

Universitas Negeri Surabaya Vocational Faculty, D4 Mechanical Engineering Study Program

Document Code

AUTHORIZATION SP Developer Course Cluster Coordinator Study Program Coordinator Learning model Case Studies Arya Mahendre Sakti, S.T., M.T. Program Course Cluster Coordinator Arya Mahendre Sakti, S.T., M.T. Learning model PLO study program that is charged to the course Program Objectives (PO) PLO-PO Matrix PLO-PO Matrix P.O PO Matrix at the end of each learning stage (Sub-PO) PO Matrix at the end of each learning stage (Sub-PO) Po full Mechanics (Basic): is a mandatory course that studies the behavior of fluids at rest or in motion without paying attention to the causes of fluid motion. The science of fluid mechanics is the main key in mechanical Engineering, therefore its Status in the curriculum is a mandatory course for Mechanical Engineering students. In the study of Mechanical Engineering, therefore, status in the curriculum is a mandatory course for Mechanical Engineering students. In the study of Mechanical Engineering. Metrolones, students are expected to understand the concepts of fluid mechanics and their interrelationships and be able to apply them to the field of Mechanics Program. Successed, including Endip Program: Jakarta. References Main :																
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(Sub-PO) Indicator Criteria & Form Offline (Online (online)]	(Su	D-PO)	Indicate	or	Cr	riteria &	Form				Or	line (d	online)			
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1	Formulate fluid properties	1.1 Able to understand and explain the physical meaning of dimensions, units and physical quantities 1.2 Able to convert one quantity and unit to another, practice questions. 2.1 Able to analyze and calculate fluid properties and their relationship to thermodynamics, practice questions	Criteria: According to the scoring guidelines and presentation rubric, full marks are obtained if you do all the questions correctly.	Reading literature and listening to students' explanations Reading literature, counting case examples, peer discussion, and Q&A Reading literature, counting case examples, peer discussion, and Q&A 10 X 30		0%
3	Understand and analyze fundamental concepts of fluid mechanics related to fluid properties and their influence on fluid mechanics applications	3.1 Able to understand the basic concept of fluid as a continuum 3.2 Able to explain and analyze velocity profiles in steady, unsteady fluids, as well as velocity profiles in fluids in 1D, 2D and 3D flow	Criteria: According to the scoring guidelines and presentation rubric, full marks are obtained if you do all the questions correctly.	Reading literature and listening to students' explanations Reading literature and listening to students' explanations 3 X 50		0%
4	Students can explain the basic concepts of velocity fields, stress fields, viscosity, surface tension, description and classification of fluid movements	Can explain the concepts of velocity fields, stress, viscosity, surface tension, and description and classification of fluid movements	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
5	Students can explain the basic concepts of velocity fields, stress fields, viscosity, surface tension, description and classification of fluid movements	Can explain the concepts of velocity fields, stress, viscosity, surface tension, and description and classification of fluid movements	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
6	Students can explain the basic concepts of velocity fields, stress fields, viscosity, surface tension, description and classification of fluid movements	Can explain the concepts of velocity fields, stress, viscosity, surface tension, and description and classification of fluid movements	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
7	Students can apply static fluid equations and calculate hydrostatic forces on immersed surfaces	Can apply static fluid equations and calculate hydrostatic forces	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
8	Students are able to apply basic equations in solving problems	Able to apply basic equations in solving problems	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Test work on 3 X 50 questions		0%
9	Students can apply static fluid equations and calculate hydrostatic forces on immersed surfaces	Can apply static fluid equations and calculate hydrostatic forces	Criteria: Steps for working on questions Completeness of work: Drawing/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%

10	Students can apply static fluid equations and calculate hydrostatic forces on immersed surfaces	Can apply static fluid equations and calculate hydrostatic forces	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
11	Students can apply the basic equations for conservation of mass and the equations of motion/momentum in solving related problems	Can apply basic mass conservation equations and motion/momentum equations	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
12	Students can apply the basic equations for conservation of mass and the equations of motion/momentum in solving related problems	Can apply basic mass conservation equations and motion/momentum equations	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
13	Students can apply the basic equations for conservation of mass and the equations of motion/momentum in solving related problems	Can apply basic mass conservation equations and motion/momentum equations	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
14	Students can apply the basic equations for conservation of mass and the equations of motion/momentum in solving related problems	Can apply basic mass conservation equations and motion/momentum equations	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
15	Students can apply dimensional and similarity analysis to form dimensionless equations	Can apply dimensional and similarity analysis	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%
16	Students can apply dimensional and similarity analysis to form dimensionless equations	Can apply dimensional and similarity analysis	Criteria: Steps for working on questions Completeness of work: Drawings/schemes, basic formulas, assumptions, inclusion of units Final Results	Lectures, questions and answers, discussions and practice questions on 3 X 50		0%

Evaluation Percentage Recap: Case Study No Evaluation Percentage

0%

Notes

- 1. Learning Outcomes of Study Program Graduates (PLO Study Program) are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
- The PLO imposed on courses are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
 Program Objectives (PO) are abilities that are specifically described from the PLO assigned to a course, and are specific to the
- study material or learning materials for that course.
- 4. Subject Sub-PO (Sub-PO) is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
- 5. Indicators for assessing ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
- 6. Assessment Criteria are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased.

Criteria can be quantitative or qualitative.

- 7. Forms of assessment: test and non-test.
- Forms of assessment: test and non-test.
 Forms of learning: Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
 Learning Methods: Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
 Learning materials are details or descriptions of study materials which can be presented in the form of several main points and sub-tonics.

- sub-topics.
- The assessment weight is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
 TM=Face to face, PT=Structured assignments, BM=Independent study.