MSIE 4.0

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Applied Data Analytics

Curriculum Development
of Master's Degree Program in
Industrial Engineering for Thailand Sustainable Smart Industry

Opening & Enrolment

- The course started on 08 January 2020 and end on 07 May 2020

- Number of students enrolled: 31 from
  - Industrial and Manufacturing Engineering
  - Computer Science
  - Information Management
  - Water Engineering and Management
  - Mechatronics

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Development of Learning Materials

Module 1: Basic Data Analysis

- Session 1: Basic Concepts
- Session 2: Statistical Inferences
- Session 3: Hypothesis Testing
- 4 tutorials/workshops on using R

Module 2: Data Visualization

- Session 4: Data Visualization
- Session 5: Data Dashboard
- Tutorials/workshops on using Power BI to develop data dashboard for a real big dataset (group project)

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Development of Learning Materials

Module 3: Key Data Mining Techniques

- Session 1: Regression Analysis
- Session 2: Data Classification
- Session 3: Data Clustering
- Session 4: Association Rules
- Tutorial on using R to conduct regression analysis
- Home assignments related to data classification, data clustering, and deriving associate rules

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Observations

Module 1:

1. Most students knew the basic statistical concepts and techniques. However, they don't really understand and made many mistakes in application
2. The lecturer must focus on the meaning of basic statistics and when each of them should be used.
3. Specific discussions on confidence intervals, observed significant levels and testing procedures are needed
4. Making mistakes in home assignments will help students to digest these knowledge

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Observations

Module 2:

1. The knowledge in this module is completely new to all students. The only way to help them capture these knowledge is through group project.
2. A lot of time must be spent for each group to help them develop a data dashboard using Microsoft Power BI.
3. Tutorials on using Power BI must be conducted to help save time for the students to understand how to use the tools provided by the software

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Observations

Module 3:

1. It is not easy for the students to understand regression analysis (linear/multiple linear regression & logistic regression). Tutorials and home assignments will help.
2. Understanding Bayes Theorem and how to apply are the requirements for applying Bayesian Networks techniques (including MAP method, Naïve Bayesian, and BBN) in data classification.
3. Application of “The a priori property” in deriving associations rules should be focused.

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Student Feedbacks

1. Most of students satisfied with the knowledge learned in this course.
2. Workload in the course is considered high but acceptable.

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