UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF GEOSCIENCE
COURSE OUTLINE
WINTER 2016

1. **Course:** Geophysics 355, Exploration Geophysics

   Lecture Sections:

   L01: MoWeFr, 11:00-11:50, ST 143
   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. K. Innanen, Office ES 212, Tel. No. 403-210-6837, e-mail address, k.innanen@ucalgary.ca,
   Office Hours: by appointment.

   Geoscience Department ES 118, 403-220-5841, geoscience.ucalgary.ca, geoscience@ucalgary.ca. Class materials and further information available on course D2L site d2l.ucalgary.ca.

2. **Prerequisites:** Geology 201; Geology 202 or 203; Mathematics 253 or 267 or 277 or 283 or Applied Mathematics 219; Physics 211 or 221, and 223. 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)

   Antirequisite: Credit for both Geophysics 355 and 365 will not be allowed.

3. **Grading:** The University policy on grading and related matters is described 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:

2 Midterm examinations (1 hour during lecture time)	20%
Laboratory Exercises	
8 Lab Exercises @ 1.5% each	12%
2 Lab Exercises with full write-up @ 9% each	18%
Final Examination (2 hours)	40% (to be scheduled by the Registrar)
TOTAL	100%

   Assignment of letter grades: after you have completed your final exam, your percentage grade will be calculated as above. Your final reported grade will be a letter, determined from your percentage grade as follows:

Grade %	Letter
95%-100%	A+
90%-94%	A
85%-89%	A-
80%-84%	B+
75%-79%	B
70%-74%	B-
65%-69%	C+
60%-64%	C
58%-59%	D+
50%-57%	D
< 50%	F

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:** Resource materials, including course notes and slides, when appropriate, and other learning tools, as needed, will be distributed via D2L. A very good additional resource is:
   O. Yilmaz, *Seismic Data Analysis*, SEG Investigations in Geophysics No. 10, 2001

6. **Examination Policy**: Nonprogrammable calculators are the only aids required or allowed during midterm and final exams. Students should also read the Calendar, Section G, on Examinations.

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

(a) 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. Krebes by email krebes@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

Tentative Schedule and Additional Course Information

Theory and practice of exploration seismology (reflection and refraction), gravity, and magnetics are introduced. Lectures times are used to develop a quantitative and qualitative understanding of the methods of interpretation of seismic data, gravity data and magnetic data. Laboratory periods will involve application of these methods to real data. Sometimes the lecture material will act as a primer for the lab exercises, and sometimes the lab exercises will act as a primer for the lecture material.

MIDTERM AND FINAL EXAMINATIONS:

1. University of Calgary policy regarding academic honesty and misconduct will be followed rigorously (see 8. below).
2. Each student is expected to bring their own **non-programmable calculator** to exams. **No** programmable calculators, nor electronic devices (e.g., smartphone, iphone) will be permitted as a substitute.

LABORATORY SCHEDULE (subject to change)

1. Seismic refraction basics. Week of Feb 2.
2. Seismic refraction plus-minus method. Week of Feb 9
3. Seismic reflection velocity analysis. Week of Feb 23.
4. Seismic reflectivity and the convolutional model. Week of Mar 2.
5. Seismic interpretation of faults. Week of Mar 9.
6. Seismic interpretation of basins. Week of Mar 16.
7. Seismic interpretation of reefs. Week of Mar 23.
8. Gravity theory. Week of Mar 30.
9. Gravity interpretation. Week of Apr 6.
10. Magnetic interpretation. Week of Apr 13.