

## **The Development of Training Kit For Basic Electronic Control on Automotive Field**

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### **ABSTRACT**

This study aims to determine: (1) the material needed by students in the Basic Practice of Electronic Control Systems in the automotive field, (2) the design of the Basic Electronic Control System Training Kit in the automotive field, (3) the results of the development of the Basic Electronic Control System training kit in the automotive field. , (4) eligibility of the basic training kit for the Electronic Control System in the automotive sector, and (5) users responses to the development results of the Basic Electronic Control System training kit. This study uses the research and development (RND) method. The research was carried out in 5 stages, namely: (1) the needs analysis stage, (2) the product design stage, (3) the product development stage, (4) the product use implementation stage, and (5) the product evaluation stage. Retrieval of data using documentation and questionnaires. The results showed that: (1) The materials needed by students in the basic practice of automotive electronic control systems include: understanding the use of simulation software, functions, arrays and looping on Arduino, serial communication, use of LCDs, use of interrupts, use of analog to digital converters, infrared sensor, ultrasonic sensor, pulse width modulation, lookup table function and EEPROM data writing, and arduino applications in the automotive sector; (2) The development product of the training kit is in the form of educational props containing parts of the power supply system, various kinds of input variations, the process system with Arduino Uno, and the output section in the form of lamps, buzzers, electric motors, solenoids, 7 segment displays, LCD, relays, and driver transistor. The model is packaged in a box for individual or group learning of 2-3 people; (3) The developed training kit was declared very feasible according to media experts and material experts; (4) The developed training kit received a positive response from users/students.

*Kata Kunci: Practical facility, training kit, basic electronic control system*