

To verify this syllabus in affiliated university website please click this.

**DR. A.P.J ABDUL KALAM TECHNICAL
UNIVERSITY, LUCKNOW**



**EVALUATION SCHEME & SYLLABUS
FOR
B. TECH. THIRD YEAR
(CIVIL ENGINEERING)**

(Effective from session 2020-21)

S.No	Subject Code	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCE 501	Geotechnical Engineering	3	1	0	30	20	50		100		150	4
2	KCE 502	Structural Analysis	3	1	0	30	20	50		100		150	4
3	KCE 503	Quantity Estimation and Construction Management	3	1	0	30	20	50		100		150	4
4		Departmental Elective-I	3	0	0	30	20	50		100		150	3
	KCE 051	Concrete Technology											
	KCE 052	Modern Construction Materials											
	KCE 053	Open Channel Flow											
	KCE 054	Engineering Geology											
5		Departmental Elective-II	3	0	0	30	20	50		100		150	3
	KCE-055	Engineering Hydrology											
	KCE-056	Sensor and Instrumentation Technologies for Civil Engineering Applications											
	KCE-057	Air and Noise Pollution Control											
	KCE-058	GIS and Advance Remote Sensing											
6	KCE-551	CAD Lab	0	0	2				25		25	50	1
7	KCE-552	Geotechnical Engineering Lab	0	0	2				25		25	50	1
8	KCE-553	Quantity Estimation and Management Lab	0	0	2				25		25	50	1
9	KCE-554	Mini Project or Internship Assessment*	0	0	2				50			50	1
10	KNC501/ KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0								
11		MOOCs (Essential for Hons. Degree)											
		Total	17	3	8							950	22

* The Mini Project or Internship (4 weeks) conducted during semester break after IV semester and will be assessed during V semester.

NOTE:

1. Regular classroom interaction with industry experts is to be ensured in all theory courses (minimum two expert talks from relevant Industry).
2. Working on experiments using virtual labs is to be ensured in lab courses.
3. Student's visit to Industry/Industry Expert's project site must be arranged as & when possible.

Course Outcomes:**After completion of the course student will be able to:**

CO-1 Understand the basic concept of hydrological cycle and its various phases.

CO-2 Understand the concept of runoff and apply the knowledge to construct the hydrograph.

CO-3 Apply the various methods to assess the flood.

CO-4 Assess the quality of various forms of water and their aquifer properties.

CO-5 Understand the well hydraulics and apply ground water modelling techniques.

Unit 1

Introduction: hydrologic cycle, water budget equations, world water balance, Precipitation: Forms of precipitation, measurement. Introduction to characteristics of storm. Abstraction from Precipitation: Evaporation – process, measurement and estimation; Evapotranspiration- measurement and estimation; Initial Losses- Interception & Depression storage; Infiltration- process, capacities indices, measurement & estimation. **[8]**

Unit 2

Runoff and Hydrographs: Runoff characteristics of stream, mass curve. Hydrograph, Factors affecting flood hydrographs, unit hydrograph and its analysis, s-curve hydrograph, synthetic and instantaneous unit hydrographs. **[8]**

Unit 3

Flood: Rational method, empirical formulae, flood frequency studies, statistical analysis, regional flood frequency analysis, design storm & design flood, risk/reliability and safety factor; Flood Routing: Basic equation, hydrologic storage routing & attenuation, hydrologic channel routing, flood forecasting & control, hydraulic method of flood routing. **[8]**

Unit 4

Groundwater: Introduction, forms of subsurface water, aquifers & its properties, Occurrence of ground water, hydro-geology & aquifers, Ground water movement. Steady and unsteady flow through confined and unconfined aquifers. Well Hydraulics: Single & Multiple well system, partially penetrating wells, Image wells, Mutual interference of wells, well losses, specific capacity. **[8]**

Unit 5

Water Wells: Introduction to Well construction, completion and Development. Pumping equipment for water wells, maintenance of wells.

Ground Water quality, Contamination of groundwater and its Control, Ground Water Modelling Techniques and exploration, artificial discharge and Recharge of Ground Water, Roof-top rainwater harvesting and recharge. [8]

Text Books:

- ‘Groundwater Hydrology’ by Todd D. K., Wiley
- ‘Groundwater Resource Evaluation’ by Walton W. C., McGraw Hill
- ‘Groundwater’ by Raghunath H. M., New Age Publisher
- ‘Engineering Hydrology’ by K. Subramanya, Mc Graw Hill Education
- ‘Hydrology: Principles. Analysis. Design’ by Raghunath H. M., New Age Publisher
- ‘Handbook of Applied Hydrology’ by Chow V. T., Mc Graw Hill Education

Reference:

- ‘Irrigation: Theory & Practice’ by Michael A. M., Vikas Publication House
- ‘Groundwater’ by S.Ramakrishnan, Scitech Publications
- ‘Irrigation: Theory & Practice’ by Michael A. M., Vikas Publication House
- ‘Engineering Hydrology’ by Ojha, Oxford University Press.
- ‘Introduction to Hydrology’ by Viessman& Lewis by Pearson Publication.
- ‘Applied Hydrology’ by Fetter, by Pearson Publication