatment plant |
| | **3rd** | sedimentation – plain and aided with coagulation |
| **7th** | **1st** | Types, features and design aspects |
| | **2nd** | Mixing basins and Flocculation units |
| | **3rd** | **Numerical of above topic** |
| **8th** | **1st** | **Numerical of above topic** |
| | **2nd** | Filtration – mechanism involved |
| | **3rd** | types of filters |
| **9th** | **1st** | slow and rapid sand filtration units (features and design aspects |
| | **2nd** | Disinfection principles and aeration |
| | **3rd** | **Numerical of above topic** |
| **10th** | **1st** | **Numerical of above topic** |
| | **2nd** | **Numerical of above topic** |
| | **3rd** | Assignment of Unit- III |
| **11th** | **1st** | **Water Distribution: Introduction** |
| | **2nd** | Distribution system – Gravity system |

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| | **3rd** | Pumping System |
| **12th** | **1st** | Dual system |
| | **2nd** | Layout of Distribution System |
| | **3rd** | Dead End System |
| **13th** | **1st** | Grid Iron System |
| | **2nd** | Ring System |
| | **3rd** | Radial System |
| **14th** | **1st** | their merits and demerits |
| | **2nd** | Distribution Reservoir-functions |
| | **3rd** | Determination of storage capacity |
| **15th** | **1st** | **Numerical of above topic** |
| | **2nd** | **Numerical of above topic** |
| | **3rd** | Assignment of Unit- IV |

# LESSON PLAN

**Name of the Faculty :**

**Discipline** : CIVIL

**Semester** : 6TH

**Subject** : ENVIRONMENTAL ENGINEERING-I (P) (CE-316N)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** practical -04

| | **PRACTICAL** | |
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| **WEEK** | **PRACTICAL DAY** | **TOPIC** |
| **1st** | **1st and2nd** | 1. To determine the pH value of a given sample of water waste water. |
| **2nd** | **1st and2nd** | 2. To determine the turbidity in given water waste water sample. |
| **3rd** | **1st and2nd** | 3. To determine the acidity of given sample of water waste water |
| **4th** | **1st and2nd** | **COPY CHECK AND VIVA VOCE** |
| **5th** | **1st and2nd** | 4. To determine the alkalinity of given sample of water waste water. |
| **6th** | **1st and2nd** | 5. To determine temporary and permanent hardness in a given water sample. |
| **7th** | **1st and2nd** | 6. To determine the chlorine does required for a given water sample. |
| **8th** | **1st and2nd** | **COPY CHECK AND VIVA VOCE** |
| **9th** | **1st and2nd** | 7. To determine total suspended, suspended, dissolved settable solids in a sewage sample. |
| **10th** | **1st and2nd** | 8. To determine the chloride concentration in a given sample of waste water. |
| **11th** | **1st and2nd** | **COPY CHECK AND VIVA VOCE** |
| **12th** | **1st and2nd** | 9. To determine the sulphate concentration in given water sample. |

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| **13th** | **1st and2nd** | **Final copies check** |
| **14th** | **1st and2nd** | **Final copies check** |
| **15th** | **1st and2nd** | **Internal viva** |

# LESSON PLAN

**Name of the Faculty :**

**Discipline** : CIVIL

**Semester** : $6^{TH}$

**Subject** : CAD Lab (CE-318N)

**Lesson Plan Duration :** 15 weeks (from January, 2018 to April, 2018)

**Work Load (Lecture/Practical) per week (in hours):** practical -06

| | PRACTICAL | |
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| **WEEK** | **PRACTICAL DAY** | **TOPIC** |
| **1st** | **1st and2nd,3rd** | **Detailed drawing of the following reinforced concrete structures:**<br>1. Footings: Isolated footings**,** combined footings, rectangular, trapezoidal, strip, strap, raft footings |
| **2nd** | **1st and2nd,3rd** | 2. Domes: Spherical and conical domes. |
| **3rd** | **1st and2nd,3rd** | **COPY CHECK AND VIVA VOCE** |
| **4th** | **1st and2nd,3rd** | 3. Water tanks: rectangular, cylindrical, Intz type overhead water tank. |
| **5th** | **1st and2nd,3rd** | 4. RCC Flat slabs |
| **6th** | **1st and2nd,3rd** | 5. Masonry columns, bearing walls, retaining walls. |
| **7th** | **1st and2nd,3rd** | **COPY CHECK AND VIVA VOCE** |
| **8th** | **1st and2nd,3rd** | **Detailed design and drawing of the following steel structures:**<br>6. Columns, base plates and their foundations |
| **9th** | **1st and2nd,3rd** | 7. Plate Girder (welded) |
| **10th** | **1st and2nd,3rd** | **COPY CHECK AND VIVA VOCE** |

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|---|---|---|
| **11th** | **1st and2nd,3rd** | 8. Gantry Girder |
| **12th** | **1st and2nd,3rd** | 9. Simple roof trusses |
| **13th** | **1st and2nd,3rd** | **Final copies check** |
| **14th** | **1st and2nd,3rd** | **Final copies check** |
| **15th** | **1st and2nd,3rd** | **Internal viva** |