

**PROGRAM PLAN AND  
SEMESTER LEARNING  
ACTIVITIES  
(RPKPS)  
SCHOOL YEAR  
2021/2022**



Physical

Geophysics

Fluid Mechanics for Geophysics

MFG4717 / 2 credits

Mentoring Team:

Fluid Mechanics Supervisory Team for Geophysics

**UNIVERSITAS GADJAH  
MADA FACULTY OF  
MATHEMATICS AND  
NATURAL SCIENCES  
2023**



**Gadjah Mada University**  
 Faculty of Mathematics and Natural Sciences  
 Department of Physics / S1 Geophysics Study  
 Program Even Semester 2022/2023


**Document Code:**

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**SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)**

Course Code	Course Name	Weight (credit)		Semester	Course Status	Prerequisite Courses
MFG4717	Fluid Mechanics for Geophysics	T:	P: -	Even	Choice	MFG-2111 Mechanics of the Continuous Medium
<b>Course Brief Description</b>	<p>The main objective of this study is to study the basics of fluid mechanics and their application in geophysical problems. After attending this course and passing the application, students can solve conceptual and practical problems about fluid mechanics and its application in geophysics.</p> <p>This course contains Introduction and basic concepts of fluid mechanics, Fluid properties, Pressure and fluid statics, Fluid kinematics. Fluid kinematics, Momentum analysis of the fluid flow system, Analysis of the momentum of the fluid flow system, Analysis of the momentum of the fluid flow system, Analysis of the momentum of the fluid flow system, Analysis of the momentum of the fluid flow system</p>					
<b>Graduate Learning Outcomes (CPL) Charged to MK</b>	<b>CPL-2</b>	<b>Mastery of knowledge:</b> Graduates are able to apply basic science (mathematics, physics, chemistry, biology, geology), and geophysics in general and their relationship with other sciences such as geology, geodesy, geochemistry, geography, computing and information technology				
	<b>CPL-3</b>	<b>Operational and comprehensive skills:</b> Graduates are able to apply all geophysical methods (seismic, gravitational, magnetic, electrical, electromagnetic, and thermic methods) for energy exploration (e.g. oil and gas, coal, geothermal), mining materials (eg: iron, copper, gold, silver, tin) as well as groundwater and disaster mitigation				
<b>Course Learning Outcomes (CPMK)</b>	<b>After completing the learning of this course, students are expected to be able to:</b>					
	<b>CPMK-1</b>	Students are able to explain statics and fluid kinematics, [CPL-2]				
	<b>CPMK-2</b>	Students are able to explain the concept of mass, Bernoulli's equation, energy and momentum equations in fluid flow [CPL-2]				
	<b>CPMK-3</b>	Students are able to explain fluid flow in pipes [CPL-3]				
	<b>CPMK-4</b>	Students are able to understand differential analysis for fluid flow [CPL-3]				
	<b>CPMK-5</b>	Students are able to explain compressional fluid flow [CPL-3]				
<b>CPL mapping with CPMK</b>	<b>CPMK-6</b>	Students are able to explain open channel fluid flow [CPL-3]				
		<b>CPMK1</b>	<b>CPMK2</b>	<b>CPMK3</b>	<b>CPMK4</b>	<b>CPMK5</b>
	CPL-2					
	CPL-3					

<b>The Relationship of CPMK with Learning Materials and Forms, as well as Time Allocation</b>		<b>Learning Materials</b>	<b>Forms of Learning</b>	<b>Time Allocation</b>					
	<i>CPMK1</i>	Introduction and basic concepts of fluid mechanics	presentation	2 Hour					
	<i>CPMK1</i>	Properties of fluids	presentation	2 Hours					
	<i>CPMK1</i>	Fluid Pressure and Statics	presentation	2 Hours					
	<i>CPMK1</i>	Fluid kinematics	presentation	2 Hours					
	<i>CPMK1</i>	Mass, Bernaouli's equation and energy equation	presentation	4 Hour					
	<i>CPMK1</i>	Momentum analysis of the fluid flow system	presentation	2 Hour					
	<b>UTS/Project Task Results/Case Analysis</b>								
	<i>CPMK3</i>	Dimensional analysis and modeling	presentation	2 Hour					
	<i>CPMK3</i>	Fluid flow in pipes	presentation	2 Hours					
	<i>CPMK4</i>	Differential analysis of fluid flow	presentation	4 Hour					
	<i>CPMK5</i>	Compressional fluid flow	presentation	4 Hours					
	<i>CPMK6</i>	Open channel fluid flow	presentation	2 Hours					
<b>UAS/ Project Task Results/ Case Analysis</b>									
<b>Learning Methods</b>	<b>Blended Learning and Student Based Learning</b>								
<b>Student Learning Experience</b>	In-class lectures, Discussions and , presentations								
<b>Access Learning Media / LMS and Offline &amp;; Online Percentage</b>	LCD, Whiteboard, Laptop, Zoom Meeting and Google meet								
<b>Assessment Methods and Alignment with CPMK</b>	<b>Assessment Techniques</b>	<b>Assessment Percentage</b>	<b>Criteria/ Indicators</b>	<b>CPMK 1</b>	<b>CPMK 2</b>	<b>CPMK 3</b>	<b>CPMK 4</b>	<b>CPMK 5</b>	<b>CPMK 6</b>
	Participatory Activities *)	10	Class participation						
	Project Results / Case Study Results / PBL								
	Cognitive								
	Assignment	20	Task grades						
	Quiz	10	Quiz scores						
	UTS	30	UTS scores						
	UAS	30	UAS value						
	Total	100							

<b>Reference List</b>	<ol style="list-style-type: none"> <li>1. Cengel, Y.A, and Cimbala, J.M., Fluid Mechanics: Fundamentals and Applications 3rd Edition, McGraw-Hill</li> <li>2. Chapman, R.E., 1981, Geology and water, Martinus Nijhoff, Dr. W.. Junk Publishers, USA</li> <li>3. Streeter, V.L., 1990, Fluid Mechanics, Volume 1, Airlangga Publishers, Jakarta</li> <li>4. Streeter, V.L., 1991, Fluid Mechanics, Volume 2, Airlangga Publishers, Jakarta</li> <li>5. Giles, R. V., 1990, Fluid Mechanics and Hydraulika, Schaum Book Series, Airlangga Publisher, Jakarta</li> </ol>			
<b>Name of Lecturer (Team Teaching)</b>	Dr. Sudarmaji, MSi. and Dr. T. Marwan Irnaka, M.Sc			
<b>Authorization</b>	<b>Drafting Date</b>	<b>Course Coordinator</b>	<b>Coordinator of Expertise (if any)</b>	<b>Head of Study Program</b>
	<i>10 February 2023</i>	Dr. Sudarmaji, MSi	Dr. rer.nat. Ade Anggraini, M.T.	 Dr. Sudarmaji, MSi