**Developing an automated process for**

**proper irrigation in the agricultural fields**

**Microprocessor and Embedded System**

1. **Introduction**
   1. Background of Study and Motivation
   2. Project Objectives
   3. A brief outline of the report
2. **Literature Review (At least 5)**
3. **Methodology and Modeling**
   1. Introduction
   2. Working principle of the proposed project
      1. Process of Work à [**Part under OBE assessment]**
   3. Description of the important component
   4. Implementation
   5. Test/Experimental setup à [**Part under OBE assessment]**
   6. Cost analysis

**[Guideline for section 3.2.1:** The ascertained project is a complex engineering problem and certainly it follows a specific method or working procedure to ensure intended functionality. Hence, one should discuss how the process is developed and the proposed “Process” is irrespective of users’ cultural (religion, language, morals etc.) and societal factors (education level, income, gender etc.).**]**

**[Guideline for section 3.5:** The design process of the experiment and the investigation behind the finalized setup should be reported here. The conception of the “Experiment” includes both the setup and study to justify the desired functionality of the developed prototype. Hence, before presenting the experimental setup and procedure, one should present which kind of engineering knowledge is required to develop such setup along with the analysis that is conducted to reach the final stage of the setup. It should be highlighted that the developed setup is a technically complicated one that requires many components to build; else, it is a big challenge to design such setup and the ultimate setup is accomplished tackling several sub-challenges.**]**

1. **Results and Discussion**
   1. Simulation/Numerical analysis
   2. Measured response/Experimental results
   3. Comparison between numerical and experimental results

[NB: Due to the pandemic, the current mode of education is completely online based; therefore, the project functionality will be demonstrated based on simulation results only. **Hence, section 4.2 can be ignored and in section 4.3, a brief discussion on the simulation results should be presented instead of comparative analysis. Since the experimental results will not be presented, so a substantial amount of simulation results and analysis should be reported in this chapter.**]

1. **Conclusion and Limitation**

**[1]** **Vimal, S. P., Sathish Kumar, N., Kasiselvanathan, M., & Gurumoorthy, K. B. (2021). *Smart Irrigation System in Agriculture. Journal of Physics: Conference Series, 1917(1), 012028****.*

**[2] Kshitij Sirohi, Aastha Tanwar, Himanshu, Poonam Jindal: “Automated**

**Irrigation and Fire Alert System based on Hargreaves Equation using**

**Weather Forecast and ZigBee Protocol”, IEEE 2nd International Conference**

**on Communication, Control and Intelligent Systems (CCIS) (2016)**

**[3] Luisella Balbis, Ali Jassim: “Dynamic Model of Soil Moisture for Smart**

**Irrigation Systems”, International Conference on Innovation and Intelligence**

**for Informatics, Computing, and Technologies (2018)**

**[4] Hui Changl, Nan Zhou, Xiaoguang Zhao, Qimin Cao, Min Tanl,Yongbei**

**Zhang. “A New Agriculture Monitoring System Based on WSNs” ICSP**

**Proceedings, IEEE, 2014, pp. 1755-1760**

**[5] R. Rajavarman, S.G. Achchutha Rengan, P. Alen Daniel, R. ArunKumar, K. Karuppaiya, “SMART AGRICULTURAL WATER IRRIGATION MONITORING AND CONTROL SYSTEM USING IOT BLYNK SERVER” Volume XII, Issue V, May-2020.**

**[6] Pradeep K. V., Balasundaram A., Rabindra Kumar Singh. (2021). IoT based Smart Irrigation for Agricultural Fields. *Annals of the Romanian Society for Cell Biology*, *25*(2), 2000–2009.**

**[7] Giri, M., & Wavhal, D. N. (2013). Automated intelligent wireless drip irrigation using linear programming. Proceedings of the Special Interest Group on Management of Data Record, International Journal of Advanced Research in Computer Engineering&Technology, 2(1).**

**[8] Munoth, P., Goyal, R., & Tiwari, K. (2016). Sensor based irrigation system: A review. NCACE. USA.**

**[9] Boutraa, T., Akhkha, A., Alshuaibi, A., & Atta, R. (2011). Evaluation of the effectiveness of an automated irrigation system using wheat crops. Agriculture and Biology Journal of North America, 2(1), 80-88.**

**[10] Awati, J. S., & Patil, V. S. (2012). Automatic Irrigation Control by using wireless sensor networks. Journal of Exclusive Management Science, 1(6), 1-7.**

**Appendix (if any)**