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MEMORANDUM

ATTENTION Senate **DATE** April 12, 2022
FROM Jeff Derksen,
Chair of Senate Graduate Studies
RE: Committee (SGSC)
New Course



For information:

Acting under delegated authority at its meeting of April 12, 2022, SGSC approved the following new courses, effective **Spring 2023**:

Faculty of Communication, Art & Technology

School of Communication

- 1) New Course: CMNS 849 Communication Research for Social Change

Faculty of Environment

School of Environmental Science

- 2) New Course: EVSC 645 Environmental Data Analysis
- 3) New Course: EVSC 660 Ecogeomorphology
- 4) New Course: EVSC 691 Directed Study in Environmental Science



MEMORANDUM

ATTENTION:	Senate Graduate Studies Committee
FROM:	Philippe Pasquier, Chair, FCAT Graduate Studies Committee
RE:	School of Communication Curriculum Changes
DATE:	March 14, 2022

FCAT GSC has voted to approve the following change(s) at the FCAT GSC meeting that occurred on March 8, 2022:

School of Communication

- New Course Proposal CMNS 849
 - A new required core course for MA students pursuing completion of capstone projects focused on communication research social change

Please add these items to the agenda of the upcoming SGSC meeting.

Philippe Pasquier, Ph.D.
Associate Dean, Academic, FCAT Chair,
FCAT Graduate Studies Committee

stw/PP

cc Enda Brophy, Graduate Program Chair, CMNS



To: FCAT Graduate Studies Committee

From: Stuart Poyntz, Professor and Director

Re: New Course Proposal (CMNS 849)

Date: February 25, 2022

The following changes have been approved by the School of Communication and is forwarded to the Faculty of Communication, Arts and Technology Graduate Studies Committee for review and approval:

- New Course Proposal for CMNS 849

If you require additional information, please don't hesitate to contact me.

Regards,

A handwritten signature in black ink, appearing to read "Stuart Poyntz", with a stylized flourish at the end.

Stuart Poyntz
Professor and Director
School of Communication

Attachments:
New Course Proposal, CMNS 849
Program Change Form

New Graduate Course Proposal

Course Subject (eg. PSYC)	Number (eg. 810)	Units (eg. 4)
Course title (max. 100 characters)		
Short title (for enrollment/transcript - max. 30 characters)		
Course description for SFU Calendar (course descriptions should be brief and should never begin with phrases such as “This course will...” or “The purpose of this course is...” If the grading basis is satisfactory/unsatisfactory include this in the description)		
Rationale for introduction of this course		
Term of initial offering (eg. Fall 2019)	Course delivery (eg. 3 hrs/week for 13 weeks)	
Frequency of offerings/year	Estimated enrollment per offering	
Equivalent courses (courses that replicates the content of this course to such an extent that students should not receive credit for both courses)		
Prerequisite and/or Corequisite		
Criminal record check required? <input type="radio"/> Yes if yes is selected, add this as prerequisite		Additional course fees? <input type="radio"/> Yes <input type="radio"/> No
Campus where course will be taught <input type="radio"/> Burnaby <input type="radio"/> Surrey <input type="radio"/> Vancouver <input type="radio"/> Great Northern Way <input type="radio"/> Off campus		
Course Components * <input type="radio"/> Lecture <input type="radio"/> Seminar <input type="radio"/> Lab <input type="radio"/> Independent <input type="radio"/> Capstone <input type="radio"/> _____		
Grading Basis <input type="radio"/> Letter grades <input type="radio"/> Satisfactory/ Unsatisfactory <input type="radio"/> In Progress / Complete		
Repeat for credit? <input type="radio"/> Yes <input type="radio"/> No	Total repeats allowed? _____	Repeat within a term? <input type="radio"/> Yes <input type="radio"/> No
Required course? <input type="radio"/> Yes <input type="radio"/> No	Final exam required? <input type="radio"/> Yes <input type="radio"/> No	Capstone course? <input type="radio"/> Yes <input type="radio"/> No
Combined with a undergrad course? <input type="radio"/> Yes <input type="radio"/> No If yes, identify which undergraduate course and the additional course requirements for graduate students:		

* See important definitions on the curriculum website.

RESOURCES

If additional resources are required to offer this course, provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course
Additional faculty members, space, and/or specialized equipment required in order to offer this course

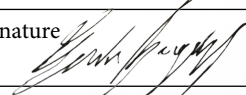
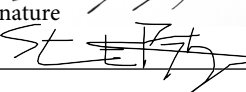
CONTACT PERSON

Academic Unit / Program	Name (typically, Graduate Program Chair)	Email
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ACADEMIC UNIT APPROVAL

A course outline must be included.

