HASANUDDIN UNIVERSITY

Agricultural Engineering
Bachelor Program

2023
MODULE DESCRIPTION

BACHELOR PROGRAM
AGRICULTURAL ENGINEERING
FACULTY OF AGRICULTURE
HASANUDDIN UNIVERSITY
2023

Renewable Energy

Semester 5

Module designation	*Renewable Energy*
Semester(s) in which the module is taught	*V*
Person responsible for the module	• *Dr. Ir. Supratomo, DEA* • *Dr. Ir. Abdul Waris, MT* • *Diyah Yumeina RD, STP., M.Agr., Ph.D*
Language	*Indonesia*
Relation to curriculum	*Compulsory*
Teaching methods	*Lecture*
Workload (incl. contact hours, self-study hours)	*(Estimated) Total workload:* *2 SKS x 1.7 = 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	*Fluid Mechanics* *Introduction to Climatology* *Engineering Mechanics*
Module objectives/intended learning outcomes	*ILO 3 : Apply knowledge of mathematics, sciences, and engineering principles in agricultural fields* *ILO4: use quantitative analysis, information technology and critical thinking in agricultural engineering profession* *ILO 7 : Design simple equipment, components, or processes needed in agricultural engineering operations*
Content	*This course studies the concepts of energy, conversion of energy, and renewable energy in agriculture. The topicsc include the concept of energy and law of the conservation of energy (the 2nd law of thermodynamics), harvesting of biomass energy (combustion, pyrolysis, gasification and biogas), solar energy, and hydro energy.*
Examination forms	*Writing*
Study and examination requirements	*Attendance above 80%*
Reading list	• *Karogirou, Solteris. 2009. Solar Energy Engineering: Processes and System. Academic Press. San Diego* • *Sørensen, Bent. 2007. Renewable Energy Conversion, Transmission and Storage. Academic Press. San Diego.* • *Sukandarrumidi, Herry Zadrak Kotta dan Djoko Wintolo. 2014. Energi Terbarukan : Konsep Dasar Menuju Kemandirian Energi. Gadjah Mada University Press, Yogyakarta.* • *Teodorita Al Seadi, Dominik Rutz, Heinz Prassl, Michael Köttner, Tobias Finsterwalder, Silke Volk, and Rainer Janssen. 2008. Biogas – Handbook. University of Southern Denmark, Esbjerg.*