ENVR 550 2010 Course Outline

Faculty
Social and Applied Sciences

School
Environment and Sustainability

Program
Master of Arts in Environmental Education and Communication

Course Title
Research and Analysis

Course Number
ENVR 550

Credits
3

Calendar Description
This course provides an overview of both natural and social science methods and techniques that apply directly to preparing and completing the Master's thesis, as well as professional assignments following graduation, and exposes learners to diverse applied research methods within a sustainable development context. An explicit objective of this course is the formulation of the thesis research question, abstract and research proposal outline in preparation for the poster presentation that takes place during the second residency.

Instructor
Name: Oksana Bartosh
Email: oksana.bartosh@royalroads.ca
Phone: 604-821-0595

Course Administrative Contact
Dr. Chris Ling, MEM Program Head, Fall Cohorts
Email: chris.ling@royalroads.ca
Course Start: December 6, 2010
Course End: February 28, 2011

Delivery Method
Online

Co-requisites
None

Pre-requisites
None

Course Overview
This course will introduce you to natural and social science research concepts, principles, and methodologies of research and analysis. The intent is to expose learners to diverse applied research methods within the sustainable development context and develop an understanding of how these might be applied. An explicit objective of this course is the formulation of the learner’s thesis research question and draft proposal.

Resources

Required Text:
The APA Reference Manual "Publication Manual of the American Psychological Association" is a required reference for the course. In addition for each unit, the learner is required to read the unit notes prepared by the instructors and the required articles listed.


Required Readings:


Information Services, Institute of Education, University of London, September 2007


The Thinking About it Stage (Levine, Joseph S., 2002. *Writing and Presenting Your Thesis or Dissertation*. Michigan State University.)


Williams, Owen. "Writing an Annotated Bibliography." Crookston Library, University of Minnesota [http://library.umcrookston.edu/annotate.htm](http://library.umcrookston.edu/annotate.htm)


**Recommended Readings**


**Optional / Useful Readings & Resources**

• Townsend, J. (2008). *Practical statistics for environmental biological scientists*. Chichester, West Sussex: John Wiley & Sons, LTD.

Additional information will be posted online in the “library” section.
### Unit Descriptions/Schedule

#### Activities Schedule

It is recommended that you print this page for your reference. To participate in the activities, please use the Course Menu on the left to navigate.

<table>
<thead>
<tr>
<th>Date</th>
<th>Course Activities</th>
<th>Learning Outcomes</th>
<th>Weighting Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing</td>
<td>Participation</td>
<td>3.1</td>
<td>5</td>
</tr>
</tbody>
</table>

**Unit One - Introduction to Environmental Research**

- Dec 6-Dec 12 | Discussion: Contribution to participation grade

**Unit Two - Framing the Research Question**

- Dec 13 – Dec 19 | Discussion: Contribution to participation grade

**WINTER BREAK -- December 20 - January 2**

**HAPPY HOLIDAYS!!!**

**Unit Two - Framing the Research Question (Cont’d)**

- Jan 3-Jan 9 | Discussion: Contribution to participation grade
- Jan 9 | **Assignment One:** Draft research question (Team) graded complete/incomplete

**Unit Three - Writing and Library Skills**

- Jan 10-Jan 16 | Discussion: Contribution to participation grade

**Unit Four - Evaluating Academic Sources**

- Jan 17- Jan 23 | Discussion: Contribution to participation grade
- Jan 23 | **Assignment Two:** Revised Research Question (Individual)  
  1.1  
  4.2  
  5  
  10

**Unit Five – Methodology**

- Jan 24-Jan 30 | General Quantitative Analysis  
  Discussion: Contribution to participation grade
- Jan 31-Feb 13 | (QUAL Stream) Qualitative Analysis  
  Discussion: Not Graded
- Jan 31-Feb 13 | (QUAN Stream) Quantitative Analysis  
  Discussion: Not Graded
- Feb 13 | **Assignment Three:** QUAL Stream (Individual)  
  OR  
  **Assignment Three:** QUAN Stream (Individual)  
  1.1  
  4.1  
  4.2  
  5  
  10  
  5

**Unit Six - Building Your Proposal**

- Feb 13-Feb 20 | Discussion: Not Graded
Unit 1
This one-week unit is a general introduction to the fascinating and difficult world of environmental research. Here, we will examine the nature of environmental research and inquiry. We will introduce the idea of research paradigms, the role of reasoning in the research process, the importance of the complex systems (often shortened to “systems”) perspective, the differences between interdisciplinary and transdisciplinary research, and the role of local knowledge in environmental research. The class discussion will explore these concepts and the course readings, and will initiate our exploration of the research process.

