



UNIVERSITY OF CALGARY

DEPARTMENT OF GEOSCIENCE COURSE OUTLINE WINTER 2016

1. **Course:** GOPH 559, Geophysical Interpretation

Lecture Sections:

L01: MoWeFr, 12:00 – 12:50, ES 162

For a listing of all lab sections corresponding with this course, please see the following link:

http://geoscience.ucalgary.ca/geoscience_info/courses/w16

Instructor: Dr. L. Lines, Office ES 570B, Tel. No. 403-220-2796, e-mail address, lrines@ucalgary.ca,
Office Hours: Appointments Upon Request

Geoscience Department ES 118, 403-220-5841, geoscience.ucalgary.ca, geoscience@ucalgary.ca

2. **Prerequisites:** Geophysics 351 or 355; and completion of at least 78 units (13 full-course equivalents). See section 3.5.C in the Faculty of Science section of the online Calendar (www.ucalgary.ca/pubs/calendar/current/sc-3-5.html)

3. **Grading:** The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Labs & Assignments 30%
Midterm Exam 15%
Project presentation 30% (20% for verbal, 10% for written)
Final Examination 25% (To be scheduled by the Registrar)

Each piece of work, e.g., assignment or exam(s), submitted by the student will be assigned a percentage score. The score for the exam(s) and the average score for the assignments will be combined with the weights indicated above to produce an overall percentage for the course, which will be used to determine the course letter grade. The conversion between course percentage and letter grade is given below.

Grading Scheme

A+ 95 – 100%
A 88 – 94.9%
A- 81 – 87.9%
B+ 75 – 80.9%
B 70 – 74.9%
B- 65 – 69.9%
C+ 60 – 64.9%
C 55 – 59.9%
C- 50 – 54.9%
D+ 45 – 49.9%
D 40 – 44.9%
F <40%

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.6](#) of the University Calendar.

5. **Course Materials:**

"*Fundamentals of Geophysical Interpretation*", by Lines and Newrick, Society of Exploration Geophysicists publication. The text is sold in the University Bookstore. A 1-2 chapter supplement to the text will be made available on D2L.

6. **Examination Policy:** Non-programmable calculators will be permitted to answer quantitative questions on exams, if applicable, and permission to do this will be clearly indicated on the examination paper. Students should also read the Calendar, [Section G](#), on Examinations.

17. **Writing across the curriculum statement:** In this course, the quality of the student's writing in laboratory reports will be a factor in the evaluation of those reports." See also [Section E.2](#) of the University Calendar.

8. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

- (a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties
- (b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- (c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf. Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Geoscience, Dr. E.S. Krebs by email krebs@ucalgary.ca or phone 403-220-5850.
- (d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **Student Union Information:** VP Academic Phone: 403 220-3911 Email: suvpaca@ucalgary.ca
SU Faculty Rep. Phone: 403 220-3913 Email: science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca;
Student Ombuds Office: 403-220-6420 Email: ombuds@ucalgary.ca; <http://ucalgary.ca/provost/students/ombuds>
- (g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend, your cell phone should be turned off unless instructed otherwise. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
- (h) **U.S.R.I.:** At the University of Calgary, feedback provided by students through the Universal Student Ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference – please participate in USRI Surveys.

Department Approval: ORIGINAL SIGNED

Date: December 21, 2015

Attachment: TENTATIVE LECTURE AND LAB SCHEDULE.

Jan. 11 Course Introduction – Chap. 1
Jan. 13 Petroleum Reservoirs – Chap. 2
Jan. 15 Potential Fields – Chap. 3
Jan. 18 Cooperative Inversion of Geophysical Data – Chap. 24
Jan. 19 Lab. 1 – Joint inversion
Jan. 20 Refraction seismology – Chap. 4
Jan. 22 Reflection seismology – Chap. 5
Jan. 25 Seismic Resolution – Deconvolution and Migration – Chap. 6
Jan. 26 Lab. 2 – Raw Seismic Interpretation
Jan. 27 Aliasing for the Layperson – Chap. 7
Jan. 29 Seismic Ties to Well Data – Chap. 8
Feb. 1 Character, Continuity, Coherency and Correlation – Chap. 9
Feb. 2 Lab.3 – – Pitfalls in Seismic Interpretation
Feb. 3 Pitfalls in Seismic Interpretation – Tucker and Yorston book examples
Feb. 5 Pitfalls in Seismic Interpretation – Chap. 10
Feb. 8 Interpreting a Complex Structure –Chap. 11
Feb. 9 Lab 4 – Synthetic Seismograms
Feb. 10 Midterm examination
Feb. 12 Review of Midterm examination
Feb. 14-21 Reading Week
Feb. 22 Sequence Stratigraphy – Chap. 12
Feb. 23 Lab. 5 – Problems in Exploration Geophysics
Feb. 24 Carbonate Reef Interpretation – Chap.13
Feb. 26 Interpretation of Salt Traps – Chap. 14
Mar. 1 Seismic Modeling – Chap. 15
Mar. 2 Lab.6 – Computer Interpretation Example #1
Mar. 3 Seismic Inversion – Chap. 16
Mar. 5 Seismic Tomography – Chap. 17
Mar. 7 3-D Reflection Seismology – Chap. 18
Mar. 8 Lab.7 – Computer Interpretation Example #2
Mar. 9 AVO – Chap. 19
Mar. 11 Reservoir Geophysics – Chap. 20
Mar. 14 Time-lapse Seismology- Chap. 21
Mar. 15 Lab. 7 – Computer Interpretation Example #2
Mar. 16 Multicomponent Seismology-Chap 22
Mar. 18 VSP Methods – Chap. 23
Mar. 21 Geostatistics – Chap. 25
Mar. 22 Project presentations
Mar. 23 The Art and Science of Contouring – Chap. 26
Mar. 25 Good Friday – no classes
Mar. 28 Recent Advances including multiple suppression – new Chap. 27
Mar. 29 Project presentations
Mar. 30 Concluding Remarks and old Chap. 27
Apr.1 Project Presentations
Apr.4 Project Presentations
Apr.5 Project Presentations
Apr.6 Project Presentations
Apr.8 Project Presentations
Apr.11 Project Presentations
Apr.12 Project Presentations
Apr.13 Project Presentations