# WAR FIELD SOLDIER BODY CONDITION MONITORING SYSTEM

## A PROJECT REPORT

*Submitted by*

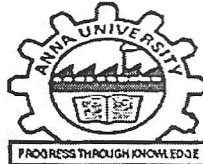| | |
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| M.GAYATHRI | (112818106004) |
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*in partial fulfillment for the award of the degree*

*of*

## BACHELOR OF ENGINEERING

in

## ELECTRONICS AND COMMUNICATIONS ENGINEERING



## T.J.S. ENGINEERING COLLEGE, PERUVOYAL



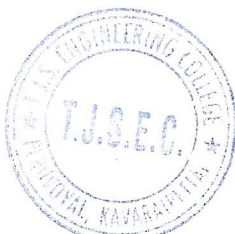## ANNA UNIVERSITY : CHENNAI 600 025

### JUNE 2022

PRINCIPAL
T.J.S. ENGINEERING COLLEGE
Peruvoyal, Kavaraipettai,
Gummidipoondi Taluk,
Thiruvallur Dist., 601 206

# BONAFIDE CERTIFICATE

Certified that this project report "WAR FIELD SOLDIER BODY CONDITION MONITORING SYSTEM" is the bonafide work of the following students.

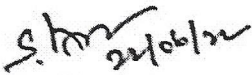| | |
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who carried out the project work under my supervision.

SIGNATURE

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PROFESSOR AND HEAD

Department of Electronics and

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SIGNATURE

Dr.M.SATHYA PRIYA,M.E.,PhD
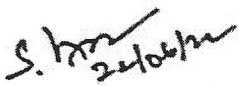
PROFESSOR AND SUPERVISOR

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Submitted for viva voce held on 22-06-22 at T.J.S. Engineering College, Peruvoyal.

INTERNAL EXAMINER

EXTERNAL EXAMINER

# ABSTRACT

Military is the backbone for the countries to restrict the entry of terrorists and maintain peace inside the country. They use plenty of electronic gadgets to fight the terrorists and protect the border. During critical conditions, they may get attacked. But due to lack of first aid during such time may cause them their life. Even though they have communication medium it is impossible to monitor their body condition. So some soldiers can get physical illness during these conditions. It is not possible for the militants to continuously monitor the condition of the soldiers. In this project we are developing a modern wearable technologies have enabled continuous recording of condition of the soldiers with the help of embedded sensors integrated in the jacket would provide maximum convenience and the opportunity to monitor both the body parameters as well as environmental parameter.

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# EC8391 CONTROL SYSTEMS ENGINEERING

**LTPC**
**3 0 0 3**

## OBJECTIVES:

- To introduce the components and their representation of control systems
- To learn various methods for analyzing the time response, frequency response and stability of the systems
- To learn the various approach for the state variable analysis.

**UNIT I SYSTEMS COMPONENTS AND THEIR REPRESENTATION**                    9

Control System: Terminology and Basic Structure-Feed forward and Feedback control theory Electrical and Mechanical Transfer Function Models-Block diagram Models-Signal flow graphs models-DC and AC servo Systems-Synchronous -Multivariable control system

**UNIT II TIME RESPONSE ANALYSIS**                    9

Transient response-steady state response-Measures of performance of the standard first order and second order system-effect on an additional zero and an additional pole-steady error constant and system- type number-PID control-Analytical design for PD, PI,PID control systems

**UNIT III FREQUENCY RESPONSE AND SYSTEM ANALYSIS**                    9

Closed loop frequency response-Performance specification in frequency domain-Frequency response of standard second order system- Bode Plot - Polar Plot- Nyquist plots-Design of compensators using Bode plots-Cascade lead compensation-Cascade lag compensation-Cascade lag-lead compensation.

**UNIT IV CONCEPTS OF STABILITY ANALYSIS**                    9

Concept of stability-Bounded - Input Bounded - Output stability-Routh stability criterion-Relative stability-Root locus concept-Guidelines for sketching root locus-Nyquist stability criterion.

**UNIT V CONTROL SYSTEM ANALYSIS USING STATE VARIABLE METHODS**    9

State variable representation-Conversion of state variable models to transfer functions-Conversion of transfer functions to state variable models-Solution of state equations-Concepts of Controllability and Observability-Stability of linear systems-Equivalence between transfer function and state variable representations-State variable analysis of digital control system-Digital control design using state feedback.

**TOTAL:45 PERIODS**

**OUTCOMES:** Upon completion of the course, the student should be able to:

- Identify the various control system components and their representations.
- Analyze the various time domain parameters.
- Analysis the various frequency response plots and its system.
- Apply the concepts of various system stability criterions.
- Design various transfer functions of digital control system using state variable models.