



Course Outline

ENVIRONMENTAL TECHNOLOGY

ENVT 254

**Conventional Oil & Gas Industry in Western Canada
Fall Semester, 2012**

**3 CREDITS
4 HOURS PER WEEK**

INSTRUCTOR: Neil O'Donnell

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PHONE NUMBER: (780) 791-4821
E-MAIL: neil.o'donnell@keyano.ca
OFFICE NUMBER: S209g

OFFICE HOURS:

Monday	1:00 – 1:50 pm
Tuesday	10:00 – 11:50 am
Wednesday	1:00 – 1:50 pm
Thursday	1:00 – 1:50 pm
Friday	----

HOURS OF INSTRUCTION:

Monday	2:00 – 3:50 pm	Room S114 (ENVT Lab)
Thursday	3:00 – 4:50 pm	Room S110

COURSE DESCRIPTION:

This course provides an introduction to the conventional oil and gas industry in Western Canada, both upstream and downstream. Topics covered include geology, exploration, market and economic conditions, ecological impact of linear disturbances, drilling operations, reclamation of drilling sites, pipeline construction and compressor stations and gas plants, sour gas, and history of development in Alberta.

PRE-REQUISITE(S):

ENVT151 (Chemistry) and ENVT156 (Geology)

COURSE OUTCOMES:

Upon successful completion of this course, students will be able to:

- Locate on a map the major oil and gas companies active in the boreal forest region of western Canada, and summarize their operations.
- Discuss and give examples of the sector of the oil and gas service industry involved with environmental issues (consultants, reclamation & decommissioning, spill cleanup), and with the appropriate professional associations such as CAPP.
- Identify the location and characteristics of the major oil and gas fields and pipelines in western Canada.
- Summarize and illustrate the physical and chemical characteristics of crude oil and natural gas.
- Discuss and give examples of the various aspects of the upstream oil and gas industry.
- Assess and critique the current environmental climate in which the oil and gas industry is operating.

- Assess and critique the environmental issues related to exploration, including the effects of cut lines.
- Assess and critique the environmental issues related to drilling, especially the toxicity and management of drilling fluids and salt water.
- Describe the environmental effects of sulphur blocks.
- Explain the environmental issues related to pipelines, oil spills, and cleanup procedures.
- Assess and critique the emerging environmental issues in the upstream oil and gas industry in the boreal region of western Canada.

REQUIRED RESOURCES:

REQUIRED TEXTS TITLE	AUTHOR	PUBLISHER	ISBN
The Petroleum Industry: A Nontechnical Guide	Conaway, Charles F.	PennWell	0-87814-763-2
Our Petroleum Challenge, 7 th Edition (or newer)	No name	Petroleum Communication Foundation, Calgary	1-894348-15-X
Alberta's Oil Patch	Le Riche, Timothy	Folk Lore Publishing	1-894864-62-X
RECOMMENDED TEXTS TITLE	AUTHOR	PUBLISHER	ISBN
Principles of Petroleum Development Geology	Laudon, Robert C.	Prentice Hall	0-13-649468-4

TOPICS TO BE COVERED:

	Topics	Alberta's Oil Patch	Labs
Week 1	Introduction Energy and Resources	Introduction, 1, 2	Review Oil & Gas Sections from ENVT156.
Week 2	Origin and Accumulation of Petroleum and Gas	3, 4, 5	Video - Petroleum Resources Assignment
Week 3	Chemistry of Petroleum	6, 7	Short Lab Assignment – Reefs & Reservoirs – SW Mountain field trip
Week 4	Natural Gas Exploration Geology	8, 9, 10	Participative Lab – Videos :Exploring the Ancient Sea ; The Moment of Truth
Week 5	Drilling: Video - River of Energy Video - Down a Long Way Sour Gas Drilling	11, 12, 13	Participative Lab – Videos ; The Rotary Rig
Week 6	Thanksgiving Day (Monday)	----	Mid-Term Exam No.1 (10%)
Week 7	Exploration Energy Overview	14, 15, 16	Possible Field Trip to Oil/Gas Facility – Report ; or “Unearthed: a Journey through Time”
Week 8	P&NG Rights Oil Sands	17, 18, 19	Mineral Rights, Land Sales, Continuations - Assignment
Week 9	Oil Sands Mining & Extraction (Overview only) Heavy Oils	20, 21, 22	Video : Product by Design; Assignment
Week 10	Formation Evaluation	23, 24, 25	Video: Fires of Kuwait Assignment
Week 11	Refining and Petrochemicals Flaring	26, 27, 28	Assignment on Flaring
Week 12	Transportation, Pipelines	29, 30	
Week 13	Guest Lecturer/Field Trip	----	Mid-Term Exam No.2 (10%)
Week 14	<u>Summary & Review</u>		Practice Final Exam
Week 15/16	Final Exam (30%)		

MOODLE

Go to <http://ilearn.keyano.ca>

This course is supported through Moodle. Assignments, readings and handouts will be posted on Moodle. Login information will be provided by your instructor. For further instructions please see the Moodle handout.

