

**University of Jordan**  
**College of Engineering and Technology**  
**Civil Engineering Department**

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1. **Course number and name:** Remote sensing 0901584
2. **Class schedule:** 3 credits
  - a. Time and place: Sun., Tue., Thu.: 12:00-13:00 at Civil. 108
  - b. Office hours: Sun., Tue., Thu. 11:00 – 12:00
3. **Instructor:** Prof. Mahmoud M.S. ALBATTAH
4. **Text book:** There is no **required** text for this course. *Suggested Textbook (optional)*  
Jensen, RJ “Introduction to Digital Image Processing. A Remote Sensing Perspective, 3rd Edition”, Prentice Hall, 2005.

**5. Course Contents:**

Introduction to remote sensing technology, forms of target interactions, remote sensing systems, the requirements and sources for remote sensing applications, role and significance of remote sensing in variety of fields, selected exercises.

1. Introduction
  - 1.1 What is Remote Sensing?
  - 1.2 Remotely Sensed Data
  - 1.3 Remote Sensing Application
2. Energy Sources & Physical Principles
  - 2.1 Electromagnetic Radiation
  - 2.2 Electromagnetic Spectrum
  - 2.3 Interactions with the Atmosphere
  - 2.4 Radiation - Target
  - 2.5 Passive -Active Sensing
  - 2.6 Characteristics of Image
3. Satellites & Sensors
  - 3.1 On the Ground, In the Air, In Space
  - 3.2 Satellite Characteristics
  - 3.3 Pixel Size, and Scale
  - 3.4 Spectral Resolution
  - 3.5 Radiometric Resolution
  - 3.6 Temporal Resolution
  - 3.7 Cameras and Aerial Photography
  - 3.8 Multispectral Scanning
  - 3.9 Thermal Imaging
  - 3.10 Geometric Distortion
  - 3.11 Land Observation Satellites
4. Microwaves
  - 4.1 Introduction
  - 4.2 Radar Basic
  - 4.3 Viewing Geometry & Spatial Resolution
  - 4.4 Image distortion
  - 4.5 Target interaction
  - 4.6 Image Properties
  - 4.7 Advanced Applications
  - 4.8 Airborne & Space borne Systems
5. Image Analysis

- 5.1 Introduction
- 5.2 Visual interpretation
- 5.3 Digital processing
- 5.4 Enhancement
- 5.5 Introduction to Classification
- 6. Applications

**6. Course Goal & Expected Outcomes:**

The goal of this course is to develop an understanding of basic principles, theories, and methods needed to use remotely sensed imagery in geographical and environmental applications. In completing this course, students will be able to:

1. Understand how electromagnetic energy interacts with the atmosphere and surface
2. Use spectral signatures to interpret land cover characteristics
3. Perform preprocessing of remotely sensed imagery
4. Describe and interpret properties of remotely sensed imagery

**1. Topics covered:** Syllabus includes 42, 50-minute class periods and 1 two-hour final exam period:

**2. Minimum student materials:** Text book, class handouts, engineering calculator

**3. Instructional methods:**

- a. Lecture/Problem solving sessions.
- b. Case studies.
- c. Homework.
- d. Mini project

**4. Assessment & Grading:**

Activities	:	20%
Midterm Exam	:	30%
Final exam	:	50%
<b>Total</b>	<b>:</b>	<b>100%</b>