

| Course Code | TKIE161202 | | | | | | | | | | | |
|--------------------------------|---|---------------------------------------|------------------------|---------------------------|------------|----------|------|-----|----------|----------|------------|----------|
| Course Name | Engineering Physics | | | | | | | | | | | |
| Course Instructors | Priyatmadi; F Danang Wijaya; Oyas Wahyunugroho; Bambang Sugiyantoro; Yusuf Susilo Wijoyo; | | | | | | | | | | | |
| Course Type | Required | | | | | | | | | | | |
| Course Classification | Basic Science & Math | | | | | | | | | | | |
| Credit / Contact Hour per Week | 4 / 200 minutes per Week | | | | | | | | | | | |
| Course Description | Engineering Physics Course learns concepts and theories related to Unit System, Kinematics, Statics, Dynamics, Mechanics, Heat, Fluid Mechanics, Waves, Light and Optical Systems, Light Particle Properties | | | | | | | | | | | |
| Prerequisites Courses | Physics for Electrical Engineering (TKIE161102) | | | | | | | | | | | |
| Covered Student Outcome | Fundamental and Engineering Knowledge (a) Development of Engineering Solution (b) | | | | | | | | | | | |
| Learning Outcome | | | | | | | | | | | | |
| | | Study Program Student Outcome | | | | | | | | | | |
| No | Learning Outcome | SO a - SO k | | | | | | | | | | |
| 1. | Students are able to understand and know the aspects related to kinematics, mechanics and able to apply Newton's laws in dynamic static and spinning motion. | Fundamental and Engineering Knowledge | | | | | | | | | | |
| 2. | Students are able to understand and know the characteristics of heat, thermodynamic laws and thermal properties of objects. | Fundamental and Engineering Knowledge | | | | | | | | | | |
| 3. | Students are able to understand and analyze the mechanics and flow of non-viscous and viscous fluids, as well as cohesive forces in the liquid | Fundamental and Engineering Knowledge | | | | | | | | | | |
| 4. | Students are able to understand the wave characteristics, their properties and energies, and finally their application to sound waves. | Development of Engineering Solution | | | | | | | | | | |
| 5. | Students are able to understand and analyze light as a wave and its application to the optical system. | Development of Engineering Solution | | | | | | | | | | |
| 6. | Students are able to understand and analyze light as particle and quantum mechanics principle with their application. | Development of Engineering Solution | | | | | | | | | | |
| Topic | <ol style="list-style-type: none"> 1. Unit system 2. Law of movement - Linear movement, Movement on plane, Movement in space, Law of motion 3. Statics Dynamics and (Newton's Law), Circular motion 4. Work, Energy, and Power 5. Linear Momentum and Angular Momentum 6. Wave and Sound 7. Heat and temperature 8. Thermodynamics 9. Fluid 10. Light and Fiber Optic 11. Special Relativity 12. Quantum Mechanics 13. Nuclear Physics | | | | | | | | | | | |
| Direct Assessment | <table border="1"> <thead> <tr> <th>Direct Assessment Plan</th> <th>Measured Learning Outcome</th> </tr> </thead> <tbody> <tr> <td>Group Task</td> <td>LO2, LO4</td> </tr> <tr> <td>Quiz</td> <td>LO3</td> </tr> <tr> <td>Mid Exam</td> <td>LO1, LO4</td> </tr> <tr> <td>Final Exam</td> <td>LO5, LO6</td> </tr> </tbody> </table> | | Direct Assessment Plan | Measured Learning Outcome | Group Task | LO2, LO4 | Quiz | LO3 | Mid Exam | LO1, LO4 | Final Exam | LO5, LO6 |
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| Group Task | LO2, LO4 | | | | | | | | | | | |
| Quiz | LO3 | | | | | | | | | | | |
| Mid Exam | LO1, LO4 | | | | | | | | | | | |
| Final Exam | LO5, LO6 | | | | | | | | | | | |
| Indirect Assessment | Questionnaire (EDOM) | | | | | | | | | | | |
| References | <p>[1] Sternheim MM., Kane JW., 1991, General Physics, John Wiley & Sons. New York</p> <p>[2] Ohanian, 1994, Principles of Physics, W. W. Norton & Company, New York</p> | | | | | | | | | | | |

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| | [3] Young & Freedman, 2000, University Physics, Addison-Wesley Publishing Co. |
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