Course Code	TKIT165111
Course Name	Data Compression Technique
Course Instructors	Bondhan Winduratna
Course Type	Elective
Course Classification	Engineering Topics
Credit / Contact Hour per Week	3 / 150 minutes per Week
Course Description	Lecture on Data Compression Technique is the elective course in the final semester. Therefore the teaching method used is more focused on the discussion. Discussion material taken from reference books, journals, internet, etc. The task of writing the discussion material in paper and power point is an absolute thing. In this course we will discuss everything related to various basic techniques of compressing data. The limitation of the width of the transmission medium used to channel information causes people to look for ways for large information to be transmitted and well received on the receiving end. It can be done by compressing the data to be sent. The data in question is not limited to text only, but also image data (video or image) and voice data. The various basic algorithms in this data compression will be discussed. Therefore, it is strongly recommended that the students have basic knowledge of Networking and Data Communication. as well as Basic Programming will be very helpful.
Prerequisites Courses	-
Covered Student Outcome	**Development of Engineering Solution (b)** **Modern Tools Utilization (e)** **Engineering Awareness and Society (j)**

Learning Mapping

Code	Learning Outcome	Student Outcome SO (a) – SO (k)
LO1	Students are able to understand, use, and analyze data compression techniques	Modern Tools Utilization
LO2	Students are able to develop a matrix of data compression in accordance with the needs and cases encountered	Development of Engineering Solution
LO3	Students are able to align knowledge of data compression in case of energy saving	Engineering Awareness and Society

Topic	1. Introduction 2. Review of stochastic process and information theory 3. Discrete source model with and no memory 4. Minimal redudance coding 5. Minimal irrelevans coding 6. Percephtical encoder 7. Encoder in time domain and frequency domain 8. The coder is based on the work domain 9. Various Data Compression Techniques are widely used, Entropy, Redundancy, Compression Ratio, and Compression Factors 10. Shannon Fano Compression Technique and Huffman Compression Technique 11. Compression Technique with Arithmetic Algorithm and LZ 12. Various Audio Compression Techniques 13. Image and Video Compression Techniques 14. Compression Technique with Wavelet Algorithm
Direct Asessment	

Direct Asessment Plan	**Measured Learning Outcome**

	Mid Exam	LO1,LO2
	Final Exam	LO3
Indirect Assesment	Questionnaire and direct communication	
References	1. Fred Halsall, 2001, *Multimedia Communications*, Addison-Wesley 2. Alberto Leon-Garcia dan Indra Widjaja, 2006, *Communication Networks*, Edisi Kedua, Mc Graw Hill 3. Behrouz A. Forouzan, 2007, *Data communications and Networking*, Edisi ke empat, McGraw Hill 4. Diktat Kuliah Teknik Kompresi Data, Wahyu Dewanto 5. Gallager R.G, "Information Theory and Reliable Communication", John Willey & Sons, 1968 6. Warkinson, J. "The MPEG Handbook MPEG1, MPEG2, MPEG4", Willey Interscience, 2007	