



UNIVERSITAS NEGERI YOGYAKARTA  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
DEPARTMENT OF PHYSICS EDUCATION  
**PHYSICS STUDY PROGRAM**

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Bachelor of Physics

MODULE HANDBOOK

|   |   |
|---|---|
| Module name:  | Termodinamika   |
| Module level, if applicable:                                | Bachelor Program  |
| Code:   | FSK6317   |
| Sub-heading, if applicable:                                 | -   |
| Classes, if applicable:                                     | -   |
| Semester:   | 2 <sup>th</sup>   |
| Module coordinator:   | .....   |
| Lecturer(s):  | .....   |
| Language:   | Bahasa Indonesia  |
| Classification within the curriculum:                       | Mata Kuliah Wajib   |
| Teaching format / class hours per week during the semester: | 150 menit Diskusi Kelas<br>180 Tugas terstruktur<br>180 Tugas mandiri   |
| Workload:   | Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes individual study per week for 16 weeks  |
| Credit points:  | 3 SKS (4.86 ECTS)   |
| Prerequisites course(s):                                    | -   |
| Course Outcomes   | Setelah perkuliahan diharapkan mahasiswa dapat:<br>CO1 Mahasiswa mampu menerapkan berbagai prinsip dan hukum-hukum Termodinamika dalam kehidupan sehari-hari, industri, dan teknologi.<br>CO2 Mahasiswa mampu mendeskripsikan, menganalisis, dan menerapkan berbagai konsep yang ada dalam ilmu Termodinamika |

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|----------------------------|---|
| Content:                   | Secara umum, mata kuliah ini membahas tentang energi dan panas (kalor), serta keterkaitan antara keduanya. Secara lebih khusus, mata kuliah Termodinamika mencakup telaah tentang hukum-hukum Termodinamika dan aplikasinya. Spesifikasi materi Termodinamika meliputi perubahan fase, persamaan Clausius-Clayperon, persamaan keadaan sistem (equation of state), siklus Carnot, entropi, potensial Termodinamika, siklus (tenaga upa) Rankine, serta perpindahan kalor  |
| Study / exam achievements: | Evaluasi mata kuliah akan dilakukan melalui (1) tugas mingguan, (2) ujian tengah semester (tertulis), dan (3) ujian akhir (tertulis). Penetapan nilai akhir adalah sebagai berikut:<br>Skor Akhir = 20%Tugas + 40%MID + 40% UAS   |
| Forms of media:            | Board, LCD Projector, Laptop/Computer   |
| Literature:                | <p>A. Ahmad Abu Hamid (a), 2007, Kalor dan Termodinamika, Diktat Kuliah, Yogyakarta: Jurusan Pendidikan Fisika FMIPA UNY.</p> <p>B. Ahmad Abu Hamid (b), 2008, Temperatur, Kalor, dan Perpindahan Kalor, Modul Pengayaan Materi Fisika Proyek Pendampingan SMA, Yogyakarta: Jurusan Pendidikan Fisika FMIPA UNY. Holman J.P., 1988, Thermodynamics, Fourth Edition, New York: McGraw-Hill Book Company.</p> <p>C. Darmawan, 1990, Termodinamika, Bandung: Jurusan Fisika FMIPA ITB.</p> <p>D. Budikase dan Sidharta, 1996, Termodinamika Fisika, Modul 1 – 9, Jakarta: Universitas Terbuka.</p> <p>E. Reif F., 1985, Fundamental of Statistical and Thermal Physics, International Edition, London: McGraw-Hill Book Company.</p> <p>F. Sears F.W., 1963, An Introduction to Thermodynamics, The Kinetic Theory of Gases, and Statistical Mechanics, First Printed, Reading: Addison-Wesley Publishing Company.</p> <p>G. Sears F.W. and Gerhard L. Salinger, 1975, Thermodynamics, Kinetic Theory, and Statistical Thermodynamics, Third Edition, Reading: Addison-Wesley Publishing Company.</p> <p>H. The Physics Coaching Class University of Science and Technology of China, 1990, Problems and Solutions on Thermodynamics and Statistical Mechanics, Edited by: Yung Kuo Lim, Singapore: World Scientific.</p> <p>I. Zemansky M.W., and R.H. Dittman, 1982, Heat and Thermodynamics, Sixth Edition, London: McGraw-Hill Book Company.</p> |

## PLO and CO mapping

|     | PLO1 | PLO2 | PLO3 | PLO4 | PLO5 | PLO6 | PLO7 | PLO8 | PLO9 |
|-----|------|------|------|------|------|------|------|------|------|
| CO1 |      | V    |      |      |      |      |      |      |      |
| CO2 |      |      |      |      | V    |      |      |      |      |