Supplemental Material

Table S1. Teaching plan

Week	Content*	Homework**
1	(1) Introduction (2) Flow behavior, viscosities of fluids	 131, 135,138
2	(1) Viscosity, other properties of fluids, models of fluids (2) Two methods of describing flows, velocity vector	141, supplement, 211,221,
3	(1) Flow patterns, material derivative, deformation and rotation of fluid elements (2) Deformation and rotation of fluid elements, types of flow, flow analysis methods, differential equation of mass conservation	232,233,242,244 253,255,261(2,3),263,265, 311(1,2),312(3,4)
4	(1) Forces acting on a fluid, N–S equation (2) Vortex dynamic equation, energy equation, pressure	321,362 371,373,376,392(1,2)
5	(1) Pressure, Reynolds transport theorem, integral equation of mass conservation (2) Bernoulli equation	421,423,425 431,433,435
6	(1) Momentum equation, angular momentum equation (2) Energy equation, dimensional analysis	442,443,445,449,451 522,526,528
7	(1) Similarity (2) Differential hydrostatic equation, integral hydrostatic equation, uniform linear acceleration,	561,563,565 142,145,
8	(1) Uniform rotation in a cylindrical container, hydrostatic forces on plane surfaces, hydrostatic forces on curved surfaces (2) Hydrostatic forces on curved surfaces, buoyancy and stability, atmospheric hydrostatic pressure distribution	151,153 161,162,171,173
9	(1) Some concepts in irrotational flow, velocity potential and stream function, elementary solutions of plane potential flows (2) Plane potential flow past a cylinder, airfoil theory, lift force of blades, complex potential theory	233,235 241,242,252, 283,285
10	(1) Entrance region, flow between two parallel plates, laminar flow in pipes, turbulent flow in pipes (2) Turbulent flow in pipes, head loss	331, 332, 342, 351,363,365, 367
11	(1) Minor losses, flow in noncircular conduits, pipe systems (2) Boundary layer concepts, laminar flat plate boundary layer	371, 381,391,394 421(1,3),431
12	(1) Momentum integral equation, boundary layer approximation (2) Separation of boundary layer, drag past immersed bodies	451,455,456 471,474(1)
13	(1) (2) Exam	

* There are two classes every week, thus, two contents per week. One class lasts for 90 min.
** The numbers in the homework can be found in the work of Ding[15].

Supplement: The pressure in a tank is 3×10^5 Pa, and then the pressure drops to 1×10^5 Pa after 24 kg oil is discharged. Given that the bulk modulus of elasticity of the oil K is 1.3×10^9 Pa and its density ρ is 900 kg/m^3, solve for the original volume of oil V in the tank. (Answer: 173.55 m^3.)