

**The University of Jordan University  
Faculty of Engineering**

**Course Syllabus**

<b>Course Title:</b>	Hydraulic structures	<b>Course Number:</b>	0951561
<b>Department:</b>	Civil Engineering	<b>Designation:</b>	Elective
<b>Prerequisite(s):</b>			
<b>Instructor:</b>	Dr. Nidal Hadadin	<b>Instructor's Office:</b>	CE 316
<b>Instructor's e-mail:</b>	nhadadin@hu.edu.jo		
<b>Office Hours:</b>	((10:00-11:00) and (1:00-2:00 ) Sunday, Tuesday, Thursday		

**Time:** Class Room: CE 2001 and E 2015

**Course description: gg** Control structure: diversion works, weirs, sluice gates, flumes, sediment control devices, fall and transitions. Cross drainage works: culverts and outlet works. Hydraulic jump and energy dissipaters and stilling basin, and U/S and D/S protections. Dams spillways and outlet works

**Textbook(s):** Novak, P., et al.1996. *Hydraulic Structures* 2<sup>nd</sup> Ed. E&FN Spon, London.

**Other required material:** Notes prepared by instructor

**Course objectives:** This course is intended for senior level students who have completed a course in a hydraulic Engineering. The objectives of this course is to develop:

- 1) insight into the basic physical principles that govern the control of flows in hydraulic systems,
- 2) analytical and mathematical skills needed to describe and predict flow conditions in hydraulic structures , and
- 3) ability to effectively apply these principles and skills to the analysis and design of structures in hydraulic system.

**Topics covered:**

1. Introduction to the course
2. principles of hydraulic system analysis
3. classification and use of structures for flow control
4. Channel regulating structures
5. Flow measurement structures
6. Channel protective structures
7. Channel Grade control structures
8. Dams spillways and outlet works
9. Energy dissipation and drop structures
10. Cross drainage culverts, pipes

**Class/laboratory schedule:** sec. (1): 3 class sessions each week; 60 minutes Sunday , Tuesday and Thursday  
Sec. (2): 2 class sessions each week; 90 minutes each, (Mond. And Wend).

**Grading Plan:** Midterm Exam ( 30 Points)  
Others (10 Points)  
Final Exam (50 Points) Will be announced by the by registrar

**Course contribution:**

Professional Component	Course Contribution
General Education	None
Basic Science and Mathematics	Applying numerical analysis, differential equation, integration to solve some hydraulic problems
Engineering Science	Present each topic clearly and completely enough that the student will develop, identify, formulate, understand, and solve engineering problems in depth by utilizing the governing conservation equations of mass, momentum and energy
Engineering Design	Design of hydraulic structure, such Channel regulating structures, Flow measurement structures, Channel protective structures, Channel Grade control structures , Dams spillways and outlet works, Energy dissipation and drop structures , Cross drainage culverts, pipes

**Course outcomes:**

ABET a-k	CE Program Outcomes
a	An ability to apply knowledge and principles of mathematics, science, and engineering to solve engineering problems
b	An ability to design and conduct experiments, as well as to analyze and interpret data.
c	An ability to design a system, component or process to meet desired needs.
d	An ability to identify engineering problems.
e	An ability to formulate engineering problems.
f	An ability to solve engineering problems.

**ABET Program Criteria for Civil Engineering Achieved:**

## CIVIL ENGINEERING PROGRAM CRITERIA

	Programs must demonstrate that graduates have:
	A. proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry;
	B. proficiency in a minimum of four (4) recognized major civil engineering areas;
	C. the ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the recognized major civil engineering areas;
	D. the ability to perform civil engineering design by means of design experiences integrated throughout the professional component of the curriculum; and
	E. an understanding of professional practice issues.

Prepared by: Dr. Hadadin

Date: 1/2/2016