

### FT/GN/68/01/23.01.16 SRI VENKATESWARA COLLEGE OF ENGINEERING

### COURSE DELIVERY PLAN - THEORY

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Dep	LP: CE18030 Rev. No: 00	)
B.E/B.Tech/M.E/M.Tech: B.E. Regulation: R2018		2022
PG Specialisation : Not Applic		
Sub. Code / Sub. Name : CE18030 V		
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		1-Ch.2; pg.20-33	DDC 0
04	Rain gauges- Rain gauge network- estimation of missing rainfall data	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; Pg114-121 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	PPT4 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

<sup>\*</sup> Session duration: 50 minutes



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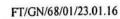
# Unit Syllabus: HYDROGRAPHS

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	TT .		Alus
11	Hydrograph analysis	1-Ch.6; pg.195-205 2-Ch.4; pg.168-174	PPT & BB
12	Unit hydrograph Construction Course	1 Ch 6 205 200	
13	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
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	
16			PPT & BB
17	Construction of unit budges and a Customer Construction of unit budg		
18	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 & BE

<sup>\*</sup> Session duration: 50 mins





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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			
22	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
23			
24		2-Ch.5, pg.256-268	PPT & BB
25	Tube wells		
26	Open wells; Yield of an open well- constant level pumping test and recuperation test		
27		2-Ch.5; pg.268-273 3-Ch.7; pg.202-208	PPT & BB

<sup>\*</sup> Session duration: 50 mins



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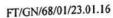
# Unit Syllabus: WATER RESOURCES

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
28		20	Method
29	Water resources survey - Water resources of India and Tamilnadu	2-Ch.22; pg.908-910 6- web link 7-web link	PPT & BB
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 & BE
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 & BE
35			
36	Levees and flood walls	2- Ch.20; pp.876-885 5-Ch.20; pg.289-290	PPT & BI
Content be Managemen	eyond syllabus covered (if any): nt of water resources for the Chennai city	10	PPT & BB

<sup>\*</sup> Session duration: 50 mins





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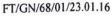
Unit: V

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.

Topics to be covered	Ref	Teaching Method
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
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
	2-Ch.6; pg.310-314 4-Ch.18; pg.662-694	DDT 4 DT
		PPT & BB
Single and multipurpose reservoir	2-Ch.6; pg.318-322	PPT & BB
Reservoir sedimentation and their control	2-Ch.6; pg.314-318 4- Ch.18; pg.710-718	PPT & BB
Reservoir losses	4-Ch.18; pg.719-721	PPT & BB
Basics of flood routing	2-Ch.6; pg.322-345 11- Lecture 17	PPT & BB
eyond syllabus covered (if any): Nil		PPT & BB
	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	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  2-Ch.6; pg.306-310 4-Ch.18; pg.655-657  Zones of storage in reservoirs— Fixation of storage capacity  2-Ch.6; pg.310-314 4-Ch.18; pg.662-694  Single and multipurpose reservoir  2-Ch.6; pg.318-322  Reservoir sedimentation and their control  2-Ch.6; pg.314-318 4-Ch.18; pg.710-718  Reservoir losses  4-Ch.18; pg.719-721





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#### REFERENCES:

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- Raghunath H.M., Hydrology, Wiley Eastern Limited, New Delhi, revised second edition, 2006.
- Santhosh Kumar Garg, Water resources Engineering (vol.II), Khanna publishers, New Delhi, 34<sup>th</sup> revised edition, 2017.
- 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
- Estimation of water requirement for drinking and domestic use (source:NBC 2016, BIS), central ground water authority, Government of India
- Water requirement and irrigation requirement- web link: agriinfo.in/water -requirementand-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	PM	2
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Designation	Professor / Civil	Professor & HOD / Civil
Date	03 / 03/2022	23 03 2022.
Remarks *:		
Remarks *:		

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