

## **Karst Hydrogeology**

- 1. Course number and name:** 020HKAGS5 Karst Hydrogeology
- 2. Credits and contact hours:** 2 ECTS credits, 1x1.25 hours
- 3. Name(s) of instructor(s) or course coordinator(s):** Christiane ZOGHBI
- 4. Instructional Materials:**
  - 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](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 and PowerPoint presentations
- 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 or co-requisites:** None
  - c. **Required:** Required course for Water and Environment Specialty students
- 6. Educational objectives 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 karst hydrological system
    - Familiarize students with groundwater modeling in karst environments
    - Enhance the students' writing and oral presentation skills

**b. PI addressed by the course:**

<b>PI</b>	2.2	3.1	3.2	7.1	7.2
<b>Covered</b>	yes	yes	yes	yes	yes
<b>Assessed</b>					

**7. Brief list of topics to be covered:**

- a. Introduction to karst geology and geological notions (1.5 hours)
- b. Introduction to methods in karst hydrogeology including hydrological, hydraulic, hydrochemical and isotopic/tracer methods (10 hours)
- c. Karst hydrogeology of Lebanon (1.5 hours)
- d. Introduction to groundwater modeling in karst environments (1.5 hours)
- e. Oral Presentations (1.5 hours)