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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: HYDROLOGY
Code No.: HYD 110-5
Program: WATER RESOURCES
Semester: FALL
Date: SEPTEMBER, 1984
Author: S. C. VERMA

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New:

Revision:

APPROVED:


Chairperson

Date y

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HYDROLOGY
Course Name

HYD 110-5
Course Number

PREREQUISITE: HYD 100

PHILOSOPHY/GOALS:

Recognize and identify the processes in the hydrologic cycle which are important for a variety of types of watersheds and watershed conditions. Measurement and instruments required for common hydrological problems both from quantity as well as quality point of view. Basic calculation/computatio techniques, including simple deterministic modelling and stochastic analysis for the solution of common hydrological problems.

On the completion of the course, the student should be able to:

- Do measurement and estimation of hydrologic components including precipitation, evaporation, transpiration and infiltration.
- Do the volume balance for simplified hydrologic systems.
- Measure the quantities like stream flow velocity, elevation, precipitation and water levels and operation of related hydrological equipment. Maintain a field book, interpret and analyze the data.
- To apply the principles of statistics to the historical data to make forecast about events including floods and droughts.
- Apply principles of hydrology to the prediction of precipitation and the calculation of peak runoff both for urban and rural watersheds.
- To develop unit hydrographs for small watersheds using the observed stream flow data or based on other watershed characteristics.
- Apply the principles of hydraulics and hydrology in routing the flood wave and understanding of flood control measures.

METHOD OF ASSESSMENT AND EVALUATION:

The final mark will be assigned which is higher of either

- a) final examination mark
- b) weighted mark calculated as follows:

Laboratory Exercises & Assignment Problems	25%
Midterm Examination	25%
Final Examination	50%

METHOD OF ASSESSMENT AND EVALUATION - Continued

- Eighty percent attendance is required for anyone to be considered for supplementary examination.
- Homework assigned is due after one week. Late submissions will be penalized.
- To pass the course, a student at least must secure 55% in one of the tests.
- This is subjected to any changes.

TEXTBOOK(S):

Hammer, Mark J. and K.A. Mackichan (1981). Hydrology and Quality of Water Resources, John Wiley and Sons, Inc., Toronto.

REFERENCES:

Viessman, Warren Jr., J.W. Knapp and G.L. Lewis (1977). Introduction to Hydrology, 2nd Edition, Harper and Row Publishers, New York.

Linsley, R.K. Jr., M.A. Kohler and J.L.H. Paulhus (1982). Hydrology for Engineers, 3rd Edition, McGraw-Hill Book Company, Toronto.

Gray, D.M. (Editor-in-Chief) (1970). Handbook on the Principles of Hydrology, Water Information Center, Inc., Huntington, New York.

	<u>NO. OF</u>
<u>Introduction;</u>	(2)
- hydrologic cycle	
- water quantity	
- water quality	
- continuity equation	
- hydrologic budget equation	
<u>Precipitation</u>	(2)
- measurement of rain and snow	
- analytical methods for computing averages	
- areal variation	
- time variability of precipitation at a point	
- maximum mean rain depth area curve	
- rainfall intensity duration frequency curve	
<u>Hydrologic Abstractions</u>	(2)
- evaporation	
- transpiration, evapotranspiration	
- interception, depression storage	
- infiltration	
- estimation and measurement	
<u>Stochastic Hydrology</u>	(2)
- probability approach to the analysis of hydrologic problems	
- probability distribution of hydrologic data	
- flood frequency analysis	
<u>Stream Flow</u>	(2)
- stream gaging stations	
- measuring stream flow by current metering	
- determining stream flow by indirect methods	
- stream flow records	
<u>Rainfall-Runoff Relationships</u>	(4)
- factors affecting runoff	
- components of a hydrograph	
- hydrograph analysis	
- peak flow runoff rates	
- unit hydrograph	
- synthetic hydrograph	
- flood routing	
- control of floods	

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- 7. Hydrology of Impounded Waters (1)
 - construction of reservoirs
 - reservoir yield
 - thermal stratification

- 8. Water Resources Management (1)
 - water quality management
 - water quantity management

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