

Course Syllabus

1. **Program of Study** B.Sc. (Applied Mathematics)
- College** Mahidol University International College
2. **Course Code** ICMA 441
- Course Title** Viscous Fluid
3. **Number of Credits** 4(4-0-8) (Lecture-Lab-Self study)
4. **Prerequisite** ICMA 214
5. **Type of Course** Elective Courses
6. **Session / Academic year** 1st or 3rd Trimester/Every Academic Year
7. **Course Conditions** Maximum number of students is 30 per class.

8. Course Description

Couette and Poiseuille Flow, Navier-Stokes Equation, Small Reynolds number flows, Flow in Convergent and Divergent Channels, Boundary Layer Analysis, Flow Along a Flat Plate; Displacement Thickness; Curves Walls and Separation; Instability of Vortex Motion

9. Course Objective

After successful completion of this course, students will be able to

- 9.1 understand the concept and solve the viscous fluid problems

10. Course Outline

Week	Topics	Hours			Instructor
		Lecture	Lab	Self study	
1	Couette and Poiseuille Flow	4	-	8	
2	Navier-Stokes Equation	4	-	8	
3	Small Reynolds Numbers	4	-	8	
4-5	Exam I Flow in Convergent and Divergent Channels	8	-	16	
6	Flow Towards a Plane Plate	4	-	8	
7	Boundary Layer Analysis	4	-	8	
8	Flow Along a Flat Plate Exam II	4	-	8	
9	Displacement Thickness	4	-	8	
10	Curves Walls and Separation	4	-	8	
11	Instability of Vortex Motion	4	-	8	

Final Examination					
	Total	44	-	88	

11. Teaching Methods

Lecture

12. Teaching Media

Texts and handouts.

13. Measurement and Evaluation of Student Achievement

Student achievement is measured and evaluated by

13.1 The ability to explain the Mathematic concept of the viscous fluid.

13.2 The ability to apply the knowledge obtained to solve the viscous fluid problems.

Student's achievement will be graded according to the college and university standard using the symbols: A, B+, B, C+, C, D+, D and F.

Ratio of mark

Homework and Quizzes 10%

Exam I 25%

Exam II 25%

Final examination 40%

14. Course evaluation

14.1 Students' achievement as indicated in number 13 above.

14.2 Students' satisfaction towards teaching and learning of the course using questionnaires.

15. Reference

15.1 Mises Rv, Friedrichs KO. Fluid dynamics New York : Springer-Verlag; 1971.

16. Instructors

Dr. Aram Tangboondouangjit

17. Course Coordinator

Assoc. Prof. Dr. Chinda Achariyakul