

Academic Year 1437- 1438H (2016 – 2017)
Second Semester

Seismic Exploration (GPH 221)

Lecture's Time: **Sunday & Tuesday: 10:00 -10:50**

Lecture's Room: GB 80/1

Instructor: Dr. Mahmoud M. ELWAHEIDI

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

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I. COURSE OUTLINES		
Activity	No of Weeks	No. of hours
1. GENERAL INTRODUCTION <ul style="list-style-type: none">• Historical development s• Importance of seismic methods• Seismic methods fields of applications	3	6
2. SEISMIC METHODS: REFLECTION AND REFRACTION <ul style="list-style-type: none">• Elastic constants• Types of Seismic Waves and their propagation• Signal to noise ratio (SNR)• Basic theoretical principles		
3. SEISMOLOGY AND GEOLOGY <ul style="list-style-type: none">• Wave Interactions with Boundaries• Velocities and Rock Properties• Seismic Velocities of Common Earth Materials	1	2

4. REFRACTION METHOD <ul style="list-style-type: none"> • Field Procedures • First Arrivals • Data Corrections • Determining Earth Structure from Travel Times 	3	6
5. REFLECTION METHOD <ul style="list-style-type: none"> • Field Procedures • Data Processing • Interpretation: Qualitative & Quantitative (isochrones and isopach maps) • Seismic stratigraphy • Case studies 	5	10
6. SEISMIC INSTRUMENTATION	2	4
7. SEISMIC SOURCES	1	2

II. GRADING SYSTEM

Assessment	Assessment task	Week due	Proportion of Final Assessment
1	Lab (12 sessions) & field trips (2)		20 %
2	1st Mid-term exam	Tuesday, 21 March., 2017	15%
	2nd Mid-term exam	Tuesday, 09 May, 2017	10%
3	Attendance, Quizzes & Assignments		15 %
4	Final exam		40 %

III. TEXT BOOKS- REFERENCES

- Lectures' notes .
- J.M. Reynolds, 2011, An Introduction to Applied and Environmental Geophysics
- Lowrie, W., 1997. Fundamental of geophysics. Cambridge University Press.
- Telford, W., Geldart, L., and Sheriff, R., 1990. Applied geophysics, second edition. Cambridge University Press.
- <http://utam.geophys.utah.edu/stanford/node2.html>