Course Syllabus

1. **Course number and name:** 020HKAGS5 – Karst Hydrogeology
2. **Credits and contact hours:** 2 credits – 17.5 hours
3. **Instructor's or course coordinator's name:** Christiane ZOGHBI
4. **Textbook and other supplemental material:**
   - **a.** Goldscheider, N., and D. Drew (2007), Methods in Karst Hydrogeology, 264 pp., Taylor and Francis Group, Leiden, Netherlands. Available electronically on the South Dakota Department of Environment and Natural Resources (SD-DENR) website: http://www.sdgs.usd.edu/pubs/PAPERS_PUBLICATIONS/Methods%20In%20Karst%20Hydrogeology.pdf
   - **b.** Ford, D. C., and P. W. Williams (2007), Karst Hydrogeology and Geomorphology, Wiley, Chichester.
   - **c.** Journal articles
   - **d.** Instructor's class notes
5. **Specific course information**
   - **a. Catalog description:** Karst nomenclature and definitions, basic concepts for understanding karst development and related groundwater flows. Introduction to methods in karst hydrogeology and geotechnical problems related to karst. Case study.
   - **b. Prerequisites:** Good knowledge of Excel.
   - **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:**
     - Introduce the students to karst hydrogeology
     - Introduce the students to methods of karst aquifers' exploitation and protection
     - Present students the needed methods to understand and analyze a case study
     - Familiarize students with groundwater modeling in karst environments
     - Enhance the students' writing and oral presentation skills

   - **b. KPIs addressed by the course:**

KPI	a2	b3	c3	e1	e2	g1	g2
Covered	x	x	x	x	x	x	x
Assessed							
Give Feedback							

7. **Brief list of topics to be covered and approximate number of lectures:**
   - **a.** Introduction to geology and geological notions (1.5 hours)
   - **b.** Introduction to methods in karst hydrogeology including hydrological, hydraulic, hydrochemical and isotopic methods (7.5 hours)
   - **c.** Introduction to tracer techniques (1.5 hours)
   - **d.** Karst hydrogeology of Lebanon (1.5 hours)
   - **e.** Methods of karst studies: Exploitation and protection of karst aquifers (3.5 hours)
   - **f.** Introduction to groundwater modeling in karst environments (1.5 hours)