SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Civil Engineering	LP: CE18030 Rev. No: 00 Date: 03/03/2022
B.E/B.Tech/M.E/M.Tech : B.E. Regulation: R2018 PG Specialisation : Not Applicable Sub. Code / Sub. Name : **CE18030 WATER RESOURCES ENGINEERING** Unit : **I**	

Unit syllabus: HYDROLOGY

Hydrologic cycle - Precipitation types - Rain gauges - Computation of average rain fall over a basin- Abstraction from rainfall - Evaporation, factors affecting evaporation, measurement of evaporation - Infiltration, factors affecting infiltration, measurement of infiltration, infiltration indices - Run off, factors affecting run off, computation of run-off - Design flood, Estimation of maximum rate of run-off.

Objective: To describe the methods for computing average rain fall, evaporation loss, infiltration loss and runoff in a catchment.

Session No *	Topics to be covered	Ref	Teaching Aids
01	An overview of the course – Hydrologic cycle	1 – Ch.1; Pg.1-3 2- Ch.4; pg.100-101 5-Ch.3; pg.42-43 11-Lecture 1	PPT & BB
02	Precipitation types	1-Ch.2; pg.13-20 2- Ch.4; pg.105-108 5-Ch.3; pg.49-51 11-Lecture 1	PPT & BB
03 04	Rain gauges- Rain gauge network- estimation of missing rainfall data	1-Ch.2; pg.20-33 2- Ch.4: pg. 108-115 5 – Ch.3; Pg.51-53 11-Lecture 2	PPT & BB
05	Computation of average rainfall over a basin	1 – Ch.2;pg.34-37 2 – Ch.4; Pg..114-121 3- Ch.2; pg.26-31	PPT & BB
06	Abstraction from rainfall - Evaporation, factors affecting evaporation, measurement of evaporation	1-Ch.3; pg.59-66 2 – Ch.4;pg.139-146	PPT & BB
07	Infiltration, factors affecting infiltration, measurement of infiltration	1-Ch.3; pg.80-84 2-Ch.4; pg.145-150	PPT & BB
08	Run off, factors affecting run off, computation of run-off	1-Ch.5; pg.139-153 2 – Ch.4; Pg.151-160 5-Ch.3; pg.60-62	PPT & BB
09	Infiltration indices - Estimation of maximum rate of run-off	1-Ch.3; pg.92-95 2-Ch.4; pg.160-168 5-Ch.3; pg.58-60	PPT & BB
Content beyond syllabus covered (if any): Nil			

* Session duration: 50 minutes

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: **CE18030 WATER RESOURCES ENGINEERING**
Unit : **II**

Unit Syllabus: HYDROGRAPHS
Hydrograph analysis - Unit hydrograph- Construction of UH for an isolated storm - Application of UH to the construction of a flood hydrograph resulting from rainfall of unit duration- Construction of unit hydrograph of different unit duration from a unit hydrograph of some given unit duration by superposition method and S -curve method.

Objective: To describe the methods for constructing flood hydrograph and Unit hydrograph

Session No *	Topics to be covered	Ref	Teaching Aids
10	Hydrograph analysis	1-Ch.6; pg.195-205 2-Ch.4; pg.168-174	PPT & BB
11			
12	Unit hydrograph- Construction of UH for an isolated storm	1-Ch.6; pg.205-209 2-Ch.4; pg.174-177 11- lecture 9	PPT & BB
13			
14	Application of UH to the construction of a flood hydrograph resulting from rainfall of unit duration	1-Ch.6; pg.209-216 2-Ch.4; pg.177	PPT & BB
15	Construction of unit hydrograph of different unit duration from a unit hydrograph of some given unit duration by superposition method	1-Ch.6; pg.216-217 2-Ch.4;pg.181-183	PPT & BB
16			
17	Construction of unit hydrograph of different unit duration from a unit hydrograph of some given unit duration by S-curve method	1-Ch.6; pg.216-223 2-Ch.4; pg. 178-181 11- Lecture 11	PPT & BB
18			
Content beyond syllabus covered (if any): Nil			

* Session duration: 50 mins

Sub. Code / Sub. Name: **CE18030 WATER RESOURCES ENGINEERING**
Unit : **III**

Unit Syllabus: GROUND WATER HYDROLOGY
Introduction; Aquifer; Aquiclude; Aquifuge; Specific yield; Specific retention; Divisions of sub– surface water; Water table; Types of aquifers -Well hydraulics- Steady radial flow to a well - Dupuit's theory for confined and unconfined aquifers; Tube wells - Open wells; Yield of an open well–Constant level Pumping test and Recuperation test.

