# THOMPSON RIVERS UNIVERSITY

## Course Outline

## Master of Science in Environmental Science

## Faculty of Science

## ENVS 5200 - 3 credits          Winter Semester

## Environmental Science II: Conducting Science     ( 3,0,0 )

## 1.     COURSE OVERVIEW

**Calendar Description**

Continues from ENVS 5100 by shifting to the proposal, design, and conducting of scientific research, particularly in the field of environmental science;  includes overview of analytical methods used in different disciplines.

**Educational Objectives/Graduate-Level Learning Outcomes**

The objectives of this course are to:
- enable students to conduct an effective and successful research proposal
- provide students with a basic understanding of the different types of research design employed by different disciplines across the environmental sciences
- review the basics and limitations of statistical testing, and provide a very general overview of more advanced tools used in the different fields of research (e.g. survey design, sampling, mixed-methods, etc.)

**Course Topics**

- Proposals:  writing to get money (easier said than done)
- Approaches to doing research: different designs, different tactics
- Ethics of doing research: humans, animals, and morals
- Review of the fundamentals of statistics
- Answering questions: hypothesis testing and other means
- Different tools for analysis
- What do you do with messy data?

**Texts/Materials**
(Should make extensive use of current literature)

Various assigned readings

**Student Evaluation Philosophy and Methods**

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| Proposal critique[1] | 10% |
| Proposal drafting | |
|       **-** instructor mark | 10% |
|       - peer-review mark[2] | 10% |
| Proposal re-drafting | |
|       **-** instructor mark | 10% |
|       -peer-review mark[2] | 10% |
| Worksheets/Quizzes[3] | 20% |
| Seminar: analytical techniques[4] | 15% |
| Seminar: proposed thesis questions & analysis[5] | <u>15%</u> |
| | 100% |

Notes:
[1]critique of proposal provided to class
[2]two drafts of proposal, graded by instructor and also through peer review of classmates ('journal office')
[3]miscellaneous worksheets and quizzes provided throughout course
[4]class presentation on advanced analytical technique of student's choosing
[5]class presentation of core thesis questions and the approach taken to answer them

## 2. RELATIONSHIP TO OTHER COURSES

**Prerequisites**

ENVS 5100  or  special permission of the instructor

**Co-requisites**

| none |
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**Links to Previous, Concurrent and Subsequent courses**

| This course will build upon foundation undergraduate training (e.g. introductory stats), but given the broad background of students in the program, some students may find parts of this course to be review whereas others will find it to be new material. |
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## 3. COURSE PURPOSE AND FIT IN GRADUATE PROGRAM

| This course continues from ENVS 5100, providing the student with skills needed to become an effective researcher; skills such as proposal writing and constructive critiquing will be emphasized. Also, in keeping with the diverse nature of the program and the degree, this course will provide students with exposure to a wide array of tools used by researchers (a number of guest speakers from different disciplines will contribute to the course). The timing of this course (2nd semester) is also critical in the development of the MSc student, for by this time, students should have a better concept of their thesis, and will be able to use course assignments and work to hone their own specific research proposal and design. |
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## 4. DELIVERY

**Delivery mode (face-to-face, blended, distance)**

| In classroom |
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**Delivery Features**
(Percentage or other breakdown of time spent in lectures, discussions, group/teamwork, case studies, simulations, student presentations, project work, field studies, internship, labs, seminars, special topics, practicum, and other activities)

| Approximately 30-40% of the class will likely be lecturing or seminars directly principally by the course instructor; the remaining time will represent guest lectures and seminars lead by the students themselves; in short, students will be able to use this course to start teaching themselves the various tools they will need to successfully complete their thesis. |
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**Instructional Approach**
(Use of active learning approaches, experiential methods, case/problem/activity based, research and scholarly journals, team based, expectations regarding engagement, integrative approaches/links to other courses and program outcomes, etc.)

| Group discussions, peer-review, and seminar participation will be key components of this course |
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## 5.     OTHER

**Methods for Prior Learning Assessment and Recognition**

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| n/a |

**Course Policies**
(For example, grading policy, late assignments policy, attendance requirements (if different from TRU policy), academic integrity statement, team conflict policy and process, appeals, and other policies as required)

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**Special Course Activities – Optional**

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**Use of Technology – Optional**

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| Some use of computer labs will take place, as students are introduced to some of the more commonly-used analytical software packages |