Course Code	TKEE161204
Course Name	Fundamental of Electronic
Course Instructors	Prapto Nugroho, Wahyu Dewanto
Course Type	Required
Course Classification	Engineering Topics
Credit / Contact Hour per Week	2 / 100 minutes per Week
Course Description	Understanding the concept of work, the characteristics, and the implementation of a series of basic components of electronics, recognize some electronic components and able to understand and make simple electronics circuit.
Prerequisites Courses	
Covered Student Outcome	**Fundamental and Engineering Knowledge (a)** **Development of Engineering Solution (b)**
Learning Outcome	1. Students are able to understand how electronics components work both passive and active components. 2. Students are able to design with a simple circuit. 3. Students are able to simulate and analyze simple circuit.
Topic	1. The Semiconductor Diode (Biasing the P-N Junction, Diode Characteristics (including Zeners and LEDs), Diode applications in power supply) 2. Precision Diode Circuits (Clippers, Clampers, Limiters, Peak Detector, Rectifier, Wave shaping circuits) 3. The Bipolar Junction Transistor (NPN and PNP Structures, Biasing the BJT, Basic BJT Linear Amplifiers, The BJT as a switch, The BJT as a simple current amplifier) 4. The Field Effect Transistor (JFET structure and characteristics, MOSFET, FET biasing, FET linear amplifiers, FET switching circuits) 5. Op Amp as black box (Basic characteristics, Open loop response, Closed loop response, Feedback concepts) and Actual Operational Amplifiers (Op-Amp Characteristics, Specifications, Limitations) 6. AC Analysis and Transistor Modeling 7. Advanced Operational Amplifier Circuits (Integrators, Differentiators, Feedback Oscillators, Active Filters, A-D and D-A Converters) and Special Purpose Amplifiers (Instrumentation Amplifiers, Isolation Amplifiers, Transconductance Amplifiers) 8. Power Supply and Regulator Circuits (Series, Shunt, Switching) 9. Timers and Relaxation Oscillators (Astable Circuits, Monostable Circuits) 10. Advanced Devices (SCR and SCR Circuits, Diac and Triac Circuits, The UJT)
Direct Asessment	

Direct Asessment Plan	Measured Learning Outcome
Engineering Design Assignment – Creating Proof of Concept	LO1, LO3
Engineering Design Assignment – Presenting the solution	LO2
Mid Exam	LO3
Final Exam	LO1

Indirect Asessment	Questionnaire (EDOM)
References	[1] Boylestad, R.L., *Electronic Devices and Circuit Theory*, 1999, Prentice Hall Int'l Inc, New Jersey. [2] Malvino, *Prinsip-prinsip Elektronik*, 1996, Erlangga. [3] Sedra, A. S. & Smith, K. C. *Microelectronics Circuits*, 2011, 6th

	edition, Oxford Series in Electrical and Computer Engineering. [4] Behzad Razavi, B. *Fundamental of Microelectronics*, 2001, McGraw-Hill International Edition.