Non-departmentalized faculties need not sign

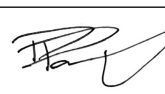
Graduate Program Committee	Signature 	Date February 24, 2022
Department Chair	Signature 	Date February 25, 2022

FACULTY APPROVAL

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content

Overlap check done? ☐ YES

This approval indicates that all the necessary course content and overlap concerns have been resolved. The Faculty/Academic Unit commits to providing the necessary resources.

Faculty Graduate Studies Committee	Signature 	Date
------------------------------------	---	------

A library review will be conducted. If additional funds are necessary, DGS will contact the academic unit prior to SGSC.

SENATE GRADUATE STUDIES COMMITTEE APPROVAL

Senate Graduate Studies Committee	Signature 	Date
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ADMINISTRATIVE SECTION (for DGS office only)

Library Check: _____
Course Attribute: _____
Course Attribute Value: _____
Instruction Mode: _____
Attendance Type: _____

If different from regular units:
Academic Progress Units: _____
Financial Aid Progress Units: _____

CMNS 849-5
Communication Research for Social Change

Spring 2023

Harbour Centre Day

Instructor:

Fridays, 12:30-4:20, HC 2205

How critical or resistant can critical social theories be within the context of academia if we continue to think of theorizing as a purely academic endeavour? (Patricia Hill Collins)

Communication Research for Social Change surveys methodological approaches to communication research gathered around an intersectional framework of analysis and the knowledges developed with, by, and for movements for social justice. This seminar investigates contemporary methodologies as they relate to the contested politics of communication research on topics including gender and sexuality; race and racism; environmental crisis; migration, borders and diaspora; data justice; colonialism and empire; labour and class; culture and cultural production; and media literacy, advocacy and governance.

The seminar is organized around knowledge production practices in the field of communication which address these and other axes of exploitation and oppression. Intersectional critical theory sees these systems as related and mutually reinforcing, while critical research methodologies strive for the production of knowledge as connected to action—what is often referred to as *praxis*—which confronts these social problems.

Questions addressed include:

- How does research—and the knowledge that supports it—contribute to or act against intersecting axes of oppression such as patriarchy, racism, and colonialism?
- What are the epistemological, ethical, and political foundations and implications of research projects in the field of communication?
- What kinds of relationships should bind us to the communities we engage with in our research?
- What are praxis-driven communication research methods?
- How can scholarship support the production of counter-discourses and praxis?

Over the course of the semester students will be exposed to and engage the diverse, cutting edge, and creative approaches to communication methodology and research adopted by faculty in the School of Communication, including Indigenous epistemologies, oral history, community-engaged research, ethnography, co-research, critical textual analysis, policy research, and others. This seminar will provide students with an opportunity to draw from these methodologies as they design their capstone projects for the MA project option. Students will have an opportunity to take an ethics application workshop in February should their research project require it. Students taking Communication Research for Social Change will draw on a range of methodological approaches and debates in order to draft a capstone research project proposal which will serve as the basis for the Directed Study course undertaken during the Summer Semester.

Evaluation Structure

Seminar Participation 40%
MA Capstone Project Proposal 40%
Proposal Presentation 20%

The school expects that the grades awarded in this course will bear some reasonable relation to established university-wide practices with respect to both levels and distribution of grades. In addition, the School will follow Policy S10.01 with respect to Academic Integrity, and Policies S10.02, S10.03 and S10.04 as regards Student Discipline (note: as of May 1, 2009 the previous T10 series of policies covering Intellectual Honesty (T10.02) and Academic Discipline (T10.03) have been replaced with the new S10 series of policies). For further information see: www.sfu.ca/policies/Students/index.html.

Course Delivery

Communication Research for Social Change will be offered once a year during the Spring semester as a complement to CMNS 848, Communication and Global Social Justice (which will be offered each fall). CMNS 849 will be taught by one member of faculty as a part of their normal teaching load, but the course will be designed, taught, and overseen collaboratively by faculty in the School according to a team-teaching model. The instructor will coordinate the weekly seminars and ensure an appropriate degree of thematic continuity across the units investigated. The instructor will also assess course participation and presentations, and mark the final assignments. Faculty responsible for coordinating individual units will determine the readings for that week and plan their seminar sessions in consultation with the course instructor.

At the moment there are 5 members of faculty with a confirmed interest in teaching this course: Cait McKinney, Kirsten McAllister, Siyuan Yin, Enda Brophy, Stuart Poyntz.

