



SECOND SEMESTER 2020-21
COURSE HANDOUT

Date: 16.01.2021

In addition to part I (General Handout for all courses appended to the Time table) this portion gives further specific details regarding the course.

Course No : CE F321
Course Title : Engineering Hydrology
Instructor-in-Charge : RALLAPALLI SRINIVAS
Instructor(s) : NA
Tutorial/Practical Instructors: Rallapalli Srinivas, Akshay Kumar

1. Course Description:

This course equips students with key concepts and methods in physical and engineering hydrology along with a background in basic hydrological techniques used by professional engineers. Course contains total nine modules with 40 lecture sessions. In order to give an exposure of field application, some virtual field trips will be organized using videos. The students crediting this course will be able to know different estimation techniques of hydrological parameters, data analysis in engineering hydrology, frequency analysis of hydrological parameters, regression analysis, introductory basics of groundwater and surface water hydrology.

2. Scope and Objective of the Course:

The course serves as a foundation to the field of engineering hydrology. The course will acquaint students in fundamentals such as the hydrological cycle, catchment and losses, hydrographs and hyetographs, rainfall-runoff analysis, flood frequency analysis, determination of design rainfall intensity and hyetographs, peak flow estimation, groundwater process and modelling, reservoir and river flood routing, and introduction to dams and hydro-economics. The primary objective of the course is to enable students to relate to real life problems and prepare them to scientifically address them using hydrologic models and decision support tools.

3. Textbooks:

- TB1.** Reddy, Dr.P.Jaya Rami, A Textbook of Hydrology, University Science Press, New Delhi, Third Edition, 2011.
TB2. Modi, Dr. P.N., Irrigation Water Resources and Water Power Engineering, Standard Book House, Rajsons Publications Pvt. Ltd., Eighth Edition, 2012.

4. Reference Books:

- RB1.** Mays, Larry W, Water Resource Engineering, WSE, Wiley India, Second Edition, 2010.
RB2. Patra, K.C., Hydrology and Water Resources Engineering, Narosa Publishing House, New Delhi, Second Edition, 2008.
RB3. Subramanya, K., Engineering Hydrology, McGraw Hill Education (India) Private Limited, New Delhi, Fourth Edition, 2013.

5. Course Plan:



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Module No.	Lecture Session	Reference	Learning outcomes
1.	L1-3 Introduction	CH-1 (TB1), CH-1 (TB2), CH-2 (RB1)	History of Hydrology, Water Resources Assessment, Water Resources Planning, Issues in Systems Approach, Hydrologic Cycle, Various applications of Hydrology, Irrigation
2.	L4-9 Precipitation and Losses	CH- 5, 7, 8 (TB1)	Types of precipitation, Measurement of Rainfall, Network Design, Analysis of Rainfall data, Depth area duration curves, Different forms of losses
3.	L10 Virtual field trip-1	TBA	Video lecture and discussion
3.	L11-13 Irrigation Methods, Water requirement of crops and estimation methods	CH-7 (TB1) CH-2, 4 (TB2)	Methods of Irrigation, Water requirement of crops and estimation methods Conventional methods for water requirement of crops, various ET estimation methods.
4.	L14-17 Ground Water Hydrology	CH-9 (TB1), CH-6 (TB2), CH-6 (RB1)	Basic Definitions, confined and unconfined aquifers, Steady and unsteady Well Hydraulics
5.	L18-24 Runoff and Hydrograph analysis	CH-4, 10, 11, 12 (TB1) CH-5 (TB2)	Types of catchment, Factors affecting runoff, Stage discharge relationships, Unit Hydrograph, Flood Hydrograph, S-Hydrograph, IUH hydrograph etc.
6.	L25-27 Flood Routing	CH-13 (TB1), CH-9 (RB1)	Various aspects of Reservoir and Stream flow routing; routing methods
7.	L28-30 Sediment Transport	CH- 15 (TB1)	Erosion, Sediment Transport, Sediment



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			yield, Reservoir Sedimentation
8.	L31-34 Probability and Statistics in Hydrology	CH-3 (TB1) CH-10 (RB1)	Statistical parameters, Probability distribution functions, Frequency analysis, Regression Analysis and correlation
9.	L35 (Virtual field trip-2)	TBA	Video lecture and discussion
10.	L38-40 Introduction to dams, Design of simple dams, spillways, diversion headworks	CH-8, 9 (TB2)	Various types of dams, advantages of dams, simple designs, spillways, diversion headworks

6. Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of component (Close Book/ Open Book)
Mid-Semester Test	90 Min.	30	TBA (March 1st – 6th)	Close
Comprehensive Examination	3 h	45	15 May 2021	Close and Open
Tutorials/Assignments	-	25	-	Close and Open

7. Chamber Consultation Hour: M W F 3:00 PM – 5:00 PM

8. Notices: All notices concerning the course will be displayed either on Nalanda webpage or will be announced in class on regular basis.

9. Make-up Policy:

1. Make-up will be granted only on genuine reasons. However, prior permission of IC is must.
2. For medical cases, a certificate from the concerned physician of the Medical Centre must be produced.

Instructor-in-charge
Course No. CE F321