

Academic Year 1446H (2024 – 2025)
1st Semester
Geophysical Data Processing (GPH 413)

Lecture's Time: Monday 8:00-9:50 am

Lecture's Room: 04

Instructor: Dr. Mahmoud M. ELWAHEIDI (د. محمود الوحيدي)

Office Hours: Sunday & Tuesday: 11:00 am -11:50 am

Monday: 11:00 am -11:50 am

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I. COURSE OUTLINES

Week/ Date	Activity	No. of Hours
W1	1. Sampling of waveform	2
W2 + W3	2. Fourier Transformation, Spectral Analysis	4
W4	3. Signal enhancement and filtering	2
W5	4. Separation techniques of regional and residual	2
W6+W7	5. Transformation of potential field: upward and downwards continuation, horizontal and vertical derivative, analytic signal 6. Midterm Exam revision	4
WEEK 8: Midterm Exam. Monday 14 October 2024		2
W9 + W10	7. Modeling: Inversion and Forward modeling, ambiguities in interpretation of potential fields data	4
W11	8. Basic concepts of seismic data processing	2
W12+ W13	9. Static correction, convolution and deconvolution, CMP sorting, velocity analyses, NMO correction, stacking, filtering, migration.	4
W14	10. General Revision	2

II. GRADING SYSTEM

Assessment	Assessment task	Week due	%
1	Midterm exam	Monday 14 Oct. 2024	30%
2	Workgroups, Assignments & Quizzes	4, 6, 8, 10 and 12	30 %
3	Final exam	9 December 2024	40 %

III. TEXT BOOKS- REFERENCES

- Lectures' notes available at: <https://lms.ksu.edu.sa/>
- Kearey P. and Brooks M., 2002. An introduction to geophysical exploration. Blackwell Science.
- Lowrie, W. (2007). Fundamentals of geophysics. Cambridge university press.
- Yilmaz, O. Seismic data processing (1987), volume 2 of Investigations in geophysics. Society of Exploration Geophysicists
- https://wiki.seg.org/wiki/Basic_data_processing_sequence

VI. IMPORTANT NOTES

- Class attendance is mandatory
- Assignments late delivery will not be accepted.
- Frequent visit to the Learning Management System (LMS) (<https://lms.ksu.edu.sa/>) site is required to keep yourself updated with course materials, activities and announcements.