Unit 2
This unit will help learners to articulate your research passions, and build upon that passion in a practical way by designing relevant research questions. Through the discussion we will review and explore your research questions. For those learners who may have already been working on their thesis topic, this unit will also provide learners with the opportunity to refine their research problem or question(s) and gather valuable feedback from class peers. There is a lot less reading in this unit - instead we will be focusing on a team discussion to develop the draft research question. We will discuss how to write an abstract, which is a critical component many learners find difficult. The learner’s draft research question will be further elaborated in Unit three when we discuss methodologies. This unit will also discuss the ethical review process, and introduce the learner to questions about choosing a research supervisor.

Unit 3
Whether researching in the sciences or the social sciences, proper library research is critical to the success of your project. All research begins with a literature review, and in this hands-on unit learners will learn the basics of this process.

Unit 4
Evaluating academic resources is a critical academic skill. In this unit learners will apply the skills gained during the course of the other units. Learners will be presented with a series of journal articles, each of which contains one or more methodological flaws. Learners will work in teams to evaluate the articles and point out their weaknesses.

Unit 5
Methodology is all about the "how" of the thesis; it really is the central but unsung component of the process. Good methodological construction is what ensures that learners can be confident in your result. On the quantitative side, this requires careful use of statistics. On the qualitative side, this requires triangulation: the confirmation of result through multiple methods such as case study, interview, personal observation, survey, etc.
Unit 6
In this final unit, learners will be working individually to craft a draft research proposal. By this point learners will have finalized their research question and started thinking about the content and structure of their research project. In the remainder of this final unit, learners will be working individually on developing a research abstract and formulating their five-page, draft research proposal, including their finalized research question and objectives, brief literature review, and methods. Working through a structured approach to planning your research here will help learners better organize their thoughts and ideas in appropriate sequence and will assist them in later developing the final research proposal in consultation with their thesis supervisor and sponsor.

Major Topics to be Addressed in Class and through Readings

- Understand the concept of the research paradigm
- Have a basic knowledge of the features of complex systems, and how these features might impact the research process
- Differentiate between multidisciplinary, interdisciplinary, and transdisciplinary study and explain why environmental research often requires a transdisciplinary framework
- Frame research questions that are concise and transferable to the research setting
- Understand the basics of the ethical review process and the rationale behind the process
- Make an informed decision as to the choice of research supervisor
- Access books and articles at the Royal Roads Library;
- Recognize how academic libraries organize and provide access to print and electronic information;
- Comprehend the diverse nature of Internet-based research resources;
- Build, develop, and manage an effective information search
- Formulate strategies for evaluating the results of an information search; and
- Assemble an annotated bibliography
- Identify misuse of statistical analysis within a research paper
- Comment on methodological flaws within research
- Identify conclusions not supported by the presented data within research publications
- Appraise a journal article's citation list demonstrate an understanding of terms and concepts important to your research and scientific inquiry
- Select and apply a suitable design methodology and process appropriate to your research question
- Convey ideas and information from your thesis proposal outline in writing effectively in a way that makes them intelligible and demonstrates an understanding of the importance of appropriate organization of numerical and textual information and of the physical presentation of ideas
- Evaluate how individual values might influence scientific inquiry and the development of hypotheses in your research planning
- Apply appropriate standards for citations and reference lists, and use of intellectual property

