**Course Information**

***‘Data’ is the new driving force, provided we know how to extract relevant ‘Intelligence’.***

This course will start with the core principles of Data Science, and will equip you with the basic tools and techniques of data handling, exploratory data analysis, data visualization, data-based inference, and data-focussed communication. The course will also introduce you to the fundamentals of Artificial Intelligence – state space, search problems, computer vision and natural language processing.

The course will motivate you to work closely with data and make data-driven decisions in your field of study. The course will also touch upon ethical issues in Data Science and Artificial Intelligence, and motivate you to explore the cutting-edge applications related to Big Data, Neural Networks and Deep Learning. Python will be the language of choice to introduce hands-on computational techniques.

By the end of this course, you should be able to identify and define data-oriented problems and data-driven decisions in real life, discuss and illustrate the problems in terms of data exploration and visualization, apply basic machine learning tools to extract inferential information from the data, compose an engaging “data-story” to communicate the problem and the inference, outline the roles and requirements of artificial intelligence in practical applications, apply basic artificial intelligence techniques in search problems and game playing, and discuss and explain concepts of computer vision and natural language processing.

**Course Resources**

***There is no single textbook for this course.*** We will follow the references from time to time. Additional resources, if required, will be shared with you in the Lectures and/or in the Lab.

**References**

* Python Data Science Handbook by Jake Vanderplas (<https://jakevdp.github.io/PythonDataScienceHandbook/>)
* An Introduction to Statistical Learning by James, Witten, Hastie, Tibshirani (<https://statlearning.com/>)
* Artificial Intelligence: A Modern Approach by Stuart Russell and Peter Norvig (<http://aima.cs.berkeley.edu/>)

**Course and Lab Instructors**

**Dr Smitha K G**, Senior Lecturer, SCSE, and **Mr. Ong Chin Ann,**Lecturer , SCSE are the Instructors for this course.  You will also interact with them during the Review sessions. **Dr Smitha K G** (smitha@ntu.edu.sg) is the Course Coordinator.

Please note that your LAMS sequences were earlier prepared by Dr. Sourav Sen Gupta (DS) and Prof. Bo. An (AI).

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| **Course Instructors** | **Dr Smitha K G (Co-Ord) and Mr. Ong Chin Ann** | smitha@ntu.edu.sg  chinann.ong@ntu.edu.sg | Office : N4-02c-75  Office : N4-02c-108 |
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