King Saud University
College of Science
Geology and Geophysics
Department.

جامعة الملك سعود
كلية العلوم
قسم الجيولوجيا
والجيوفيزياء

Academic Year 1440H (2019 – 2020)
First Semester

Environmental Geophysics (GPH 541)
(Master Course)

Lecture's Time: Wednesday: 8:00 -11:00 **Lecture's Room:**

Instructor: Dr. Mahmoud M. ELWAHEIDI

Office Hours: Sunday, Monday & Tuesday: 11:00 am -12:00 am

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I. COURSE OUTLINES		
Activity	**No of Weeks**	**No. of hours**
General Introduction: ❖ Basic concepts and definitions ❖ Site investigation	2	6
Electrical Resistivity Methods: ❖ Basic principles ❖ Resistivity of earth materials ❖ Law of Archie ❖ Electrode configurations ❖ Field procedures: VES, Profiling and ERT ❖ Interpretation of Geoelectric data ❖ Limitations of Electrical methods ❖ Case Studies:	4	12
Seismic Methods: ❖ Basic principles of reflection and refraction methods ❖ Processing of seismic data ❖ Interpretation of Seismic data ❖ Interpretation of Seismic data	4	12

Gravity Method: ❖ Basic principles ❖ Corrections of gravity data ❖ Interpretation ❖ Case Studies	**2**	**4**
GPR Method: ❖ Basic principles ❖ Interpretation ❖ Case Studies	**2**	**6**

II. ASSESSMENTS AND GRADING

Assessment	Assessment task	Due on	Proportion of Final Assessment
1.	➢ **Write a Literature Review about ONE of the following topics (1000 -1500 words. Scientific publishing rules, such as *citations, plagiarism, proofreading, organization of the publication* etc., will be STRICTLY applied):** ✓ **Electrical Anisotropy** ✓ **Biogeophysics** ✓ **Use of drones in environmental investigations**	**17 Oct. 2019**	10 %
2.	**Mid-term exam**	**7 Nov. 2019**	25%
3.	➢ **Presentations: *Choose one topic of the* following:** ✓**3D ERT environmental investigations** ✓**Landfills: site selection and construction** ✓**Applications of NMR method in groundwater exploration** ✓**Radioactive geophysical techniques applied to detect nuclear materials pollution** ✓**Use of Resistivity methods for archaeological explorations.**	**14 Nov. 2019**	10 %
4.	**Project (Using geophysical methods for environmental investigations)**	**Presentation to be submitted by 28 Nov.**	15 %
5.	**Final exam**	**TBD**	40 %

III. TEXT BOOKS- REFERENCES

- The Internet
- Reynolds, J. M., An Introduction to Applied and Environmental Geophysics, Wiley, 2011
- http://www.learninggeoscience.net/free/00001/index.htm
- http://www-ig.unil.ch/cours/geophysa/c_resa.htm