

## TEACHING PLAN FOR THEORY

**Subject Teacher: Jyoti Barge**

<b>Subject: Hydrology &amp; Water Resource Engineering    Class: TE (B)Civil    SEM-I    Branch: Civil Engineering    Year 2017-2018</b>		
<b>Lecture No</b>	<b>Scheduled Date</b>	<b>Topics to be covered on the scheduled date</b>
1	16-06-17	Syllabus Discussion, Discussion on course objective & course outcome
<b>Unit - I Introduction to Hydrology</b>		
2	20-06-17	Hydrological cycle, Application of hydrology
3	21-06-17	Precipitation: Types of precipitation, measurement, Rain gauge network, Preparation of data-estimation of missing data, Consistency test, Presentation of rainfall data-mass rainfall curves, Hyetograph, Point rainfall, Moving average, Mean precipitation over an area- arithmetic mean method
4	22-06-17	Thiessen's polygon, isohyetal method, Concepts of depth-area-duration analysis, Frequency analysis - frequency of point rainfall and plotting position, Intensity-duration curves, Maximum Intensity duration-frequency analysis
5	27-06-17	Abstractions of Precipitation: Intersection, Depression storage, Evaporation- Elementary concepts, factors affecting, Measurement of evaporation, Transpiration,
6	28-06-17	Evapotranspiration- process and measurement, Infiltration -introduction, Infiltration capacity, Infiltrometer, Horton's method and infiltration indices
7	29-06-17	Selection of site, various methods of discharge measurement (velocity-area method, dilution method, slope-area method),
8	04-07-17	Advance techniques/equipment's used in gauge discharge measurements such as Radar, Current meter, ADCP (Acoustic Doppler Current Profiler)
<b>Unit - II Introduction to Irrigation</b>		
9	05-07-17	Definition, Functions, Advantages and Necessity, Methods of Irrigation,
10	06-07-17	Surface Irrigation, Subsurface Irrigation, Micro-Irrigation

11	11-07-17	Water Requirements of Crops: Soil moisture and Crop water relationship, Factors governing Consumptive use of water, Principal Indian crops, their season and water requirement,
12	12-07-17	Crop planning, Agricultural practices, Calculations of canal and reservoir capacities – duty, delta, irrigation efficiency
13	13-07-17	Assessment of Canal Revenue: Various methods :-Area basis or crop rate basis, volumetric basis, seasonal basis,
14	18-07-17	composite rate basis, permanent basis or betterment levy basis
<b>Unit III Ground Water Hydrology</b>		
15	19-07-17	Occurrences and distribution of ground water, Specific yield of aquifers,
16	20-07-17	Movement of ground water, Darcy's law, Permeability,
17	25-07-17	Safe yield of basin, Hydraulics of wells under steady flow condition in confined and unconfined aquifers,
18	26-07-17	Specific capacity of well,
19	27-07-17	Well Irrigation: Tube wells,
20	01-08-17	Well Irrigation: Open wells and their construction
<b>Unit – IV Runoff</b>		
21	11-08-17	Introduction, Factors affecting runoff
22	16-08-17	Rainfall-Runoff relationships, Empirical Techniques to determine runoff,
23	17-08-17	Runoff hydrograph- Introduction, Factors affecting Flood Hydrograph,
24	22-08-17	Components of Hydrograph, Base flow separation, Effective rainfall,
25	23-08-17	Unit hydrograph theory, S-curve hydrograph, uses and limitations of Unit Hydrograph

26	24-08-17	Floods: Estimation of peak flow, Rational formula and other methods, Flood frequency analysis, Gumbel's method, Design floods
<b>Unit – V Reservoir Planning:</b>		
27	29-08-17	Introduction, Term related to reservoir planning (Yield, Reservoir planning and operation curves, Reservoir storage, Reservoir clearance),
28	30-08-17	Investigation for reservoir planning, Significance of mass curve and demand curves,
29	31-08-17	Applications of mass curve and demand curves, Fixation of reservoir capacity from annual inflow and outflow,
30	05-09-17	Fixation of reservoir capacity using elevation capacity curve and dependable yield, Reservoir regulation, Flood routing- Graphical or I.S.D method, Trial and error method, Reservoir losses,
31	06-09-17	Reservoir sedimentation- Phenomenon, Measures to control reservoir sedimentation, Density currents Significance of trap efficiency,
32	07-09-17	Useful life of reservoir, Costs of reservoir, Apportionment of total cost, Use of facilities method, Equal apportionment method, Alternative justifiable expenditure method
<b>Unit VI Water Management</b>		
33	12-09-17	Distribution, Warabandi,
34	13-09-17	Rotational water supply system, Participatory Irrigation Management,
35	19-09-17	Cooperative water distribution systems, Introduction to auto weather station
36	20-09-17	Water Logging and Drainage: The process of water logging, Causes of water logging,
37	21-09-17	Effects of water logging, preventive and curative measures
38	26-09-17	Land drainage, Reclamation of water logged areas, Alkaline and saline lands.