

Department of Civil Engineering
Indian Institute of Technology Kanpur
CE 361A Engineering Hydrology (2017-18-I)

Instructors: Ashu Jain and Shivam Tripathi **Emails:** ashujain / shiva
Schedule: *Lec:* TTh 17:10-18:00; L4
Text Book: Engineering Hydrology by Rajesh Srivastava and Ashu Jain, Tata McGraw Hill Publishing Company, New Delhi (Errata: <http://home.iitk.ac.in/~rajeshs/eh.htm>).

Reference Book(s): *Engineering Hydrology* by K. Subramanya, Tata McGraw Hill Publishing Company, New Delhi.
Applied Hydrology by Ven T. Chow, David R. Maidment, and Larry W. Mays, McGraw Hill International Editions.
Groundwater Hydrology by D. K. Todd and Larry W. Mays, John Wiley & Sons, Inc.

Course Synopsis: This course has been designed to present the principles of hydrology at an under-graduate level. At the end of the course, a successful student is expected to have a thorough understanding of the following topics:

Hydrologic cycle: water budget, world water quantities
Precipitation and Abstractions: Forms of precipitation, data analysis, rain-gauge networks
Infiltration - process, infiltration indices and Horton's equation
Evaporation and Evapotranspiration – Pan evaporation, empirical equations for estimating evaporation and evapotranspiration
Runoff and Hydrographs: Rainfall runoff relations, time area concept, flow duration curve, mass curve, flow hydrograph, Unit Hydrograph (UH), its analysis, S-curve hydrograph
Floods and Routing: Concepts of return period, flood frequency analysis, Gumbel's and Log-Pearson Type-III distributions, Rational method, risk, reliability, and safety factor; Hydrologic storage routing
Groundwater Hydrology: Types of aquifers and properties, Darcy's law, steady flow in a confined and unconfined aquifer (without recharge), steady flow to a well

Course Evaluation: The course will be evaluated based on the following scheme:

Final Exam	40%
Mid Semester Exam	30%
Quizzes	20%
Home Works	10%

The final letter grade will be awarded based upon the cumulative performance throughout the semester according to the following guidelines:

90 and above	A+
80 to 89	A
70 to 79	B
60 to 69	C
50 to 59	D
40 to 49	E
39 and less	F

Notes:

- 1) The grading policy may be changed in consultation with the students during the semester, if found necessary.
- 2) Take notes as necessary in the class because (a) exams may be open book/notes, (b) some of the material covered in the class may not be in the text, and (c) class notes can be very good review material before exams/quizzes.
- 3) A student is free to come to the instructor's office for clarifying doubts, if any, without any prior appointment.
- 4) You are expected to attend 100% of the classes and inform the instructor if you take official leave approved by DUGC/SUGC.
- 5) A student will get an 'F' grade if found cheating or using unfair means during exams/quizzes/homeworks, and the matter will be reported to SSAC.