Module Handbook

Module's Name	Mechanics
Module's Grade	Undergraduate Program (S-1)/Bachelor
Abbreviation /code (if any)	
Subtitles (if any)	
Courses included in the module (if any)	
Semester/year	3/2nd year
Module Coordinator	Prof. Dr. Budi Jatmiko, M.Pd
Lecturer	Prof. Dr. Budi Jatmiko, M.Pd Prof. Dr. Munasir, M.Si Woro Setyarsih, S.Pd., M.Si Dr. Dwikoranto, M.Pd Nugrahani Primary Putri, M.Si
Language used	Indonesian
Classification in the curriculum	Compulsory course/~~elective course~~
Learning format/number of class hours per week	Per week consists of: 4 hours face to face (1 hour face to face = 50 minutes/hour)
Workload	4x50 minutes face to face, 4x60 minutes structured tasks, 4x60 minutes independent learning, for 14 weeks, a total of 168 hours face-to-face/semester
CU	4
Precondition course	
Learning Outcome	Knowledge: 1. Using concepts/principles/theories in mechanics deep and critical, apply, analyze, formulate, and solve mechanical problems procedurally. Skill: 1. Using software/platform/technology applications such as PhET, Geogebra, Excel, and mathematical and computational approaches, for formulate and explain the concepts/principles/theory of mechanics in solving physics problems. 2. Able to work independently and collaboratively in assessing and solve mechanics problems. Competence: 1. Conduct a study of physical phenomena related to internal concepts/principles/theories mechanics in depth for further application Attitude and Social: 1. Implement higher-order thinking processes (critical, creative, logical, and problem-solving) in analyzing solutions mechanical problems.
Content	This course examines basic concepts (space and vectors), Newtonian mechanics (kinematics and particle dynamics), harmonic vibration, central force field and gravitational field, transformation frame of reference, particle system dynamics and rigid body mechanics, Lagrangian mechanics and Hamilton equations by applying discussion methods, guided discovery, problem solving, and tutorials for discover, understand, and apply mechanical concepts. Duty independently and in groups as well as presentations on study search results as well applied.

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<tr><td>Attribut soft skill</td><td>Work effectively group and individually in task
Self-efficacy
Discipline
Communication</td></tr>
<tr><td>Assessment of CLO/exam</td><td>Students are considered competent and pass if they get at least a minimum test score of 68 (Mid and Final), and structured activities (assignments/T) and participatory activities (P)
The final grade (NA) is calculated according to the formula:
$NA = \frac{(2xP)+(3xT)+(2xMid)+(3xFinal)}{10}$
Convert the 0-100 scale value to a 0-4 scale and the letters are arranged as follows.

<table><tr><th>Alphabet</th><th>Score</th><th>Interval</th></tr><tr><td>A</td><td>4,00</td><td>85 ≤ A < 100</td></tr><tr><td>A-</td><td>3,75</td><td>80 ≤ A- < 85</td></tr><tr><td>B+</td><td>3,50</td><td>75 ≤ B+ < 80</td></tr><tr><td>B</td><td>3,00</td><td>70 ≤ B < 75</td></tr><tr><td>B-</td><td>2,75</td><td>65 ≤ B- < 70</td></tr><tr><td>C+</td><td>2,50</td><td>60 ≤ C+ < 65</td></tr><tr><td>C</td><td>2,00</td><td>55 ≤ C < 60</td></tr><tr><td>D</td><td>1,00</td><td>40 ≤ D < 55</td></tr><tr><td>E</td><td>0,00</td><td>0 ≤ E < 40</td></tr></table></td></tr>
<tr><td>Media</td><td>PPT slides, videos of the phenomena of motion in nature, games, experiments, and mechanics projects, graphical analysis software (Geogebra), PhET, Worksheets Students for material deepening, and homework assignments</td></tr>
<tr><td>Reference</td><td>1. Alessandro Bettini, 2016, Undergraduate Lecture Notes in Physics: A course in classical physics 1-Mechanics, Springer International Publishing, Switzerland
2. Benacquista, Mathew J. Romano, Joseph D. 2018, Undergraduate Lecture Notes in Physics: Classical Mechanics. Springer International Publishing AG
3. Helrich, Carl S. 2017. Undergraduate Lecture Notes ini Physics: Analytical Mechanics. Springer International Publishing Switzerland.
4. Greiner, W., 2004, Classical Mechanics-Point Particles and Relativity, Springer.
5. Fowles, G R, 1999, Analytical Mechanics, New York: Saunders College Publishing
6. Arya, P. Atam, 1990, Introduction to Classical Mechanics, Prentice Hall
7. Spiegel, M R, 1982, Theory and Problems of Theoretical Mechanics, McGraw-Hill</td></tr>
<tr><td>Note</td><td></td></tr>
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