Recently, healthcare monitoring systems have utilized the modern wireless networks and internet technologies. One of the most developed applications in the healthcare monitoring systems is the fetal heartbeat detection. Obtaining fetal heartbeat has become very important to study the state of fetal heart before giving birth. On the other hand, the fetal heartbeat signal contains potentially precise information. This information could assist clinicians in making more appropriate and timely decisions during pregnancy period and labour. The continuous change in the fetal heartbeat signals during the pregnancy period pushes the researchers to focus on building the remote monitoring systems. Measuring fetal electrocardiogram (FECG) from mother’s abdomen is a very complicated process. It is affected by mother’s signal. This thesis proposes a design and implementation of remote web-based Fetal electrocardiogram (FECG) monitoring system. The proposed monitoring system comprises of an acquisition part and data transfer part. The acquisition part acquires FECG signal through the use of a Least Mean Square (LMS) based adaptive filter. In addition, this part has been implementation in MATLAB based graphical user interface (GUI) to simplify the system usage by the pregnant women. The other part (data transferring) uses the internet based web page to transmit FECG data to physicians for monitoring, diagnosis and pregnancy care at a significantly low cost, regardless of the location of the pregnant women. Moreover, a database could be built at the hospital to manage the patients and physicians reports and decisions. Different case studies have been considered to test the ability and reliability of the proposed system. Through these cases studies, the system has proven its effectiveness and success of the signal extraction of the FECG, saved it and sent to a specialist doctor for preview and take necessary.