



Course Outline

ENVIRONMENTAL TECHNOLOGY

**ENVT 266
Land Reclamation
Winter 2014**

**3 CREDITS
6 HOURS PER WEEK**

INSTRUCTOR: Dr. Danna Schock

INSTRUCTOR: Danna Schock
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OFFICE NUMBER: S209c

OFFICE HOURS:

Monday – Friday 1:00 – 1:50 pm

Please email me to arrange an appointment if these times won't work for you.

HOURS OF INSTRUCTION:Lecture

Monday	10:00 – 11:50 am	Room S107
Friday	12:00 – 12:50 pm	Room 228

Lab

Wednesday	9:00 – 11:50	Lab S114
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COURSE DESCRIPTION:

Reclamation objectives, practices and assessment strategies will be discussed as they relate to planned components of resource extraction activities, and as they relate to *post-hoc* reclamation initiatives. The focus of this course is on methods of prevention, control, and remediation of altered or degraded land as a result of human activities. This includes, but is not limited to, the decommissioning of base metal and oil sands mine sites, pipelines, and redevelopment of urban brownfields. A significant portion of the course involves synthesizing concepts from throughout the ENVT program in the form of independent projects. A heavy emphasis is placed on student-directed learning.

PRE-REQUISITE(S):

ENVT 252, ENVT 261

COURSE OUTCOMES:

Students that successfully complete this course will be able to:

1. Identify, assess, minimize, and mitigate environmental degradation that can occur during extraction and utilization of natural resources.
2. Locate and utilize key pieces of legislation and guidelines related to environmental impact assessments, monitoring, and reclamation in the province of Alberta.
3. Develop an assessment and related reclamation plan for a hypothetical resource development project in the province of Alberta. Choice of topic and development of reclamation plan will be accomplished with guidance from the course instructor and other Keyano College personnel.
4. Conduct an individual experiment related to land reclamation with guidance from the course instructor and other Keyano College personnel. This includes choosing an appropriate topic, designing and conducting the experiment, analyzing the data, and presenting the results in a formal presentation and formal written report.

REQUIRED RESOURCES:

There are no required textbooks for this course.

Primary scientific literature, best-practices guidelines, websites and NGO publications will be identified, applied and/or provided, as required during the course. Sources related to reclamation, Phase I and II assessments, land capability classification, ecosite classification, reclamation species selection, and other related topics will be covered.

The following sources are recommended:

- Brady & Weil (2008) *The Nature and Properties of Soils* 14th edition. Prentice Hall Canada Inc., Toronto
- Johnson et al. (1995) *Plants of the Western Boreal Forest and Aspen Parkland*
Or Johnson et al. (2009) *Plants of the Western Forests*. Lone Pine Publishing.
- Beckingham & Archibald (1996) *Field Guides to Ecosites of Northern Alberta*

TOPICS TO BE COVERED:**Please Note:**

This course outline may be modified to facilitate unforeseen time constraints.

Topic 1	<p>Overview: Reclamation in ecological and legal contexts, defining reclamation objectives and how those objectives determine what will constitute a “successfully reclaimed site”.</p> <p>Themes introduced in this topic will be revisited and developed throughout the rest of the semester through the use of case studies, articles from the primary scientific literature, and government reports.</p>
Topic 2	<p>Scientific Inquiry and Reclamation: the use of scientific methodology, including experimental/sampling design and data analysis, in assessment and reclamation projects.</p> <p>After the initial introduction of these concepts, we will continue to build upon them throughout the semester, particularly through the use of case studies and independent research projects.</p>
Topic 3	<p>Soil movement, care, storage and change: application of ecological principles for the purpose of meeting reclamation objectives, with special recognition that all aspects of reclamation, however defined, pivots on appropriate soil quality.</p>
Topic 4	<p>Upland revegetation: application of ecological principles for the purpose of meeting different objectives including reclamation of overburden dumps and urban brown sites.</p>
Topic 5	<p>Wetlands: application of ecological principles for the purpose of meeting reclamation objectives including fulfilling requirements of government issued Operating Approvals, and improving water quality of process-affected water destined for return to the hydrologic cycle.</p>
Topic 6	<p>Contaminated sites: evaluation of the nature and extent of contamination including ecotoxicological assays, identifying point vs non-point sources, underground contaminants, decontamination techniques.</p>
Topic 7	<p>Assessing “success” of reclamation activities: Special attention to monitoring strategies, timescale considerations, and the importance of stakeholders, site history, and jurisdictions.</p>

