The university of Jordan
Faculty of Engineering
Course Syllabus

Course Title:	Hydraulics	**Course Number:**	0901362
Department:	Civil Engineering	**Designation:**	Compulsory
Prerequisite(s):			
Instructor:	Dr. Nidal Hadadin	**Instructor's Office:**	E 316
Instructor's e-mail:	n.hadadint@ju.edu.jo		
Office Hours:	Mon and Wed. 8:00-9:30		
	Sun.Tue, and Thurs10:00-11:00		
Time:	8:00 – 9:00	**Class Room:**	CE 101
	Sun through Thurs		
Course description:	Basic principles, Fluids in motion, Open channel flow, Uniform flow, Non-uniform flow, Flow under varying head, Flow through pipelines, Water turbines, Water pumps		
Textbook(s):	Les Hamill "Understanding Hydraulics", Second Edition , 2001, Polgrave		
Other required material:	Reberson, J.A., Cassidy, J.J. and Chaudhry, M.H., 1998, "Hydraulic Engineering", Second Edition, Prentice Hall.		

Course objectives: This course is intended for junior or senior level students who have completed a course in basic fluid mechanics. The objectives of this course is to:

1- Apply energy and momentum principles in hydraulic systems,
2- Distinguish between flow through pipes and open channels,
3- Know the main equations governing flow in open channels,
4- Analyze flow types, hydraulic jump and Design cross section for open channels,
5- Calculate backwater curves,
6- Analyze flow in pipelines and design of networks,
7- Understand the performance of water pumps and design of pumping stations,

Topics covered:
1. Hydrostatics
2. Fluids in Motion
3. Flow Through Pipelines and closed conduits
4. Flow under Varying Head
5. Flow in Open Channels
6. Turbines and pumps

Class/laboratory schedule: 3 class sessions each week; 60 minutes each

Grading Plan:

Midtermt Exam	(30Points)	
Final Exam	(50 Points)	Will be announced by the registrar
Others	(20 Points)	Quizzes and/or assignments

General Notes: Assignments should be submitted on time.

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 open channels, pipe networks, flow transitions, some hydraulic structure, such as spillway, outlet works protection for culverts, canals and related structure for irrigation.

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 a system, component or process to meet desired needs.
c		An ability to identify engineering problems.
d		The broad education necessary to understand the impact of engineering solutions in a regional and local context
e		An ability to use the techniques, skills, and, modern engineering tools necessary for engineering practice.

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:**   2/2016