

Office of Academic Affairs
Tarleton State University
April 21, 2009

Master Course Syllabus Outline

Department: Engineering and Physics

Course Prefix/Number: HYDR 450-3

Official Course Title: Modeling in Hydrology

I. Catalog Description: Necessity of model studies. Introduction to various types of models; physics of surface and ground water flow; finite difference model; finite element model; solution of practical problems by numerical modeling.

II. Prerequisite: MATH 333 or 360; HYDR 300; HYDR 320

III. Expanded Course Description: The course introduces the commonly used hydrologic and hydraulic models (e.g., HEC-HMS; SWAT; and HEC-RAS). In addition to a broad overview of the necessity and philosophy of modeling studies, the course covers details in using differential equations of mass conservation, energy conservation, and momentum conservation, to describe the hydrologic (e.g., rainfall-runoff) and hydraulic (e.g., routing) processes. Further, the course introduces the numeric (i.e., finite difference and finite element) techniques to solving the equations. Also, the course teaches the set up and operation of the models as well as the interpretation of model outputs.

IV. Intended Student Outcomes:

- Learn how to abstract the real world for modeling purposes
- Learn the mathematic descriptions of the hydrologic and hydraulic processes
- Learn the numeric techniques to solving the differential equations
- Gain hands-on experiences in using commonly used hydrologic and hydraulic models
- Gain the preliminary ability to interpret model outputs

V. Coordinators: Dr. Xixi Wang, P.E.

VI. Academic Honesty:

Cheating, plagiarism (submitting another person's materials or ideas as one's own), or doing work for another person who will receive academic credit are all-impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure of give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

VII. Students with Disabilities Policy:

It is the policy of Tarleton State University to comply with the Americans with Disabilities Act (ADA) and other federal, state, and local laws relative to the provision of disability services. Students with disabilities attending Tarleton State University may contact the Office of Disability Services at (254) 968-9478 to request appropriate accommodation. Furthermore, formal accommodation requests cannot be made until the student has been officially admitted to Tarleton State University.