In addition to the instructors who will teach the course on a rotating basis, two or more faculty have been identified to oversee the development of, and eventually lead, one of the units. Faculty members will not be expected to lead more than one unit per year and leading a seminar will be counted as a service contribution (in much the same way as leading a graduate workshop is currently).

WEEKLY TOPICS

Week 1: The Politics of Knowledge (Instructor)

Appadurai, A. (2006). The right to research. *Globalisation, Societies and Education*, 4(2), 167–177.

Potts and Brown; Karen; Leslie. (2005). Becoming an Anti-Oppressive Researcher. In Leslie Brown and Susan Strega (Ed.), *Research as Resistance: Critical, Indigenous, and Anti-Oppressive Approaches* (pp. 17–42). Canadian Scholar's Press, Inc. [CSPI].

Santos, B. de S., & Meneses, M. P. (2019). *Knowledges Born in the Struggle: Constructing the Epistemologies of the Global South*. Routledge. [Chapter 12 Epistemic Extractivism: A Dialogue with Alberto Acosta, Leanne Betasamosake Simpson, and Silvia Rivera Cusicanqui]

Moyo, Last (2020) *The Decolonial Turn in Media Studies in Africa and the Global South*, Palgrave.

Week 2: Intersectional Approaches to Communication Research (Instructor)

Moosa-Mitha, M. (2005). Situating Anti-Oppressive Theories within Critical and Difference-Centered Perspectives. In Leslie Brown and Susan Strega (Ed.), *Research as Resistance: Critical, Indigenous, and Anti-Oppressive Approaches*. Canadian Scholar's Press, Inc. [CSPI].

Sartoretto, P., & Custódio, L. (2020). Dealing with Ethical Dilemmas in Activist Research on Social Movement Media. In S. Jeppesen & P. Sartoretto (Eds.), *Media Activist Research Ethics: Global Approaches to Negotiating Power in Social Justice Research* (pp. 51–66). Springer International Publishing.

Velkova, J. (2020). The Ethics of Reciprocal Communication. In S. Jeppesen & P. Sartoretto (Eds.), *Media Activist Research Ethics: Global Approaches to Negotiating Power in Social Justice Research* (pp. 157–173). Springer International Publishing.

Week 3: Communication Methodologies and Social Change (Instructor)

Kalinina, E. (2020). Difficult Choices: Application of Feminist Ethics of Care in Action Research. In S. Jeppesen & P. Sartoretto (Eds.), *Media Activist Research Ethics: Global Approaches to Negotiating Power in Social Justice Research* (pp. 193–218). Springer International Publishing.

Queer(y)ing Communication Research Relationships: A Conversation About Subjectivities, Methodologies and Ethics. In *Queer Methods and Methodologies: Intersecting Queer Theories and Social Science Research*. Taylor & Francis Group.

Haiven, M. & Khasnabish, A. (2014) *The Radical Imagination: Social Movement Research in the Age of Austerity*. Zed Books.

Week 4: Decolonizing Epistemologies (Crey [and possibly Indigenous position hire?])

Burkhart, B. (2019). Everything Is Sacred: Iktomi Lessons in Ethics without Value and Value without Anthropocentrism. In *Indigenizing Philosophy through the Land* (pp. 177–222). Michigan State University Press.

Lily George, Juan Tauri, & Lindsey Te Ata o Tu MacDonald. (2020). *Indigenous Research Ethics: Claiming Research Sovereignty Beyond Deficit and the Colonial Legacy*. Emerald Publishing Limited.

Media, M. (2020) “Yuta Anthropology,” in *Indigenous Research Ethics: Claiming Research Sovereignty Beyond Deficit and the Colonial Legacy* 6: 237–246).

Martins, V., & Rosa, R. (2020). Denaturalizing Research Practices: (Re)Signifying Subject Positions Through Decolonial Theories. In S. Jeppesen & P. Sartoretto (Eds.), *Media Activist Research Ethics: Global Approaches to Negotiating Power in Social Justice Research* (pp. 89–108). Springer International Publishing. https://doi.org/10.1007/978-3-030-44389-4_5

Moreira, C. (2009). Unspeakable Transgressions: Indigenous Epistemologies, Ethics, and Decolonizing Academy/Inquiry. *Cultural Studies ↔ Critical Methodologies*, 9(5), 647–660. <https://doi.org/10.1177/1532708608327232>

Week 5: Community-Engaged Research (Poyntz, Brophy)

Costanza-Chock, S. 2020. *Design Justice: Community-Led Practices to Build the Worlds We Need*. The MIT Press. [Chapter 2: Design Practices, “Nothing About Us Without Us.” In *Design Justice: Community-Led Practices to Build the Worlds We Need* (pp. 70–101).

