Department of Civil Engineering

Course Name:

Hydrological Modelling

Course Number:	**Credit:** 3
Program: Graduate	**Course Type:**
Prerequisite: Advanced Hydrology	**Corequisite:**

Course Description (Objectives):

In this course, students will delve into the essential concepts, understanding the necessity of hydrologic models, and their practical application in solving real-world water problems. The course will provide hands-on training in utilizing popular models such as SWAT, VIC, HBV, SMADA, and others. Additionally, students will gain valuable insights into preparing information and input data, mastering methods for calibration and validation of hydrological models, and gaining proficiency in characterizing various sources of uncertainty in hydrological modelling. This course equips students with the knowledge and skills needed to navigate and contribute to the dynamic field of hydrological modelling.

Course Content (outline):

- Chapter 1: Introduction to Hydrological Models and their Applications
- Chapter 2: Hydrological Processes in a Watershed
- Chapter 3: Types and Classification of Hydrological Models
- Chapter 4: Data Requirements and Preparation
- Chapter 5: Rainfall-Runoff Modelling
- Chapter 6: Parameter Estimation
- Chapter 7: Model Validation
- Appendix A: Uncertainty in Hydrological Models

References:

- Beven, KeithK. J. **Rainfall-Runoff Modelling: The Primer**. John Wiley & Sons. 2011.
- Vieux, B. E. **Distributed Hydrologic Modeling Using GIS**. Springer, Dordrecht. 2001.
- Xu, C.Y. **Textbook of Hydrologic Models**. Upsala University, 2002.