**Learning Outcomes**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Produces effective written material</td>
<td>Material is organized coherently, concisely and completely&lt;br&gt;Text is legible, accurate and conforms to the style and grammatical conventions that match the purpose of the writing&lt;br&gt;A structure is used that makes it easy for the reading audience to identify main points and to follow the sequence of ideas&lt;br&gt;Documents are proof-read and re-drafted to ensure accuracy&lt;br&gt;Where material is copied from published and unpublished sources, this is noted and attribution provided, including copyright approval where appropriate.</td>
</tr>
<tr>
<td>2.1 Applies the imperatives of sustainable development (social, economic, environmental and governance) in discussions problem-based learning and assessed work</td>
<td>Articulates problems and issues with reference to the context of social, environmental and economic considerations&lt;br&gt;Identifies barriers and solutions to sustainable development, and recommends management decisions</td>
</tr>
<tr>
<td>3.1 Facilitates effective teamwork</td>
<td>Confirms accuracy of own understanding and team understanding of collective goals, responsibilities and working arrangements&lt;br&gt;Accepts responsibilities and roles within the capacity to meet and deliver these&lt;br&gt;Evaluates and plans group processes to achieve goals</td>
</tr>
<tr>
<td>4.1 Applies critical thinking to the integration of knowledge and practice</td>
<td>Searches for, identifies and challenges implicit assumptions in own, peer or professional opinion&lt;br&gt;Explicitly and critically evaluates relevant assigned or available information, evidence and argument for reliability and authority&lt;br&gt;Presents perspectives in a way that is sympathetic to the intentions of the source&lt;br&gt;Collects data and information in a manner that provides a comprehensive picture of potential perspectives&lt;br&gt;Accurately recognizes and acts upon written and implied objectives&lt;br&gt;Assesses the implications of action or inaction</td>
</tr>
</tbody>
</table>
### Outcomes

<table>
<thead>
<tr>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizes and assesses the end use and end user of information, and the impacts that these have on the analytical and decision-making process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4.2 Identifies and selects appropriate research methods for investigation of an issue, problem or project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defines the research question/problem, selects a suitable design methodology, and sets out a design process appropriate to the research question. Identifies, locates and accurately uses relevant expertise and literature sources. Recognizes and takes into account sources of uncertainty when drawing inferences and reaching conclusions</td>
</tr>
</tbody>
</table>

### Assessment Matrix

<table>
<thead>
<tr>
<th>Assignment Information</th>
<th>Outcomes</th>
<th>Assignment %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1 Draft Question (Team)</td>
<td>1.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Assignment 2 Draft Question (Individual)</td>
<td>Jan 9</td>
<td></td>
</tr>
<tr>
<td>Assignment 3 Methodology (Individual)</td>
<td>Jan 23</td>
<td>5</td>
</tr>
<tr>
<td>Assignment 4 Draft Research Proposal (Individual)</td>
<td>Feb 13</td>
<td>5</td>
</tr>
<tr>
<td>Participation</td>
<td>Feb 28</td>
<td>10</td>
</tr>
<tr>
<td>Course Total</td>
<td>20</td>
<td>15</td>
</tr>
</tbody>
</table>

### Assignment and Evaluation Description

**Assignment 1: Rough Research Question – Pass/Fail**

The purpose of this assignment is to formulate and justify researchable problem, and produce a rough draft of your research question. 

**Individually**, you will need to develop a draft of YOUR OWN research question (1/2 page) and then share your draft with your team.

**In groups**, you will review each others’ drafts and provide suggestions on how to improve them.

**Individually**, you will revise your draft based on your team's feedback and submit it as **individual** assignment.
Your submission for Assignment 1 (the rough research question) should be no more than a half page in length at the maximum. It will receive a grade of complete/incomplete, and will be used as the basis for discussion in the methodology unit. Use APA format.

Assignment 2: Research Question – 15%
The purpose of this assignment is to develop a refined draft of your research question. You will need to review the instructor’s feedback on your Assignment 1 and use it to revise your research question. This is an individual assignment, so you don't have to review your teammates' questions (although you are welcome to provide feedback to each other through group discussions).

You need to
- include a running title, assignment number, your name, and course name/number;
- introduce and explain the issue, question or problem that you intend to examine in your study;
- explain why the topic is worth examining (Why should we care? Why is it important?) Use literature, factual information, and/or experience to elaborate on the problem and why this problem should be explored; and
- provide a few rough ideas about methods you are planning to use.

