I.) INTRODUCTION

A.) General Information

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B.) Course Grade

The grade for Earth 460 has following three (3) components:

1.) Assignments (65% of course mark)
2.) Midterm Exam (10% of course mark)
3.) Final Exam (25% of course mark)

C.) Midterm Examination

The midterm examination will be given during tutorial period (i.e., 8:30-10:20 am) on **Friday 17 February 2017**.

D.) Assignments

There will be approximately nine (9) assignments covering topics from the lecture regarding principles and data analysis.

Due dates on assignments are firm; late assignments will be assess a penalty of 25% for the first week and 50% for the second week.

After two weeks, assignments will no longer be accepted for grading.

Extensions will only be granted for very exceptional circumstances and need to be arranged in advance.

All assignments in Earth 460 are **individual assignments** (i.e., completed by each student independently).

E.) Format of Submitted Assignments

1.) All submitted assignments must conform to the following requirements:

   a.) All assignments are to be submitted on standard Letter size (8.5 x 11 inch) paper.

   b.) Paper torn out of spiral notebooks is **not** acceptable.

   c.) Your solutions are to be arranged in numerical order of the questions on the assignment.

   d.) Multiple pages must be stapled together before submitting.

   e.) **Assignments not conforming to these requirements will be penalized**.

2.) **Hand draw** graphs are **not** acceptable for submitted assignments.

   a.) H**and draw** graphs will **not** be graded and **zero points** will be given for that element of the assignment problem.

   b.) It is highly recommended that you use spreadsheet software to generate your graphs.

   c.) If necessary, you may use commercial graph paper or gridded engineering paper.

F.) Evaluation of Submitted Work

1.) Individual assignments submitted for grading in Earth 460 are to be only the personal work of the individual submitting that work.

2.) While students in this class are strongly encouraged to discuss the concepts involved in assignments among

themselves, each student must individually fulfill the requirements of each individual assignment.

3.) ***Collaborative work submitted for grading will not be accepted. Submitted assignments deemed to be the product of collaborative work will receive a mark of 0%.***

4.) ***Use of materials from previous years in the preparation of assignments is prohibited. Submitted assignments that are deemed to have used materials from previous years will receive a mark of 0%.***

5.) It is the responsibility of each student to be aware of what constitutes responsible behaviour in class, what constitutes plagiarism, and your rights and responsibilities with respect to these issues. The University of Waterloo has policies on these issues, which are outlined in the undergraduate calendar and are available on the University of Waterloo Websites at:

http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm

http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm

More information regarding academic integrity issues is found at:

http://uwaterloo.ca/academicintegrity/index.html

If in doubt, ask me.

G.) Textbook and Additional References

Recommend textbook for Earth 460:

Robert E. Sheriff & Lloyd P. Geldart, *Exploration Seismology*

Other useful supplemental textbooks for Earth 460:

Oz Yilmaz, *Seismic Data Analysis*

Luc T. Ikelle & Lasse Amundsen*, Introduction to Petroleum Seismology*

Lloyd P. Geldart & Robert E. Sheriff, *Problems in Exploration Seismology and their Solutions*

(These three books are available through the Society of Exploration Geophysicists at a discount for student members)

Ron Bracewell, *The Fourier Transform and Its Applications*

Hua-Wei Zhou*, Practical Seismic Data Analysis*

H.) Topics Covered in this Course

Complex Numbers (A review)
Fourier Series
Fourier Transforms
Linear Systems Convolution & Filters
Convolution Earth Model & Deconvolution
Time Sampling and Aliasing
z Transform & Discrete Operations
Basic Wave Theory
Primary Reflections in Layered Earth
CMP Concept & NMO Analysis
Multiples
Static Corrections & Migration
AVO, Array Response & Dispersion