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| **Specialist Diploma in Internet of Things** | Description: C:\Users\rajahk\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\Z7A7LSNK\big (2).jpg |
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**Engineering Analytics and Machine Learning**

**(ECSE202)**

**Students’ Subject Guide Book**

**AY 2018/2019 (October)**

**Author’s Name: Teo Kok Keong**

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1. **About the Subject**

**Subject Synopsis**

This subject provides coverage of the knowledge of concepts and skills in the tools and processes used in data analytics of large amounts of engineering data. It encompasses the various stages of data analytics, from gathering the data, asking the right questions, to analyzing and interpreting data, identifying patterns and trends and making use of machine learning and predictive models to make intelligent and actionable recommendations for improvement in engineering systems.

**Subject Aims**

This subject aims to equip students with the knowledge and skills to:

* Apply the processes needed to perform analysis on engineering data.
* Present results in the form of visualization.
* Apply machine learning algorithms on engineering data.

**Intended Learning Outcomes**

* Perform data gathering and pre-processing of data
* Conduct exploratory data analysis and visualization
* Perform machine learning by regression analysis
* Perform machine learning algorithms for predictive analysis

**2 Teaching Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Wk** | **Dates** | **Laboratory Activities** | **Assessment** |
| 1 | 18 Oct | * Subject Briefing and set ground rules * Seminar 1: Introduction to Engineering Analytic and Machine Learning * Lab 1: Introduction to Python |  |
| 2 | 25 Oct | * Seminar 2: Essential Statistic * Lab 2: Introduction to Python Data structure, Numpy and Panda |  |
| 3 | 11 Nov | * Seminar 3: Data Cleansing * Lab 3: Data Cleansing |  |
| 4\* | 8 Nov | * Seminar 4: Data Transformation * Lab 4: Data Transformation |  |
| 5 | 15 Nov | * Seminar 5: Data Visualization * Lab 5: Data Visualization |  |
| 6 | 22 Nov | * Seminar 6: Introduction to Linear Machine Learning method * Lab 6: Linear Machine Learning methods |  |
| 7 | 29 Nov | * **Practical Test 1** | Practical Test 1 (15%) |
| 8 | 06 Dec | * Seminar 7: Introduction to Artificial Neural Network * Lab 7: Artificial Neural Network * **Written Test 1** | Written Test 1 (15%)  Make-up Practical Test 1 |
| 9 | 13 Dec | * Seminar 8: Introduction to Deep Learning * Lab 8: Deep Learning * Project Briefing | Make-up Written Test 1 |
| 10/  11\* | 17 Dec  -  28 Dec | Term Break |  |
| 12\* | 3 Jan | * Project Development * Project Checkpoint |  |
| 13 | 10 Jan | * **Practical Test 2** | Practical Test 2 (15%) |
| 14 | 17 Jan | * Project Development * Project Checkpoint | Make-up Practical Test 2 |
| 15 | 24 Jan | * Project Development |  |
| 16 | 31 Jan | * Final Project Assessment | Project (45%) |

\* Public Holidays:

6 November (Tue): Deepavali

25 December (Tue): Christmas Day

31 December (Mon) School not open

1 January (Tue): New Year

5 & 6 Feb (Tue & Wed) Chinese New Year

**3 Assessment Matters**

Engineering Analytics is a non-examination subject. The final subject grade is 100% coursework and comprises of the following components.

|  |  |  |
| --- | --- | --- |
| **Component** | **Individual/Group** | **Weightage** |
| Class Participation | Individual | 10% |
| Written Test 1 | Individual | 15% |
| Practical Test 1 | Individual | 15% |
| Practical Test 2 | Individual | 15% |
| Project 1 | Individual | 45% |
| Total: 100% | | |

To obtain a pass in the subject, you are required to obtain 50% of the total marks.

**4 Assessment Rubric**

Class Participation

