CA2675: FLUID MECHANICS

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Fluid Mechanics

Subject Code
CA - Civil and Architectural Engineering
Course Number
2675

Academic Unit
Architecture and Civil Engineering (CA)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
BC2675 Fluid Mechanics

Exclusive Courses
Nil

Part II Course Details

Abstract

The course will give the student a basic knowledge on fluid characteristics, fluid statics and buoyancy, dimensionless groups, fluid motion, laminar and turbulent flows. Also included is the application to the design of simple engineering structures against hydrostatic forces and fluid in closed conduits.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe basic characteristics of fluid and significance of dimensionless numbers	25	x		
2	Demonstrate problem solving skills about the stability of floating bodies	25		x	
3	Demonstrate problem solving skills about the hydrostatic forces on simple structures	25		x	
4	Explain laminar and turbulent pipe flow problems	25		x	

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lectures	Students will gain knowledge about theory and, concepts of fluid mechanics	1, 2, 3, 4	
2	Tutorials	Students will engage in tutorial activities to practice problem solving skills	1, 2, 3, 4	
3	Experiments	Students will work in groups to put theory and concepts into practice	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Laboratory Reports	1, 2, 3, 4	10		No
2	Tests and/or assignments	1, 2, 3, 4	40		No

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

3

Minimum Continuous Assessment Passing Requirement (%)

30

Minimum Examination Passing Requirement (%)

30

Additional Information for ATs

To pass a course, a student must obtain minimum marks of 30% in both coursework and examination components, and an overall mark of at least 40%.

Assessment Rubrics (AR)

Assessment Task

Laboratory Reports

Criterion

1. ABILITY to USE/APPLY the methodology and procedure with ACCURACY in using the experimental techniques

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Tests and/or assignments

Criterion

1. CAPACITY for SELF-DIRECTED LEARNING to understand the principles of fluid mechanics

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Examination

Criterion
1. ABILITY to UNDERSTAND the taught methodology and procedures in using the modelling and calculation techniques
2. ABILITY to APPLY the scientific techniques in solving theoretical and application problems in fluid mechanics

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus
Fluid properties, hydrostatics, buoyancy, floatation, laminar and turbulent flow, dimensional analysis, similitude and scale model, fluid friction, pipe flow.

Reading List

Compulsory Readings

	Title
1	Yunus A. Cengel and John M. Cimbala, Fluid Mechanics Fundamentals and Applications, 3rd edition, McGraw Hill Education, Singapore, 2014. ISBN: 978-1-259-01122-1.

Additional Readings

	Title
1	John F. Douglas, Janusz M. Gasiorek, John A. Swaffield and Lynne B. Jack, Fluid Mechanics, 5th edition, Prentice Hall, England, 2005. ISBN:-13: 978-0-13-129293-2.
2	Bernard S. Massey revised by John Ward-Smith, Mechanics of Fluids, 9th edition, Spon Press, London, 2012. ISBN13: 978-0-415-60259-4