

## Course Syllabus

### 020HYSGS5 Statistical Hydrology

1. **Course number and name:** 020HYSGS5 Statistical Hydrology
2. **Credits and contact hours:** 4 credits, 35 course hours
3. **Instructor's or course coordinator's name:** Wajdi NAJEM
4. **Textbook and other supplemental material:**
  - a. Ven Te Chow, Maidment and Mays, *Applied Hydrology*, McGRAW-Hill
  - b. Miquel J.. (2007), *Hydrologie Statistique*, Ecole Nationale des Ponts et Chaussées – France
5. **Specific course information**
  - a. **Catalog description:** Provide the necessary elements to: determine and fit probability distributions and models to univariate and multivariate hydrologic variables, perform statistical tests and frequency analysis, select extreme value distributions and estimate probable maximum or minimum events (precipitation, droughts and floods).
  - b. **Prerequisites:** 020STAGS2 Probability and Statistics.
  - 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 the concepts of probabilistic treatment of hydrological variables
    - Develop the background needed for performing frequency analysis
    - Present to students the needed methods to evaluate probable maximum events
    - Familiarize students with flood forecasting
    - Enhance the students' writing and oral presentation skills
  - b. **KPIs addressed by the course:**

| KPI           | a1 | a2 | b3 | c1 | g1 | h1 | k1 |
|---------------|----|----|----|----|----|----|----|
| Covered       | x  | x  | x  | x  | x  | x  | x  |
| Assessed      |    |    |    |    |    |    |    |
| Give Feedback |    |    |    |    |    |    |    |

7. **Brief list of topics to be covered and approximate number of lectures:**
  1. Statistical analysis of hydrologic data(6 hours)
  2. Extreme value distributions (4 hours)
  3. Correlation and regression analysis (6 hours)
  4. Statistical tests in hydrology (6 hours)
  5. Frequency analysis (4 hours)
  6. Flood forecasting (9 hours)