MOODLE and KEYANO EMAIL:

Moodle is at <http://ilearn.keyano.ca>

This course is supported through Moodle. Assignments, readings, handouts, etc will be posted on Moodle. It is expected that you will be regularly visiting the our course page and that you are able to send and received messages through Moodle. You must ensure your account is operational and tha t you are familiar with how to navigate Moodle by the end of the **FIRST WEEK OF CLASSES**.

Similarly, you must ensure your **KEYANO** email is operational and you must check it regularly – twice a day is recommended. I will not use your personal email addresses (gmail, yahoo, etc) for a plethora of liability, security and confidentiality reasons.

CELL PHONES and other electronic devices:

Except by express permission of the instructor,

- a) cell phones must be turned off and unavailable for use during class
- b) cell phones and other electronic devices must be turned off and stored in a designated area during all exams

EVALUATION:

Evaluation	Percent	Due Date
Midterm	25%	Friday 21 Feb 2014
Assignments	15%	various throughout semester, tba
Research Experiment (total)	25 %	various throughout semester, tba
Final Examination	35%	set by Registrar

GRADING SYSTEM:

Letter Grade	Description	Grade Points
A+		4.0
A	Excellent	4.0
A-		3.7
B+		3.3
B	Good	3.0
B-		2.7
C+		2.3
C	Satisfactory	2.0
C-		1.7
D+		1.3
D	Minimal Pass	1.0
F	Failure	0

Students intending to transfer to other institutions require a ‘C-’ as a minimum grade. Transfer information on each course is available at the [Alberta Council on Admission and Transfers](#).

If all assignments are not completed the student will receive a grade of F.

Students should consult:

<http://www.keyano.ca/StudentLife/StudentConduct/StudentRightsResponsibilities>

GOOD ATTENDANCE AND GOOD GRADES ARE TIGHTLY CORRELATED

Regular attendance is expected and that fact will be reflected in the calibre and nature of assignments and exams. PowerPoint presentations should be thought of as study guides; you must take additional notes in class to do well.

Attendance will be taken in accord with department policy.

This will be accomplished by sign-in sheets distributed at the beginning of class/lab. Each student must enter their own information on the sign-in sheet. Failure to record your information on the sign-in sheets will be recorded as an absence.

ASSIGNMENTS AND EXAMS

It is YOUR responsibility to make sure you know when assignments are due, and when exams take place. Major exam dates are listed in this course outline. Assignments will be announced in class/lab.

You will have at least 1 week to complete assignments. Assignments are automatically late if not handed in when asked for at the start of class. Late assignments will be penalized 20% per day late and will not be accepted if more than 5 days late.

Final exam is cumulative.

Material presented by guest lecturers and material presented during student presentations is included on exams.

Travel plans are NOT valid excuses for missing a final exam. Do not make plans to travel during the final lecture exam period (22 – 30 April 2014). Exams missed under these circumstances will not be accommodated and therefore completion of the course is not possible.

IMPORTANT DATES:

17 January 2014	Courses dropped after this date will be designated “W”. (A withdrawal (W) is not reflected in your GPA)
21 February 2014	Mid-term examination (tentative)
7 March 2014	Courses dropped after this date will be designated “WF”. (A withdrawal failure (WF) counts as a 0 in your GPA)
17 April 2014	Last day of classes
22 – 30 April 2014	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://www.keyano.ca/StudentLife/StudentConduct/StudentRightsResponsibilities>

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://www.keyano.ca/Portals/0/Documents/Academic%20Calendar/creditcalendar2013-14_book.pdf

<http://www.keyano.ca/StudentLife/StudentConduct/StudentRightsResponsibilities>

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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Danna Schock, Instructor

Date

Reviewed and approved by:

Louis Dingley, Chairperson

Date

Guy Harmer, Dean

Date