**Capstone Project – Introduction (PROJ2999), 7th Semester**

**Academic year: 2025-26**

**Project Title: Non- Invasive Biosensing Platforms for the Early Detection of Critical Diseases**

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**Section: C [ECE-AIML]**

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***Abstract:***

Biosensing technologies hold significant potential for transforming healthcare by enabling real-time monitoring and early detection of the diseases. This project represents the initial stage of developing a comprehensive biosensor platform that integrates optimized hardware with a cross-platform application for data monitoring and analysis. The hardware design focuses on reducing the electrical noise and the interference through improved PCB layout and advanced signal processing techniques, thereby enhancing the accuracy and reliability of sensor outputs. Complementing this, the software component is being developed as a user-friendly mobile and desktop application that supports live data streaming, secure storage, and cloud connectivity to enable remote monitoring. The application emphasizes an intuitive interface to make data visualization and interaction accessible to both patients and healthcare providers. Furthermore, advanced analytics are being incorporated to identify abnormal patterns in the data, offering the potential for early disease detection and improved decision support. Additional objectives include the implementation of wireless data transmission for seamless connectivity and the creation of a scalable framework adaptable to diverse biosensing applications. By combining innovations in hardware optimization and software integration, this work establishes a foundation for a reliable, accessible, and intelligent biosensor system aimed at supporting personalized healthcare and proactive disease management.

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