

DEVELOPMENT OF A GSM-BASED ELECTROCARDIOGRAM  
(ECG) SENSING DEVICE

Design Project

ANDREI E. ANDAYA  
FLORANTE B. VIDAD III

College of Engineering and Information Technology

CAVITE STATE UNIVERSITY

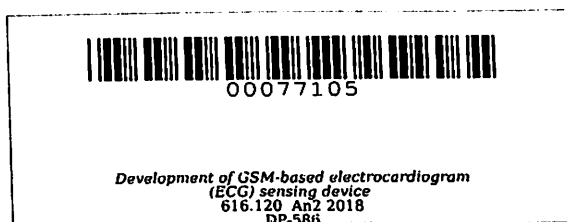
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# **DEVELOPMENT OF A GSM-BASED ELECTROCARDIOGRAM (ECG) SENSING DEVICE**

**Undergraduate Design Project  
Submitted to the Faculty of the  
College of Engineering and Information Technology  
Cavite State University,  
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**In partial fulfillment  
of the requirements for the degree  
Bachelor of Science in Electronics and Communications Engineering**



**ANDREI E. ANDAYA  
FLORANTE B. VIDAD III  
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## **ABSTRACT**

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The study was conducted from December 2017 to April 2018 at Dasmarinas City and Cavite State University, Indang, Cavite to develop a GSM-based electrocardiogram sensing device. Specifically, it aimed to: 1. design and construct the circuit for the heart monitoring device; 2. develop system software; 3. develop a graphic user interface/application software using Visual Basic; 4. develop data logging system; 5. test and evaluate the performance through pilot testing; and 6. conduct a cost computation. It was tested and evaluated at the Engineering Science Building, Department of Computer and Electronics Engineering, Cavite State University.

The equipment was designed and developed to produce a GSM-based ECG sensing device that can output a Lead II heart tracing. The device was composed of microcontroller-Arduino Uno, GSM module (Sim 800) and ECG module. The software was developed for the device.

Testing and evaluation were done by actual testing to five patients from General Emilio Aguinaldo Memorial Hospital (GEAMH) and 25 random participants with the age of 35 years and above. Electrocardiograms of the five patients were measured by both the hospital ECG machine and the developed prototype. Signal strength was also evaluated by doing 30 trials of data transmission. Data was recorded and subjected to statistical analysis. The equipment was first checked and approved by the Ethics Review Board before the patients evaluated the equipment.

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