HASANUDDIN UNIVERSITY

Agricultural Engineering
Bachelor Program

2023

MODULE DESCRIPTION

BACHELOR PROGRAM
AGRICULTURAL ENGINEERING
FACULTY OF AGRICULTURE
HASANUDDIN UNIVERSITY
2023

Thermodynamics

Semester 3

Module designation	*Thermodynamics*
Semester(s) in which the module is taught	*III*
Person responsible for the module	• *Prof. Dr. Ir. Mursalim.* • *Prof. Dr. Ir. Junaedi Muhidong, M.Sc.* • *Prof. Dr. Ir. Salengke, M.Sc.*
Language	*Indonesia*
Relation to curriculum	*Compulsory*
Teaching methods	*Lecture*
Workload (incl. contact hours, self-study hours)	*(Estimated) Total workload:* *2 SKS = 3.4 ECTS = 91.8 hours* *> Lecture = 23.3 hours* *> Excercise = 28 hours* *> Sel Study = 28 hours* *> Exam = 4 hours (MID term and final)* *>Exam preparation= 8.5 hours*
Credit points	*2 SKS = 3.4 ECTS*
Required and recommended prerequisites for joining the module	*Physics*
Module objectives/intended learning outcomes	*ILO 3: Apply knowledge of mathematics, sciences, and engineering principles in agricultural fields; (Knowledge 1)* *ILO 4: Use quantitative analysis, information technology and critical thinking in agricultural engineering profession; (Knowledge 2)* *ILO 5: Use techniques, skills, and modern tools necessary for agricultural engineering practices; (Skill 1)* *ILO 6: Design simple equipment, components, or processes needed in agricultural engineering operations; (Skill 2)*
Content	*Topics that will be studied include the concept of energy, work, energy transfer, the first law of thermodynamics, properties of pure substances, P-V-T relationship, ideal gas, conservation of mass and energy, the second law of thermodynamics, Carnot cycle, and entropy.*
Examination forms	*Writing exam*
Study and examination requirements	*Attendance above 80%*
Reading list	*Yunus A. Cengel and Michael A. Boles (2005): Thermodynamics: An Engineering Approach*