Grain, K. “Community-Engaged Research Ethical Principles.” Community-Engaged Research Initiative, Simon Fraser University. <https://www.sfu.ca/ceri/ethics.html>. Accessed 20 Nov. 2020.

Wallerstein, N., & Duran, B. “The Theoretical, Historical and Practice Roots of CBPR.” In M. Winkler and N. Wallerstein (Eds.) *Community-Based Participatory Research for Health: Advancing Social and Health Equity* (3rd edition) Jossey-Bass, 2017, pp. 17-29.

Week 6 Migration, Refugees, Diaspora (McAllister, Yin)

Anzaldúa, G. (2012). *Borderlands: The new mestiza = la frontera / Gloria Anzaldúa*. (Fourth edition, 25th anniversary.). Aunt Lute Books. [Chapter 1: The Homeland, Aztlan/ *El Otro Mexico*]

Metcalf, P., & Dencik, L. (2019). The politics of big borders: Data (in)justice and the governance of refugees. *First Monday*. <https://doi.org/10.5210/fm.v24i4.9934>

Papadopoulos, D. (2018). *Experimental Practice: Technoscience, Alterontologies, and More-Than-Social Movements*. Duke University Press.

Siapera, E., & Creta, S. (2020). The Ethics of Media Research with Refugees. In S. Jeppesen & P. Sartoretto (Eds.), *Media Activist Research Ethics: Global Approaches to Negotiating Power in Social Justice Research* (pp. 221–248). Springer International Publishing.
https://doi.org/10.1007/978-3-030-44389-4_11

Week 7 Gender and Sexuality (McKinney, Thomas)

Barnett, F., Blas, Z., Cárdenas, M., Gaboury, J., Johnson, JM., & Rhee, M. (2016). QueerOS: A User's Manual. In *Debates in the Digital Humanities 2016*. University of Minnesota Press.

Grundy, J., & Smith, M. (2007). "Activist Knowledges in Queer Politics," *Economy and Society*, 36(2), 294–317.

Holliday, R. (2000). We've been Framed: Visualising Methodology. *The Sociological Review*, 48(4), 503–521.

Jackson, S. J., Bailey, M., & Foucault Welles, B. (2018). #GirlsLikeUs: Trans advocacy and community building online. *New Media & Society*, 20(5), 1868–1888.

McKinney, C. (2020). *Information Activism: A Queer History of Lesbian Media Technologies*. Duke University Press.

Week 8 Race and Racism (Thomas, Ahadi)

Davies, E. J., Jackson, J. M., & Streeter, S. (n.d.). "Bringing Abolition In: Addressing Carceral Logics in Social Science Research," *Social Science Quarterly*

Maynard, R. (2018). "Reading Black Resistance through Afrofuturism: Notes on Post-Apocalyptic Blackness and Black Rebel Cyborgs in Canada," *TOPIA: Canadian Journal of Cultural Studies*, 39: 29–47.

Welsh, C. (2019). From "Too Womanish, Girl!" to Clever Womanish Woman. In J. Goode (Ed.), *Clever Girls: Autoethnographies of Class, Gender and Ethnicity* Springer: 125–143.

Nelson, C., Ohri, A., Crooks, J., Kelebay, A., Thompson, C., Boone, E., Bowen, D., Duncan, C. B., Dionne-Petit, M., Abraham, C., Johnson, A. R., Verrall, K., Jim, A. M. W., & Fatona, A. (2018). "Towards an African Canadian Art History: Art, Memory, and Resistance," Captus Press.

Week 9 Digital Labour and Worker Inquiry (Brophy, Yin)

Appel, E., et al. (2020) *Food Delivery Platform Work and the COVID-19 Outbreak in the Metro Vancouver Regional District*. (37 pages)

Englert, S., Woodcock, J., & Cant, C. (2020). "Digital Workerism: Technology, Platforms, and the Circulation of Workers' Struggles," *TripleC: Communication, Capitalism & Critique*, 18(1), 132–145.

Leonardi, D., Briziarelli, M., Armano, E. and Murgia, A. (2019) "The Ambivalence of Logistical Connectivity: A Co-research with Foodora Riders," *Work Organisation, Labour & Globalisation*, 13(1): 155-171.

Yin, S. (2020) "Cultural Production in the Working-Class Resistance: Labour Activism, Gender Politics, and Solidarities," *Cultural Studies*, 43(3): 418-441.

Week 10 Environmental Communication (Gunster, Matviyenko)

Brulle, R. (2010) "From Environmental Campaigns to Advancing the Public Dialog: Environmental Communication for Civic Engagement," *Environmental Communication* 4.1.

