

Academic Year 1442 (2020 – 2021)
Second Semester

Environmental and Engineering Geophysics (GPH 424)

Lecture's Time: Monday & Wednesday: 14:00 -15:00

Lecture's Room: **Online COVID19**

Instructor: Dr. Mahmoud M. ELWAHEIDI

Office Hours: Sunday & Monday: 10:00 am -12:00 am

Tuesday: 10:00 am -12:00 am & 8:00 -9:00am

Wednesday: 08:00 -9:00 am

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| I. COURSE OUTLINES | | |
|---|-------------|--------------|
| Activity | No of Weeks | No. of hours |
| General Introduction: <ul style="list-style-type: none">❖ Basic concepts and definitions❖ Site investigation | 1 | 2 |
| <u>Electrical Resistivity Methods:</u> <ul style="list-style-type: none">❖ Basic principles❖ Resistivity of earth materials❖ Law of Archie❖ Electrode configurations❖ Field procedures: VES, Profiling and ERT❖ Interpretation of Geoelectric data: Master curves and computer modeling.❖ Limitations of Electrical methods❖ Fields of applications❖ Case Studies: Waste site; Groundwater; Geology; Archaeology | 3 | 6 |

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| <u>Seismic Methods:</u> | | | |
| ❖ Basic principles of reflection and refraction methods | | | |
| ❖ Processing of seismic data | | | |
| ❖ Interpretation of Seismic data | | 3 | 6 |
| <u>Gravity Method:</u> | | | |
| ❖ Basic principles | | | |
| ❖ Corrections of gravity data | | | |
| ❖ Interpretation | | 2 | 4 |
| ❖ Case Studies | | | |
| <u>Magnetic Method:</u> | | | |
| ❖ Basic principles | | | |
| ❖ Corrections of magnetic data | | 2 | 4 |
| ❖ Interpretation | | | |
| ❖ Case Studies | | | |
| <u>GPR Method:</u> | | | |
| ❖ Basic principles | | | |
| ❖ Interpretation | | 2 | 4 |
| ❖ Case Studies | | | |
| II. GRADING SYSTEM | | | |
| Assessment | Assessment task | Week due | Proportion of Final Assessment |
| 1 | Attendance, Assignments & Quizzes | | 10 % |
| 2 | Mid-term exam | 8 th week | 30% |
| 3 | Presentations | 10 th week | 10 % |
| 4 | Project / workgroups/in class participation | | 10% |
| 5 | Final exam | | 40 % |
| III. TEXT BOOKS- REFERENCES | | | |
| <ul style="list-style-type: none"> • Lectures' notes via LMS. • Reynolds, J. M., An Introduction to Applied and Environmental Geophysics, Wiley, 1998 • Kearey, Ph., Brooks, M., and Hill, I., An introduction to geophysical exploration, Wiley-Blackwell, 2002. • http://www.learninggeoscience.net/free/00001/index.htm • http://www-ig.unil.ch/cours/geophysa/c_resa.htm | | | |