Course Description Form of Remote Sensing

1. Course Name:	
Remote Sensing	
2. Course Code:	
REMS309	
3. Semester / Year:	
Second semester/ 2024-2025	
4. Description Preparation Date:	
15/1/2025	
5. Available Attendance Forms:	
Full time (theoretical lecture and practical lecture) weekly	
6. Number of Credit Hours (Total) / Number of Units (Total)	
5 hours (2 hours theoretical and 3 hours practical per week) for 14 weeks, number of units 3.5 units	
7. Course Administrator's Name (Mention All, If More Than One Name)	
Name: Dr.Ahmed Bahjat Khalaf Email : raaedibrahim@uodiyala.edu.iq Israa Yarab Youssef	
8. Course Objectives	
Course Objectives: Graduating students who are able to:	1 Teaching students the most important foundations, applications and modern programs in remote. sensing techniques to serve them in the agricultural field. 2 The student's ability to use different software to process, interpret and analyze satellite images. 3 The student will learn how to distinguish and compare between different ground targets. 4 Learn about geographic information systems (GIS) and their uses.
9. Teaching and Learning Strategies	

Strategy	In-person lectures for 14 weeks, including two monthly exams, daily exams, and scientific reports

10. Course Structure

Theoretical part

Week	Hours	Required learning outcomes	Unit or Subject	Learning Method	Evaluation Method
1	**2**	Introduction: History of remote sensing and objectives	**Remote Sensing**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
2	**2**	Electromagnetic energy and parts of the electromagnetic spectrum	**Remote Sensing**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
3	**2**	Electromagnetic energy interactions	**Remote Sensing**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
4	**2**	Spectral reflectivity and factors affecting it	**Remote Sensing**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
5	**2**	Aerial photography and its development stages	**Remote Sensing**	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
6	**2**	Semester 1st exam			
7	**2**	Rules for classifying aerial images and their applications	Remote Sensing	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
8	**2**	Types and characteristics of platforms and satellites in the world	Remote Sensing	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
9	**2**	Sensors: their types and characteristics	Remote Sensing	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
10	**2**	Satellite images: their types and characteristics	Remote Sensing	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
11	**2**	Improving satellite images	Remote Sensing	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
12	**2**	Semester 2nd exam			
13	**2**	Applications in remote sensing	Remote Sensing	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports
14	**2**	GIS and their uses	Remote Sensing	**Lecture Dialogue & discussion Brainstorming**	Daily, monthly and final exams and daily reports

Practical part					
Week	**Hours**	**Required learning outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation Method**
1	**3**	Applications on the interpretation of aerial photographs and the preparation of maps.	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
2	**3**	Satellite images and spectral bands	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
3	**3**	How to import and export satellite images using the ERDAS program	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
4	**3**	Spectral band merging and spatial enhancement	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
5	**3**	Regular and irregular satellite image segments of the areas under study	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
6	**3**	Semester 1st exam			
7	**3**	satellite data interpretation: Visual interpretation	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
8	**3**	satellite data interpretation: Automatic interpretation	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
9	**3**	satellite image classification: Unsupervised classification	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
10	**3**	supervised classification	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
11	**3**	Using natural indicators, vegetation cover indicator, water, minerals, soil	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
12	**3**	Semester 2nd exam			
13	**3**	Applications on satellite images	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports
14	**3**	Applications on the interpretation of satellite images and the preparation of maps	Remote Sensing	**Observation Dialogue & discussion**	Daily, monthly and final exams and daily reports

11. Course Evaluation
Examination Monthly & daily exams with discussion questions inside the lecture. The degree of participation in the questions related to the subject.

12. Learning and Teaching Sources	
Required Textbooks (Curricular Books, If Any)	1.Al-Mashhadani, Ahmed Saleh and Ahmed Madloul Al-Kubaisi. (2014). Remote Sensing Science. Ministry of Higher Education and Scientific Research. University of Baghdad. College of Agriculture. University House for Printing, Publishing and Translation. 2. Khalaf, Ahmed Bahjat. (2021). Processing, analyzing and interpreting satellite images using the ERDAS IMAGINE program. Central Press. University of Diyala
Main References (Sources)	Al-Daghestani, Nabil Sobhi, (2003 AD), Remote Sensing: Basics and Applications, Dar Al-Manahj, Amman, Jordan.
Recommended Books and References (Scientific Journals, Reports...)	Iraqi academic journal
Electronic References, Websites	**www.noor-book.com.** **www.youtube.com.**