

Course Syllabus

020LOGGS5 Applied Hydraulics Software

1. **Course number and name:** 020LOGGS5 Applied Hydraulics Software
2. **Credits and contact hours:** 2 credits – 17.5 hours
3. **Instructor's or course coordinator's name:** Antoine HREICHE
4. **Textbook and other supplemental material:**
 - Computer Applications in Hydraulic Engineering - Eighth Edition– Tom Walski
5. **Specific course information**
 - a. **Catalog description:** Computer Applications in Hydraulic Engineering is an all-inclusive water resources guide for students in the hydraulics and hydrology fields. It links theory with real-world applications through exercises and examples of the technology, theory, and analysis methods at the forefront of hydraulic engineering. The examples cover everything from hydraulic theory to detention pond design, dynamic modeling, culvert hydraulics, and more.
 - b. **Prerequisites:** None.
 - c. **Required/Elective/Selected Elective:** Required major course for Water and Environment Specialty students

6. Specific goals for the course

- a. **Specific outcomes of instruction:**
 - Understand the theory and applications for the design of hydraulic structures and related appurtenances.
 - Understand methods of stormwater drainage and design criteria,
 - Watershed delineation
 - Determine the flows for various return period
 - Design hydraulic structures (channel, ditches, ponds, culvert, bridges, dams, spillways, road drainage)
 - Understand professional and ethical responsibility.
- b. **KPIs addressed by the course:**

KPI	a1	a2	c3	e3	g1	k1	k3
Covered	X	X	X	X	X	X	X
Assessed							
Give Feedback							

7. Brief list of topics to be covered and approximate number of lectures:

- Introduction (1h15)
- Basic Hydraulics (1h15)
- Basic Hydrology (2h30)
- Watershed delineation using ArcGIS (2h30)
- Flow calculations: SCS method (HEC-HMS) (1h15)
- Design of hydraulic structures (FlowMaster) (1h15)
- Culverts (CulvertMaster) (2h30)
- Design of Bridges/Dams (HEC-RAS) (2h30)
- Design of ponds (Pondpack) (2h30)