Objective: To determine the discharge of various Aquifers and open well.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Introduction; Aquifer; Aquiclude; Aquifuge; Specific yield; Specific retention; Divisions of sub– surface water; water table	2- Ch.5; pg.239-242 3-Ch.7; pg.192-193	PPT & BB
20	Types of aquifers	2-Ch.5; pg.242-245	PPT & BB
21	Well hydraulics- Steady radial flow to a well - Dupuit's theory for confined and unconfined aquifers	2-Ch.5; pg. 245-254 3-Ch.7; pg.193-200 11 –Lecture 24	PPT & BB
22			
23			
24	Tube wells	2-Ch.5, pg.256-268	PPT & BB
25			
26	Open wells; Yield of an open well- constant level pumping test and recuperation test	2-Ch.5; pg.268-273 3-Ch.7; pg.202-208	PPT & BB
27			
Content beyond syllabus covered (if any): Nil			

* Session duration: 50 mins

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: **CE18030 WATER RESOURCES ENGINEERING**
Unit : **IV**

Unit Syllabus: WATER RESOURCES

Water resources survey – Water resources of India and Tamilnadu - Description of water resources planning - Estimation of water requirements for irrigation and drinking - Design flood— Flood estimation by Dicken's formula -levees and flood walls.

Objective: To estimate the water requirements for drinking and irrigation purpose and also to estimate the flood.

Session No*	Topics to be covered	Ref	Teaching Method
28	Water resources survey – Water resources of India and Tamilnadu	2-Ch.22; pg.908-910 6- web link 7-web link	PPT & BB
29			
30			
31	Description of water resources planning - Estimation of water requirements for irrigation and drinking	2-Ch.22; pg.910-917 8- pg:1-4 9-web link	PPT & BB
32			
33			
34	Design flood— Flood estimation by Dicken's formula-	1-Ch.7; pg.251-253, 1-Ch.7; pg.267-269 2- Ch.4; pg.197-209	PPT & BB
35			
36	Levees and flood walls	2- Ch.20; pp.876-885 5-Ch.20; pg.289-290	PPT & BB
Content beyond syllabus covered (if any): Management of water resources for the Chennai city		10	PPT & BB

* Session duration: 50 mins

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: **CE18030 WATER RESOURCES ENGINEERING**

Unit : **V**

Unit Syllabus: RESERVOIR PLANNING

Importance of Reservoirs - Purpose of storage work – Large Reservoirs in India and Tamil Nadu -Types of reservoirs– Investigation for reservoir planning – Selection of site for a reservoir – Zones of storage in reservoirs – Fixation of storage capacity- Single and multipurpose reservoir – Reservoir sedimentation and their control – Reservoir losses – Basics of flood routing.

Objective: To describe the reservoir planning and flood routing techniques.

Session No *	Topics to be covered	Ref	Teaching Method
37	Importance of Reservoirs - Purpose of storage work – Large Reservoirs in India and Tamil Nadu	5-Ch.17; pg.256-257 2-Ch.23; pg.918-943	PPT & BB
38	Types of reservoirs– Investigation for reservoir planning – Selection of site for a reservoir	2-Ch.6; pg.306-310 4-Ch.18; pg.655-657	PPT & BB
39	Zones of storage in reservoirs- Fixation of storage capacity	2-Ch.6; pg.310-314 4-Ch.18; pg.662-694	PPT & BB
40			
41	Single and multipurpose reservoir	2-Ch.6; pg.318-322	PPT & BB
42	Reservoir sedimentation and their control	2-Ch.6; pg.314-318 4- Ch.18; pg.710-718	PPT & BB
43	Reservoir losses	4-Ch.18; pg.719-721	PPT & BB
44	Basics of flood routing	2-Ch.6; pg.322-345 11- Lecture 17	PPT & BB
45			
Content beyond syllabus covered (if any): Nil			PPT & BB

* Session duration: 50 mins

Sub Code / Sub Name: **CE18030 WATER RESOURCES ENGINEERING**

REFERENCES:

1. **Subramanya K.**, Engineering Hydrology, Tata-McGraw Hill, 5th edition ,2013
2. **Punmia B.C. and Pande B.B.Lal.,** Irrigation and water Power Engineering, Laxmi Publications Pvt Ltd., New Delhi, 16th edition, 2009
3. **Raghunath H.M.**, Hydrology, Wiley Eastern Limited,New Delhi, revised second edition, 2006.
4. **Santhosh Kumar Garg,** Water resources Engineering (vol.II), Khanna publishers, New Delhi, 34th revised edition, 2017.
5. N N Basak, Irrigation Engineering, McGraw Hill Education (India) Private Limited, 29th reprint, 2013
6. Indian water resources society – weblink: iwrs.org.in/indias-water-resources/
7. Web link of ENVIS centre: Tamil Nadu- tnenvis.nic.in/Database/TN-ENVIS_791.aspx
8. Estimation of water requirement for drinking and domestic use (source:NBC 2016, BIS), central ground water authority, Government of India
9. Water requirement and irrigation requirement- web link: agriinfo.in/water –requirement-and-irrigation –requirement-17/
10. T.R.Neelakantan, P.Venkateswara Rao, S.Thayumanavan and N.V.Pundarikanthan, A Fuzzy linear programming model: The management of water resources for the Chennai city, National conference on Fuzzy sets and their applications, June 9-10, 1997, IIT Madras.
11. Prof. Rajesh Srivastav, Dept. of Civil Engineering, IIT Kanpur, NPTEL video course: Water Resources Engineering

	Prepared by	Approved by
Signature		
Name	**Dr. P. Venkateswara Rao**	**Dr. R. Kumutha**
Designation	**Professor / Civil**	**Professor & HOD / Civil**
Date	**03 / 03/2022**	23/03/2022.
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD