PROBLEM STATEMENTS
(Department of Electronics and Communication)

1:Air pollution monitoring using wireless sensor network

Abstract: Rapid urbanization and industrialization has resulted in a sustained degradation of environmental quality parameters. It is important to keep track of various environmental pollution indices so that realistic models can be developed and relevant public policies are created. With these limitations, air pollution monitoring in broader area is not feasible. However, use of modern low-cost sensors in conjunction with wireless sensor network (WSN) creates an opportunity to collect real time data from different locations and provide detailed pollution map. You are required to develop a project with low cost multi-sensor node for air pollution measurement, and develop WSN protocols for data gathering and data aggregation protocol.

2: Fingertip based heart beat monitoring system using embedded systems

Abstract: Heart rate is a very vital health parameter that is directly related to the Soundness of the human cardiovascular system. It can be measured either by the ECG waveform or by sensing the pulse – the rhythmic expansion and contraction of an artery. Learning heart rate and patterns, both during a workout & during daily activity, can help to monitor health.

3 : Smart garbage alert system using Arduino UNO

Abstract: Waste management is one of the primary problem. The key issue in the waste management is that the garbage bin at public places gets overflowed well in advance before the commencement of the next cleaning process. It in turn leads to various hazards such as bad odour & ugliness to that place which may be the root cause for spread of various diseases. The student is required to develop a smart intelligent garbage alert system for a proper garbage management. This proposes a smart alert system for garbage clearance by giving an alert signal to the municipal web server for instant cleaning of dustbin with proper verification based on level of garbage filling.

4 : Real time vehicle monitoring and tracking based on Raspberry pi

Abstract: Students are supposed to prepare an advanced vehicle monitoring and tracking system based on Raspberry pi Board and android application is to be designed and implemented for monitoring the school vehicle from any one location To another location at real time. The system should make good use of new technology that based on Embedded Linux board namely Raspberry Pi and smartphone android application.. The proposed system is to be placed inside the vehicle whose position is to be determined on the web page and monitored at real Time. The proposed system also took care of the traveler's safety by using LPG gas leakage and temperature.

5: Inserting Photovoltaic Solar Energy to an Automated Irrigation System

Abstract: Photovoltaic solar energy is a clean, static and promising energy source, and such technology has been applied to various applications. Make a project for prototype of an automated irrigation system for later installation on the field. The Integration of photovoltaic solar energy in the automated irrigation system should represent a good application For family farming, minimizing water waste, and use of a renewable energy source.

6: Automated railway crossing

Abstract : We have been hearing lot of news lately regarding the number of people losing lives, vehicles getting into accident at the unmanned railway gates. The student should provide an efficient solution to this, through which the railway gates can be programmed to open and close automatically by sensing the arrival of train.

7: Paid car parking system using RFID

Abstract: In this project a car should be the authorizing system where the system can only allow a car entry when a valid RFID card id swiped by the car owner. The System should also have paid parking facility where the amount of parking gets deducted automatically whenever the card is swiped and the available number of car parking are displayed on a seven segment display.

8: RFID Based Object locators

Abstract: This system is proposed for the assistance of blind people. The system incorporates a mobile RFID reader with object management system with three main functionalities: to access and manage an integrated ZigBee transceiver for transmitting the tag's information. Utensils and other objects in a building carry the tags and transmit data wirelessly to the server embedded. An audio file, recorded for each unique object resides on the server .The reader reads PC which in turn scans for the particular id in the database and plays the corresponding audio file.

9: Replacing Cryptography with Ultra-Wideband (UWB) Modulation in Secure RFID

Abstract: Existing secure RFID tags rely on digital cryptographic primitives in the form of hashes and block ciphers, which lead to large system latencies, high the power consumption and large tag silicon area. In addition, existing passive RFID systems rely on simple coding and modulation schemes using narrowband radio frequencies, which can easily be eavesdropped or jammed. To address the above problems, students are required to propose a new approach for secure passive RFIDs based on ultra-wideband (UWB) communications.