

Pro-Green Diploma
Sustainable Water Resources Management- PRGR 681- Spring/ 2016-2017

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Office Hours: Every Thursday at 2:00 p.m. CST or by appointment

Online Office Hours (Skype): Every Tuesday at 4:00 p.m. CST or by appointment

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Overview of the Course

This course is concerned with quantitative methods for analyzing water resource problems. Topics covered include the design and management of facilities for river basin development, flood control, water supply, hydropower, and other activities related to water resources. Stochastic and deterministic methods for approaching and analyzing water resources problems will be discussed.

Credit Hours

(2cr)

Delivery Format and Rationale

This is an online course and will use Moodle as the Learning Management System (LMS). Online Learning aims at bringing new and powerful dimensions to the learning experience.

- Logistics flexibility: location & time are no longer a limitation on learning. Whether all together in a classroom or scattered over many countries, students can still tap into the same course materials.
- Courses are delivered more efficiently, providing opportunities to teach students in more flexible ways.
- Reaching optimum learning with increasingly fewer resources.
- Immediate Results and Feedback: Most online learning technologies integrate online quizzes and other tools to more rapidly evaluate the pace of learning.

Course Prerequisites

- Prior knowledge in a science/engineering discipline

Course Objectives

Teach water resources systems planning, operation, and management. Introduce students to application of models to various surface and groundwater resource allocation problems. Understand the advantages and limitations of modeling methods and algorithms used in water resources planning and management. Introduce students to optimization and the use of simulation/optimization models for designing systems to best achieve management goals.

Upon successful completion of this course, students should be able to:

1. Perform simulation of water resources systems taking into consideration reservoir reliability and storage requirements using known algorithms
2. Formulate models to solve water resources allocation problems while determining net benefits of water projects under uncertainty
3. Calculate probabilities of occurrences of hydrologic phenomena
4. Use optimization algorithms to minimize design cost for water supply and storage facilities
5. Use software for water projects analysis and evaluation

Topics Covered

- Concepts of Water Resources Planning and Management
- Economics of Water resources plans
- Time Series analysis of hydrologic Events
- Reservoir Sizing
- Linear programming in Water Resources
- Water Evaluation and Planning System Software

Texts and Supplementary Materials

Required Text

- Water Resources Systems Planning and Management: An Introduction to Methods, Models, and Applications. (2005) Daniel P. Louck and Eelco van Beek. Available online.

Technical Requirements

- You would need a computer running Windows XP or later, having a spreadsheet and a word program, along with the following software that you need to download and install when you register for this class:
 - o HEC-SSP, a software that allows you to perform statistical analysis of hydrologic data.
Available from:
 - <http://www.hec.usace.army.mil/software/hec-ssp/download.aspx>
 - o WEAP software, Available from
 - <http://www.weap21.org/index.asp?action=200>
 - Please register and apply for an academic license one week after the course starts

Technical support:

This course uses a Learning Management system called Moodle.
Your student account will allow you access to the course, by logging into:
<http://moodle.progreendiploma.com/>

Technical assistance for online courses is available Monday-Friday from 8 a.m. until 5:00 p.m. (UTC+02:00) through:

- Sending an e-mail to: moodle@aub.edu.lb
- Calling: 00961-1-350000, extension 3515/3518/3599/3586

Grading Policy

The grades in this class break down as follows:

Discussion Forum	10 pts
Assignments	60 pts
Online Quizzes	30 pts
Total Points	100 pts

Please refer to the Grading section in Moodle for more details.

Instructor feedback:

I will be providing both individual and group feedback. I will reply within 48 hours to the questions/concerns that you post in the online lounge.

Description of Course Requirements (assessments)

Online Quizzes/Knowledge Checks

You will take quizzes (Knowledge checks) throughout the semester, all delivered via Moodle. These quizzes include multiple-choice questions and essay writing. The quiz content will be largely based on video lectures and readings.

Internet Etiquette

Netiquette (short for "network etiquette" or "Internet etiquette") is a set of social conventions that facilitate interaction over networks.

General Rules

1. Make your messages easier to read by making your paragraphs short and to the point.
2. TYPING IN ALL CAPS IS CONSIDERED SHOUTING ON THE INTERNET.
3. Messages in all lowercase letters can be difficult to read, instead, use normal capitalization.

4. *Asterisks* surrounding a word can be used to make a stronger point.
5. Be careful when using sarcasm and humor. Without face-to-face communications your joke may be viewed as criticism. When being humorous, use emoticons to express humor. (Tilt your head to the left to see the emoticon smile) :-) = happy face for humor
6. Never give your user ID or password to another person. System administrators that need to access your account for maintenance or to correct problems will have full privileges to your account.

Make-up Policy

With the exception of illness requiring hospitalization or the death of an immediate family member, no make-ups for exams will be conducted.