Asian Institute of Technology

School of Engineering and Technology

AT76.24 *Introduction to Spatial Information Engineering* 1(1-0) Semester: August

Course Objective: The objective of this course aims at providing basic introduction and concept of spatial information engineering with an insight into both academic knowledge and practical skills at the entry level. It also addresses the basic and history of geospatial information, location-based service, GNSS, space technology and IoT.

Learning Outcomes:

The students on the completion of this course would be able to:

1. Identify and communicate basic concept of spatial information engineering such as monitoring and observation method, data analysis and handling, data interoperability.
2. Develop understanding of how to process and analyze spatial data, how to utilize it, and how to combine it with the spatial designs and rules of society.
3. Comprehend and integrate various technology in spatial information.

Pre-requisite: None

Course Outline:

I. Introduction
   1. Overview and History of Spatial Information
   2. Concept of Geospatial Information
   3. Technology in Spatial Information
   4. Research in Spatial Information

II. Recent Technology

1. GNSS
2. Space Technology
3. Real-time Positioning Service
4. ITS
5. Location-based Services
6. Outlier Detection and Removal
7. IoT
8. Sensor Network

III. Spatial Data
1. Collecting Method
2. Privacy Issue
3. Data Sharing Concept
4. Data Assimilation

IV. Application Development
1. Overview of Application Development
2. Service Design
3. Ideathon Concept and Practice

Learning Resources:

Textbook: No designated textbook, but class notes and handouts will be provided.

Reference Books:

Wenzhong Shi, Michael Goodchild, Brian Lees, Yee Leung:
Advances in Geo-Spatial Information Science, CRC Press, Boca Raton, FL, 2012.

Journals and Magazines:

IEEE Transaction on Geoscience and Remote Sensing, IEEE
International Journal of Remote Sensing, Taylor & Francis

Journal of Geophysical Research, John Wiley & Sons

Others: None

Teaching and Learning Methods:

1. **Lectures and class discussion**: Students will received the lecture notes and the weekly lecture schedule at the beginning of the course., and They will be requested them to read the lecture notes before coming to the class.

Time Distribution and Study Load:

Lecture: 15 Hrs
Assignments: 10 Hrs
Self-studies: 40 Hrs

Evaluation Scheme:

Assignment: 20%
Final examination (Close Book): 80%

In the examination, "A" would be awarded if a student shows high ability to utilize aerospace technology through the examinations and exercises. "B" would be awarded if a student shows an overall understanding of all given topics. "C" would be given if a student meets below average expectation on both knowledge and skills. "D" would be given if a student does not meet basic expectations in understanding the topics and issues presented in course.

Instructors: Dr. Apichon Witayangkurn