

**UNIVERSITY OF CALIFORNIA, DAVIS**  
**DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING**

**COURSE: ENGINEERING HYDRAULICS (ECI 141)**

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**OFFICE: 3105, Ghausi Hall (former Engineering III building)**

**Class: Tuesdays and Thursdays-3:10 to 4:30 PM (216 Wellman)**

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**SYLLABUS OF ECI 141, ENGINEERING HYDRAULICS (YEAR 2018)**

Date	Topic
<b>January</b>	
11	<i>Introduction, review</i> Dimensions and units (Section 1.6 from the book) Viscosity and other properties (1.9) Gage pressure and hydrostatic pressure (pages 68 and 69) Bernoulli Equation (3.5; page 173)
16	<i>Flow in pipes: Laminar and turbulent</i> Reynolds number regimes (6.1). Head losses (6.3) Laminar fully developed pipe flow (6.4). The Nikuradse and Moody charts (page 369)
18	Four types of pipe turbulent flow problems (6.7) <i>Minor losses: Concepts, applications</i> Minor or local losses in pipe systems (6.9)
23	<i>Pipeline networks: In series, parallel, 3 reservoir-problem</i> Multiple pipe systems (6.10)
25	<i>Open-channel flow: Concepts, definitions</i> Terminology and differences with pipe flow (10.1) Flow cases in open channels
30	<i>Uniform flow: Manning's equation</i> Chezy and Manning formulas (10.2) Efficient cross section (10.3)

**February**

01	<i>Other equations for the prediction of uniform flow</i> Energy losses; comparison between pipe and channel flow
06	<i>Specific energy: Analysis, alternate depths</i> Specific energy; critical depth (10.4)

08 *Hydraulic jump: Analysis, implications*  
The hydraulic jump (10.5); fundamental equations

13 *Gradually varied flow: Concepts, applications*  
Gradually varied flow cases (10.6)  
Construction of backwater curves

**15 Mid-term examination**

20 Weirs: Equations, applications

22 Sharp-crested weirs; broad-crested weirs

27 Weirs: Continuation. Pumps: Concepts, analysis

## March

01 Pumps: Idealized theory of pumps

06 Pumps: Performance curves and system design

08 External flows: Boundary layers

13 Flow separation: Occurrence, implications

15 Lift and drag: Quantification and applications.

**21 Final examination (at 10:30 AM)**

**Note:** These dates and topics are only tentative and *might be subject to change*.