



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

Course Name:

REMOTE SENSING TECHNIQUES
(0335441)

1	Course title	Remote Sensing Techniques
2	Course number	0335441
3	Credit hours (theory, practical)	Theory 2, practical 1
	Contact hours (theory, practical)	Theory 2, practical 3
4	Prerequisites/corequisites	Structural Geology (0305341)
5	Program title	Bachelor of Geology
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Geology
10	Level of course	4 th Year
11	Year of study and semester (s)	2016-2017 / Second Semester
12	Final Qualification	(B.Sc.) Bachelor of Geology
13	Other department (s) involved in teaching the course	
14	Language of Instruction	English
15	Date of production/revision	2017

16. Course Coordinator:

Name: Dr. Hussam Al-Bilbisi
Office numbers: 310
Office hours: TBD Later
Phone numbers: 24967
Email addresses: hbilbisi@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

18. Course Description:

This course introduces students to the basics of remote sensing, physical principles of the visible, infrared and microwave section of the electromagnetic spectrum, remote sensing platforms and sensors, data acquisition, storage and processing, image processing and analysis, remote sensing applications in geosciences.

19. Course aims and outcomes:**A- Aims:**

The aim of this course is to give the students an understanding of the following scientific knowledge:

The basic principles of remote sensing science.

Technical specifications of different remote sensing sensors types.

The principles of image interpretation and digital image processing

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to:

Academic skills: Students will be able to:

Understand the physical principles of the electromagnetic radiation and its interaction with different surface materials.

Understand the theoretical concepts of digital satellite image interpretation and processing.

Practical Skills: Students will be able to:

Use remote sensing software.

Perform visual interpretation using digital satellite imagery.

Choose the suitable method to perform digital processing.

20. Topic Outline and Schedule:

Week	Topic	Credit Hours
1-3	Basics physical concepts of remote sensing. Characteristics of electromagnetic radiation and its types. Types of remote sensing based on electromagnetic radiation. Blackbody radiation.	9
4	Types of satellite remote sensing sensors based on their ground resolutions, the operation mechanism of the passive and active sensors.	3
5-6	Technical specification of the current global coverage remote sensing satellite sensors.	6
7-8	Ground reference databases (Ground Truth), using of (GPS). Characteristics, structure and format of the satellite images data.	6
9	Concepts of digital image interpretation. Main elements of image interpretation. Interpretation techniques procedures.	3
10	Digital image processing of satellite images (Radiometric Correction and Geometric Correction).	3
11-12	Digital image processing of satellite images (Image Enhancement) and (Features Extraction based on objects spectral features, Geometric Features and Textural Features).	6
13-14	Digital image processing of satellite images Supervised image Classification and Unsupervised image Classification).	6
15-16	Applications of remote sensing science for environmental and geological researches.	6

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:
Motivate the creative thinking through lectures, practical classes and discussion.
Students are expected to use the material presented on e-learning system and to read the relevant sections of prescribed and recommended textbooks as well as references provided by lecturers.
Perform practical exercises using remote sensing software for different geological and environmental applications.

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Class discussions, practical skills of Lab. exercises, performances, quizzes, and exams.

23. Course Policies:

A- Attendance policies:

Students are expected to be in class on time. The University allows students to be absent up to 15% of the total number of lectures

B- Absences from exams and handing in assignments on time:

In case of absence in exams because of sickness, only reports issued directly from a public clinic or hospital will be accepted. Reports should be produced within a week after the exam.

C- Health and safety procedures:

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D- Honesty policy regarding cheating, plagiarism, misbehavior:

Cheating, plagiarism, and misbehavior will not be tolerated in class or during examinations and will be dealt with according to the university's regulations

E- Grading policy:

Mid-Term Exam	30%
Lab Exam and Practical Reports	30%
Final Exam	40%

F- Available university services that support achievement in the course:

24. Required equipment:

- Computer based laboratory
- Remote Sensing Software, such as; PCI Geometica, and ENVI

25. References:**A- Required book (s), assigned reading and audio-visuals:**

Tateishi R. & Remote sensing society of Japan, 2013, **Remote Sensing An Introduction Textbook**, Maruzen Planet. Tokyo, Japan.

B- Recommended books, materials, and media:

- Siamak Khorram , Cynthia F. van der Wiele, Frank H. Koch, Stacy A. C. Nelson, Matthew D. Potts, 2016, **Principles of Applied Remote Sensing**, 1st ed., Springer, New York. U.S.A.
- Campblel, J. B., 2006, **Introduction to Remote Sensing**. 4th ed. The Guilford Press, New York, U.S.A.
- Lillesand, T. M., Kiefer, R. W., and Chipman, W. 2005, **Remote Sensing and Image Interpretation**. 5th ed., John Wiley and Sons, Inc., New York. U.S.A.

26. Additional information:

Name of Course Coordinator: **Dr. Hussam AL-Bilbisi** --Signature: ----- Date: 1/11/2018

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
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