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Masters of RES:

Resources and Environmental Studies (RES) is a graduate program housed at UBC's Institute for Resources, Environment, and Sustainability (IRES). The origins of IRES can be traced back to the pioneering work of Buzz Holling who was the first to attempt an integration of ecosystem and social systems in the 60s. The next iteration focussed on water resources and the West Water Research Unit was also a first in evolving a program and team of interdisciplinary research on water resources. That team became the Institute for Resources and Environment (IRE). Finally, in 2004, IRE and the Sustainable Development Research Institute joined forces to become IRES. This 40+ year history reflects evolving research agendas and personnel.

We continue to evolve as an institute and with each new faculty member have the benefit of new perspectives on old problems and new awareness about emerging issues. This evolution is currently reflected in a revision to our curriculum to meet three goals:

- strengthen and broaden the preparation of our graduates;
- assure a more timely completion of degrees while retaining flexibility; and to,
- promote more interaction among students working across the many research domains at IRES.

The new curriculum will have one more required course. The required courses are team-taught in order to give experience of different valid perspectives on problems, the integration of such perspectives in research design and practice, and how these need to be understood in the service of better decision-making. Masters students are expected to complete at least 36 credits. 15 credits will be from the required courses, with a minimum of 12 more credits from electives. The thesis will account for the final 9 credits**. In general, one paper suitable for publication would be a suitable benchmark for this thesis.

**Currently RMES Masters students are required to take 12 thesis credits. The 9 credit requirement is at present under review by UBC Senate and Curriculum.

Term	Course #	Course Name	Led by	Credits
Fall	501	History and Philosophy of Environmental Thought	John Robinson	3
Spring	502	Research Methods and Design	Hadi Dowlatabadi & Terre Satterfield	3
Fall	550	Policy Analysis and Decision Making (PA)	Hadi Dowlatabadi	3
Spring	510*	Human-Nature systems (H/N)	Leila Harris & Mark Johnson	3
Fall	507*	Human-Technology systems (H/T)	Milind Kandlikar & Terre Satterfield	3
		Four elective courses	(≥1 cross listed with RMES, 1 methods course in consultation with supervisor)	≥12
	599	Thesis		9*
Total				≥36

* = UBC Senate & Curriculum approval pending.

The typical schedule of a Masters will have the following structure:

Semester 1	Semester 2	Summer 1	Semester 3	Semester 4
501	502	Field research	Req3 (e.g. PA)	Write-up and

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Req1 (e.g. H/N)	Req2 (e.g. H/T)		Elect 3	defence of thesis
Elect 1	Elect 2		Elect 4	

The above timeline of courses and activities prepares the students for their field research by the end of the second semester. This allows for the first summer to be used in learning research skills and pilot studies and further refinement of the research ideas and methods. Additional courses and research in the third semester, along with final steps in research and write-up lead to an expected defence of thesis by the end of the 2nd semester – and at the latest the end of the second summer.

A brief description of the required courses:

RMES 501: History and Philosophy of Environmental Thought

This course will examine how attitudes towards human nature and non-human nature have changed over the period from Mesolithic times until the present in Western society. By reading and discussing historical arguments and contemporary documents we will attempt to uncover the underlying assumptions about the world that were characteristic of different periods in the history of Western culture. The underlying question is whether contemporary concerns about sustainability require fundamental changes in the way we conceive of ourselves, or our environment.

RMES 550: Policy Analysis and Decision-making

Concepts such as sustainability, resilience, adaptation and ecosystem-based management are fundamentally about how decisions are framed, processed and implemented. Better decision-making, by individuals, organizations and governments, is how we can make progress in the face of grim environmental trends.

We begin with academic writing on decision-making, including normative (what would be perfect) descriptive (how we typically do it) and prescriptive (how to do it better) views. These concepts serve as a starting point for learning about good practice as a professional in policy analysis. We will make use of several applied case studies in which concepts of decision research have been used as a basis for designing and conducting applied policy analysis and program evaluation. We will explore features of different policy instruments, their implementation and evaluation.

RMES 502: Interdisciplinary Case Analysis and Research Design

This is a course in which case studies are used to teach how sustainability questions are turned into researchable topics and what research methods (qualitative and quantitative) are used to arrive at answers.

