



**HASANUDDIN  
UNIVERSITY**

**Agricultural  
Engineering**  
Bachelor Program

# 2023 MODULE DESCRIPTION

BACHELOR PROGRAM  
AGRICULTURAL ENGINEERING  
FACULTY OF AGRICULTURE  
HASANUDDIN UNIVERSITY  
2023



## Instrumentation Practicum

### Semester 3

Module designation	<i>Instrumentation Practicum</i>
Semester(s) in which the module is taught	<i>III</i>
Person responsible for the module	<i>Muhammad Tahir Sapsal, STP., M.Si</i>
Language	<i>Indonesia</i>
Relation to curriculum	<i>Compulsory</i>
Teaching methods	<i>Lab works</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: 1 SKS = 1.7 ECTS = 45.9 hours (1 ECTS around 27 hours) &gt; Laboratory session = 12 hours &gt; Lab report = 30 hours &gt; Virtual experiment = 1 hours &gt; Final examination = 2.5 hours</i>
Credit points	<i>1 SKS = 1.7 ECTS</i>
Required and recommended prerequisites for joining the module	<ul style="list-style-type: none"> <li>• <i>Fisika</i></li> </ul>
Module objectives/intended learning outcomes	<ul style="list-style-type: none"> <li>• <i>ELO 3: Apply knowledge of mathematics, sciences, and engineering principles in agricultural fields.</i></li> <li>• <i>ELO 4: Use quantitative analysis, information technology and critical thinking in agricultural engineering profession.</i></li> <li>• <i>ELO 5: Use techniques, skills, and modern tools necessary for agricultural engineering practices.</i></li> <li>• <i>ILO 6: manage and utilize agricultural resources effectively, efficiently, and sustainably; (Skill 2)</i></li> </ul>
Content	<i>This course provides the knowledge and skills needed to design simple control and instrumentation systems. Topics covered are instrumentation systems, types of electrical sensors, techniques of converting physical data from sensors to voltage, filters, current and voltage amplification with Op-Amp ICs, design of data loggers with microcontrollers, and application of expert systems and fuzzy logic to improve precision in instrumentation systems. Translated with <a href="http://www.DeepL.com/Translator">www.DeepL.com/Translator</a> (free version)</i>
Examination forms	<i>Writing and essay, etc.</i>
Study and examination requirements	<i>Attendance Above 80%</i>
Reading list	<p><i>Budiharto, W. 2008. Panduan Praktikum Mikrokontroler AVR Atmega16. Elex Media Komputindo Kelempok Gramedia, Jakarta.</i></p> <p><i>Doebelin, Ernest O., 1990, Measurement system, Application dan design, fourth edition, McGraw-Hill International edition.</i></p>