The draft research question should be approximately 1/2 to 1 page long and should follow the APA format.

Scoring Rubric for Assignment 2

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Outcomes</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides a clear description of an issue, question or problem related to environment and/or sustainability</td>
<td>4.2</td>
<td>4 points</td>
</tr>
<tr>
<td>Uses literature, factual information, and/or experience to elaborate on the problem and why this problem should be explored</td>
<td>4.2</td>
<td>3 points</td>
</tr>
<tr>
<td>Provides a few rough ideas about methods</td>
<td>4.2</td>
<td>3 points</td>
</tr>
<tr>
<td>Uses APA style</td>
<td>1.1</td>
<td>2 points</td>
</tr>
<tr>
<td>Produces effective written material (Text is legible, accurate and conforms to the style and grammatical conventions that match the purpose of the writing: proof-read)</td>
<td>1.1</td>
<td>3 points</td>
</tr>
</tbody>
</table>

Assignment 3 (QUAL or QUAN)
Assignment 3 has two versions: one for QUAN stream and another for QUAL stream.
Select and complete assignment for your stream only.

Assignment 3a (QUAL) – 20%
Most qualitative techniques in the social sciences are subject to bias. This bias can either be due to the method data is collected, unconscious assumptions and prejudices of the researcher, respondent bias and such like - these can threaten the validity of the data, and thus conclusions drawn from it. One way of reducing these biases and increasing data validity is to use 'triangulation'. This can be one of four types (Denzin, 1988):

1. Data triangulation: The use of more than one method of data collection (e.g. observation, interviews, documents);
2. Observer triangulation: Using more than one observer in the study;
3. Methodological triangulation: Combining quantitative and qualitative approaches;

Using your developing research question devise a methodology using triangulation that will increase the validity of the data you collect for your thesis and your conclusions.

Your completed assignment should be about two pages in length, following the APA formatting. Please cite at least three references from the methodology literature.

**Scoring Rubric for Assignment 3a (QUAL)**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Outcomes</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides a description of methodology that uses triangulation</td>
<td>4.1</td>
<td>10 points</td>
</tr>
<tr>
<td>Uses references to support your claims (at least 3 references)</td>
<td>4.2</td>
<td>5 points</td>
</tr>
<tr>
<td>Uses APA style</td>
<td>1.1</td>
<td>2 points</td>
</tr>
<tr>
<td>Effective written material (Text is legible, accurate and conforms to the style and grammatical conventions that match the purpose of the writing; proof-read)</td>
<td>1.1</td>
<td>3 points</td>
</tr>
</tbody>
</table>

Assignment 3b (QUAN) – 20%

The QUAN assignment consists of several pages of short answer questions about statistical methods.

Assignment 4: Draft Research Proposal – 60%

The final project for this course is a draft research proposal. It should include the following elements: (Please follow the instructions carefully)

Title page containing the thesis project title, your name, and the date

Abstract (250 words maximum) – briefly outlining the problem/research question, objectives, research methods and significance of research

Proposal Outline (10 pages maximum, (using APA spacing) not including the bibliography. Include
• Introduction – introduction of problem or area of interest, explanation of the relevance of the topic to the researcher and sustainability, description of question/hypothesis and objectives, and discussion of the potential significance of the research (e.g. theoretical and practical significance of the research, implications of anticipated findings).
• Brief literature review incorporated as references throughout your proposal. (includes publications related to sustainability/research topic and studies that support your methodological approach)
• Research approach and methodology (including numerical methods, if appropriate) – description of methodology and data gathering methods, sample/participants, context, planned analysis; justification of the methodology in relation to the research topic or problem.
• Project timeline with major milestones clearly identified.
• Annotated bibliography - minimum of five key references related to the topic of the proposal accompanied by a brief (one or two sentence) description of its significance to your research
• Reference list (all publications mentioned in the proposal).