EVALUATION:

Assignment	Percentage	Due Date
Mid-Term Exam 1	10%	Week 6
Mid-Term Exam 2	10%	Week 13
Videos, Short Quizzes	10%	See Schedule
Labs + Reports	40%	See Schedule
Final Examination	30%	TBA

GRADING SYSTEM:

Letter Grade	Description	Grade Points
A+		4
A	Excellent	4
A-		3.7
B+		3.3
B	Good	3
B-		2.7
C+		2.3
C	Satisfactory	2
C-		1.7
D+		1.3
D	Minimal Pass	1
F	Failure	0

Students intending to transfer to other institutions should strive for a 'C-' as a minimum. Transfer information on each course is available at the [Alberta Council on Admission and Transfers](#).

NOTES:

Please dress appropriately for the weather on any field trips! Proper footwear is important. If the weather does not co-operate, the lab schedule will shift.

Individual components of the course will be given a numerical mark. The grading system will be applied using a combination of absolute achievement and relative standing in the class.

MISSED TERM EXAM OR LABS:

A student who cannot write a term examination or complete a lab assignment due to incapacitating illness, severe domestic affliction or other compelling reasons can apply to have the weight of the missed midterm transferred to the final. All attempts should be made to make up missed labs. Missed labs with no attempts to complete the work will be assigned a “0”. You must notify the instructor of a missed midterm or lab assignment within 48 hours. Deferral of term work is a privilege and not a right; there is no guarantee that a deferral will be granted. Misrepresentation of Facts to gain a deferral is a serious breach of the Code of Student Behaviour.

CELL PHONES: Cell phones and other electronic devices are to be turned off during class times. If you need to use one, leave the room. If you have to text someone, leave the room.

STUDENTS WITH DISABILITIES: Students who require accommodation in this course due to a disability are advised to discuss their needs with counsellors in the Registrar’s office . Please ensure that the required forms for exams are submitted to the instructor **one week** before the date of midterms or **by the last lecture class** for the final exam.

SKILL CENTRE: Students who require additional help in developing strategies for better time management, study skills or examination skills should contact the Keyano College Skill Centre.

Disclaimer: Any typographical errors in this Course Outline are subject to change and will be announced in class. The date of the final examination is set by the Registrar.

Note: Recording is permitted only with the prior written consent of the instructor or if recording is part of an approved accommodation plan.

Students should consult:

<http://keyano.ca/sites/default/files/academic%20regulations.pdf>

IMPORTANT DATES:

September 18, 2012	Courses dropped after this date will be designated “W”. (A withdrawal (W) is not reflected in your GPA)
October 26, 2012	Courses dropped after this date will be designated “WF”. (A withdrawal failure (WF) counts as a 0 in your GPA)
December 7, 2012	Last day of classes
Dec. 10-19	Final Exams

COLLEGE POLICIES

Equality, Equity and Respect

The Keyano College is committed to providing an environment of equality, equity and respect for all people within the College community. All members of this community are considered partners in developing teaching and learning contexts that are welcoming to all. Faculty, staff, and students are encouraged to use inclusive language to create a classroom atmosphere in which students' experiences and views are treated with equal respect and valued in relation to their gender, ethnic and cultural background, and sexual orientation.

Students should consult:

<http://keyano.ca/current-students/individual-rights/definitions-scope>

Plagiarism and Cheating

Every student expects to be treated and evaluated fairly in a course. Plagiarism and cheating robs everyone of this right.

No student may submit words, ideas or data of another student or person as his or her own in any writing, project, assignment, quiz, electronic presentation, exam etc. Any work used that is not the student's own must be clearly cited as belonging to someone else. There are penalties for using other's work and not citing it. The Student's Rights & Responsibilities document clearly outlines these penalties and the appeal process.

- No learner can obtain information from another student during an exam.
- No learner can bring unauthorized information (paper or electronic) into an exam or quiz.
- No student can submit work done in another course for grading in this course without the written prior approval of the course instructor.
- No student can submit copyright protected or commercially produced materials as part or all of an assignment without proper citation & permission.

Student Rights & Responsibilities

Students should consult the Keyano College Credit Calendar or online at:

<http://keyano.ca/sites/default/files/academic%20regulations.pdf>

Specialized Supports and Duty to Accommodate

Disability Support Services: Learner Assistance Program

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

Specialized Supports and Duty to Accommodate

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation, and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.



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4 HOURS PER WEEK**

Neil O'Donnell, Instructor

Date

Reviewed and approved by:

Louis Dingley, Chairperson

Date

Guy Harmer, Dean

Date