

Data Mining (MSM4244)

<b>Course Code</b>	MSM4244								
<b>Course Name</b>	DATA MINING								
<b>Credit Hour</b>	4								
<b>Prerequisite Course</b>	Industrial Statistics (MSM4213)								
<b>Contact Hours</b>	Lecture:	3	units	(3 hour(s) per week)					
	Tutorial:	0	unit	(0 hour(s) per week)					
	Laboratory:	2	units	(2 hour(s) per week)					
<b>Rationale for the Inclusion</b>	This course is primarily focused on the applications of data mining techniques that are applicable to industries. Through this course, students are able to learn and directly apply the data mining knowledge in the research or problems being studied.								
<b>Course Objective</b>	To introduce basic concept and techniques of data mining, develop skills of using data mining software for solving practical problems, and gain skills of doing independent study and research.								
<b>Course Synopsis</b>	In this course, students are exposed to statistical approaches to the data mining and its applications. Topics cover preparing data input, knowledge representation, method evaluation, and data pre-processing. This knowledge will be applied to solve industrial related problems using appropriate software such as MATLAB or R. The assessment will be done based on the ability of a student to solve problem through project based learning and the quality of the data mining analysis. Some examples of project are include data pattern for customer profiles or product choice, prediction rules for weather problem, and diagnostics study on production rate of certain product.								
<b>Program Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>
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<b>Soft Skills</b>	<b>Code</b>		<b>CTPS</b>	<b>CS</b>	<b>TS</b>	<b>LL</b>	<b>ES</b>	<b>EM</b>	<b>LS</b>
	<b>KIM</b>		5		4				
<b>Course Outcomes</b>	By the end of semester, students should be able to:								
	<b>CO1</b>	Distinguish the strengths and weaknesses of various data mining techniques.							
	<b>CO2</b>	Construct appropriate data mining analysis by using appropriate software tools.							
	<b>CO3</b>	Decide suitable data mining method to solve related problems involving real life data.							
	<b>CO4</b>	Display the ability to work collaboratively as part of a team to solve given problem through group discussion and presentation.							
<b>Assessment Methods</b>	<b>Methods</b>		<b>Weighting</b>	<b>CO1</b>	<b>CO2</b>	<b>CO3</b>	<b>CO4</b>	<b>CO5</b>	
	Individual Project		50%	/	/	/			
	Group Project		50%	/	/	/	/		

	<b>Total</b>	<b>100%</b>				
<b>Learning References</b>	1	Witten, I. H., Frank, E., Hall, M. A., Data Mining Practical Machine Learning Tools and Techniques, 3rd Edition, Morgan Kaufmann, 2011. (latest version-Main Reference)				
	2	Bishop C. M., Pattern Recognition and Machine Learning, Springer, 2006 (latest version)				
	3	Nisbet, R., Elder, J., and Miner, G. D., Handbook of Statistical Analysis and Data Mining Applications, Academic Press. 2009 (latest version)				
	4	Han, J., Pei, J., and Kamber, M., Data Mining: Concepts and Techniques, 3rd Edition, Morgan Kaufmann. 2011 (latest version)				
	5	Olson, D. L. and Delen, D., Advanced Data Mining Techniques, Springer. 2008. (latest version)				