The Proposal shall be written entirely according to APA style guidelines

**Scoring Rubric for Assignment 4**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Outcomes</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abstract</strong></td>
<td>2.1</td>
<td>5 points</td>
</tr>
<tr>
<td>• Briefly outlines the problem/research question, objectives, research methods and significance of research</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>2.1</td>
<td>15 points</td>
</tr>
<tr>
<td>• Introduces the problem or area of interest. (3 points)</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>• Clearly explains how this topic is related to sustainability. (4 points)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• States concisely the research questions/hypothesis and objective. (3 points)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Explains significance of the proposed research. (Identifies the theoretical and practical significance of the research/speculates on implications of anticipated findings). (5 points)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Literature review/ Annotated bibliography</strong></td>
<td>2.1</td>
<td>10 points</td>
</tr>
<tr>
<td>• Includes brief literature review incorporated as references throughout the proposal. Cites publications related to sustainability/research topic and methodological approach (5 points)</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>• Includes annotated bibliography - minimum of five key references related to the topic of the proposal accompanied by a brief (one or two sentence) description of its significance to your research (5 points)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>4.2</td>
<td>20 points</td>
</tr>
</tbody>
</table>
- Describes and justifies methodology and data gathering methods. (5 points)
- Describes the sample/participants, context. (5 points)
- Describes planned analysis, and project timeline with major milestones clearly identified. (5 points)
- Justifies the methodology in relation to the research topic or problem. (5 points)
- **BONUS (2 points)**: describes limitations and biases of the methodological approach/instruments, etc.

### Writing Qualities

- Material is organized coherently, concisely and completely and includes title page, abstract, introduction, lit review, methodology, annotated bibliography, timeline and reference list. (2 points)
- Text is legible, accurate and conforms to the style and grammatical conventions that match the purpose of the writing. (2 points)
- A structure is used that makes it easy for the reading audience to identify main points and to follow the sequence of ideas. Subheadings used to clarify organization. (2 points)
- Provides smooth transition from section to section. (2 points)
- APA format is followed for writing, citations and bibliography. Where material is copied from published and unpublished sources, this is noted and attribution provided, including copyright approval where appropriate. (2 points)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>10 points</td>
</tr>
</tbody>
</table>

******

**Participation:**

The Participation mark of 5% is assigned based upon a number of factors. In general, however, students should try to achieve the following goals: in each unit, try to post at least four well thought out postings. Try to post at least one resource link per unit. Your posts should be thoughtful and contribute to the discussion. (Some of your postings will of course be shorter and simply be part of the conversation - this is just fine). Also, the participation mark is given on the sum of your contribution, so don't worry if you can't participate in a unit- simply contribute more in the following units.

**Academic Policies**

**Grading Guide**

© Copyright and ownership of this material will at all times remain with Royal Roads University.
<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90-100</td>
<td>4.33</td>
</tr>
<tr>
<td>A</td>
<td>85-89</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>80-84</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>77-79</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>73-76</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>70-72</td>
<td>2.67</td>
</tr>
<tr>
<td>F</td>
<td>0-69</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Late Policy**

Course assignments should be submitted no later than ten working days after the assignment due date. Assignments received later than ten working days after the due date will not normally be accepted and will be given an “INC” (Incomplete) grade. A penalty of 5% per day will normally be applied to assignments submitted after the due date, leading to a maximum late penalty of 50%. Learners who fail to meet the assignment requirements of a course will be assigned a final grade of “Incomplete” (INC) and will normally be expected to acquire the course credits through re-enrollment in order to satisfy the course requirements for the program. Learners wishing an extension for individual assignments should approach the instructor in the first instance. Extensions will only be granted under exceptional circumstances. Instructors will normally consider any application for an extension on a case-by-case basis.

**INC Clearance Policy**

Learners who are awarded an “INC” grade will be permitted an opportunity to have that grade converted to a “B–” through the writing of a special assignment, or through another mechanism specified by the instructor in the course. All “INC” grades must be removed from the learner transcript before approval to graduate is granted.

Learners will be assessed a fee of $150 to cover additional grading costs. If the outstanding course work is not completed satisfactorily within 30 days of the course end date, a learner will automatically receive a grade of F.

If the learner fails to clear an INC or series of INCs, they may be required to withdraw from the MEM Program, at the discretion of the MEM Program Academic Lead.

**Grading Policy**

See General Academic Regulations in the current version of the RRU Calendar.