
Introduction to Remote sensing and applications

Present by:
Dr. Weerakaset Suanpaga
D.Eng

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Rationale

This course aims at providing students with principles of Remote Sensing (RS) technology, which is the tool to obtain information on the earth from deci-meter level to km level locally and globally.

Basic image processing techniques and skill to analyze Remote Sensing image will be taught as well. Application examples of remote sensing technologies to various fields will be introduced to encourage students to use remote sensing in their research

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Purpose

1. Understand Principle of RS (What and How We are Looking/Measuring)
 2. Understand Various Remote Sensing Satellite System / Data and their Characteristics
 3. Understand Advantage and limitation of RS for Applications
 4. Understand Basic RS Image Processing Techniques
 5. Introduction for higher analysis
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Goal

The goals are

1. To be able to use RS for your research as a tool
2. To construct foundation for RS research
3. Entry point to be a RS engineer / researcher
4. To be able to operate ENVI software, but not as a black box
 - Understand what is going on (algorithm) behind very user friendly interface.
 - By doing so, you will be able to operate another software easily
 - Being able to select menus does not mean having understood RS !
5. To obtain the analytical attitude to look at the essence of phenomena.
– RS is just a tool for observation !

Understand a phenomena on the ground.

How this phenomena would appear in RS Image under the limited observation condition (wavelength, spatial&time resolution) and vice versa.

To establish a relationship between what we want to know and RS data

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Course Outline

1. Introduction
 2. Overview of RS Application
 3. Interaction between electromagnetic wave and targets
 4. Satellite System and Sensors
 5. Introduction to RS Digital Image Processing
 6. Image Enhancement
 7. Geometric Correction
 8. RS Image Classification
 9. Introduction for Modeling
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Text Books / References

- Lecture Note
 - Remote Sensing Note
 - Japan Association on Remote Sensing
 - *R.C. Gonzales, R. E. Woods:*
 - Digital Image Processing, Addison Wesley, 1993
 - *R. A. Schowengerdt:*
 - Techniques for Image Processing and Classification in Remote Sensing, Academic Press, 1983
 - *John A. Richards:*
 - Remote Sensing Digital Image Analysis, Springer-Verlag, 1993
 - International Journal of Photogrammetry and Remote Sensing; (ISPRS)
 - Photogrammetric Engineering and Remote Sensing
 - Asian Journal of Geoinformatics
 - Lecture Note, Remote Sensing Note and Labo materials are available from
<http://203.159.10.20/~weerayuth/RS>
<http://course.ku.ac.th>
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