The case studies will reflect the various foci of research at IRES. The case studies will begin with simple questions and grow in sophistication and complexity. Two case studies will be used to explore similarities and differences in how questions in different domains are structured and researched. The students in the class will then be encouraged to develop the research questions and proposed methods for their own thesis by work-shopping their ideas in the class setting and through one-on-one mentoring with class instructors.

The case studies will be prepared by teams of faculty and post-docs with the aim of highlighting key features of good research design, how different perspectives (theoretically, conceptually and methodologically) can lead to different kinds of research and how there is value in these different approaches, and foster the search for even better hybrid approaches.

Given the wide range of incoming academic and professional backgrounds among the students, peer mentoring will be used within the class to help bolster knowledge of and familiarity with qualitative and quantitative methods.

The goals of this course are to:

- foster literacy in research methods and bring about familiarity with good research design;

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- initiate design of the research proposals for every student.

RMES 507: Human-Technological systems

Technology to the rescue – is the mantra of many. To be sure, technological progress bringing greater efficiency to how we utilize a resource is valuable. But technology can also generate dangers that are under appreciated in the light of their promise. The twentieth century is replete with examples of marvellous technological innovations to solve a pressing problem leading to new problems born of these solutions. For example, fires in metal machine shops led to the invention of PCBs. The hazards of ammonia leaking from refrigeration systems led to the invention of CFCs. How should we balance the “needs” of society and the “promise” of new technology? This course will examine the relationship between technological innovation and human behaviour as both interact to harm, improve, or impede the benefits and costs of new technologies.

RMES 510: Human-Nature systems

At the core of many environmental issues are intertwined social and ecological processes that drive those issues. The relationships between these processes have important consequences for human society and ecosystems. The multiple causalities of environmental issues have long troubled traditional academic approaches because social and ecological systems have generally been studied separately. Increasingly, interdisciplinary socio-ecological approaches are being developed in order to consider these processes together, providing important insights regarding the complex dynamics of diverse and interlinked processes operating across temporal and spatial scales. This course investigates both the disciplinary and interdisciplinary approaches that are important to understanding connections and linkages across social and ecological realms. This will include in-depth exposure to several case studies, and also to disciplines and methods that focus on coupled systems and integrating socio-ecological perspectives, as well as evaluation of perspectives that have not yet been integrated. Students will leave the course with a sense of (i) how these interlinked systems and dynamics function (or are dysfunctional), (ii) how existing policies, governance regimes, individuals and social movements affect these systems and processes and (iii) how new policies and institutions might learn from available research to better promote sustainable trajectories.

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PhD at RES:

Our incoming students are expected to have taken the equivalents to most of the foundation courses offered in our Master's program. Nonetheless, successful completion in three courses will be required before proceeding to PhD candidacy. There is a choice of 2 courses from the four foundation courses offered by the program (or more advanced versions of these if you have already completed equivalents elsewhere) and a course in case studies and research design where the 1st half of the semester is devoted to interdisciplinary case studies and research design and the 2nd half is focused on each student generating different research questions and designs for a topic of their own choosing.

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Fall	501	History and Philosophy of Environmental Thought		John Robinson	3
Spring	502	Research Methods and Design		Hadi Dowlatabadi (& Terre?)	3
Fall	550	Decision and Policy Analysis	One of these three courses is required. The one chosen should be as far from the area of your research as possible to ensure breadth of experience.	Hadi Dowlatabadi	3
Spring	510*	Human-Nature systems (H/N)		Leila Harris & Mark Johnson	
Fall	507*	Human-Technology systems (H/T)		Milind Kandlikar & Terre Satterfield	
		Advanced methods			3

* = UBC Senate & Curriculum approval pending.

Beyond these courses, we expect our PhD students to attend advanced courses deepening their expertise in their chosen field of research. We also expect them to hone their advanced methods skills with guidance from their supervisors.

Ideally, an RMES PhD will have:

- Mastery of the domain of their research comparable to a specialist.
- Mastery of advanced qualitative or quantitative methods (whichever is appropriate to their research methods).
- Most than a passing familiarity with the complementary methods to those above.