Gunster, S., Neubauer, R., Bermingham, J., & Massie, A. (2021). 'Our Oil': Extractive Populism in Canadian Social Media, in *Regime of Obstruction: How Corporate Power Blocks Energy Democracy* (pp. 197–225). Athabasca University Press.

Anabela Carvalho, Margit van Wessel and Pieter Maesele, "Communication Practices and Political Engagement with Climate Change: A Research Agenda," *Environmental Communication* 11(1) (2017).

Paterson, M. (2021) *In Search of Climate Politics*, Cambridge University Press, 2021.

Week 11 Data Justice (Hong, Dick)

Bouk, Dan. 'The History and Political Economy of Personal Data over the Last Two Centuries in Three Acts'. *Osiris* 32, no. 1 (1 September 2017): 85–106.

Thatcher, J., O'Sullivan, D., & Mahmoudi, D. (2016). Data Colonialism through Accumulation by Dispossession: New Metaphors for Daily Data. *Environment and Planning D: Society and Space*, 34(6), 990–1006.

Ruhaak et al (2020) "Demystifying Data Trusts and Collective Consent in the World of Data Privacy," *Ocean Protocol*, May 23.

<https://blog.oceanprotocol.com/voices-of-data-economy-anouk-ruhaak-data-trusts-8240426c2ecf>

Whittaker, M. (2021) “The Steep Cost of Capture,” *ACM Interactions*, November-December, 51–55.

Ochigame, R. (2019) “The Invention of “Ethical AI”: How Big Tech Manipulates Academia to Avoid Regulation,” *The Intercept* (December 20).

Chun, W. (2021) *Discriminating Data: Correlation, Neighborhoods, and the New Politics of Recognition*, MIT Press.

Week 12 Project Proposal Presentations

Week 13 Project Proposal Presentations



DONGYA YANG, PH.D., ASSOCIATE DEAN, RESEARCH AND GRADUATE STUDIES
FACULTY OF ENVIRONMENT

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www.fenv.sfu.ca

MEMO

To: Dr. Jeff Derksen, Dean of Graduate Studies / Chair of SGSC
From: Dr. Dongya Yang, Associate Dean / Chair, Faculty of Environment Graduate Studies Committee
Subject: New course proposals, EVSC 645, EVSC 660 and EVSC 691 from School of Environment Science
Date: March 16, 2022/April 5, 2022
CC: Jeremy Venditti, Director of EVSC

The Faculty of Environment Graduate Studies Committee has approved the request from the School of Environmental Science (EVSC) to create three new courses EVSC 645, EVSC 660 and EVSC 691. Please include this item on the next SGSC agenda.

Three new course proposal forms are attached along with the original memo from Dr. Jeremy Venditte, the Director of EVSC.

Should you have any questions please feel free to contact me.

A blue ink handwritten signature, likely of Dongya Yang, is written over a horizontal line.

Dongya Yang, Ph.D.
Associate Dean, Research and Graduate Studies
Professor of Bioarchaeology



SCHOOL OF ENVIRONMENTAL SCIENCE

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MEMORANDUM

ATTENTION	Dongya Yang, Associate Dean, Faculty of Environment	DATE	February 11, 2022
FROM	Jeremy Venditti, Director, School of Environmental Science	PAGES	2
RE:	Creation of EVSC 645, 660 & 691		

Dear Dongya,

The School of Environmental Science would like to create three new graduate courses:

1. EVSC 645 (4) Environmental Data Analysis. This course was run as a special topics course in Spring 2021. The course is primarily taken by students in the Masters of Ecological Restoration (MER) program, but we are seeing some enrollment for students in research-based Masters programs. The course is cross-listed with EVSC 445(4), which was also taught in Spring 2021, and is now being created as a permanent course.
2. EVSC 660 (4) Ecogeomorphology. This course was run as a special topics course in Spring and 2021. The course is primarily taken by students in the Masters of Ecological Restoration (MER) program and by research-based graduate students supervised by faculty in Environmental Science, but enrolled in other programs on campus. The course is cross-listed with EVSC 460, which was also taught in Spring 2021, and is now being created as a permanent course.
3. EVSC 691 Directed Readings in Environmental Science. There is also a growing cohort of graduate students supervised by Environmental Science faculty, but enrolled elsewhere (e.g. Biology, REM, Earth Sciences, Geography). This directed readings will allow Environmental Science faculty to offer individualized, guided reading courses for those students. The course will be available to students in the MER program and it will be added as an elective course for any future graduate programming in Environmental Science. As a directed readings course we want the units to be variable (1-4) so that they may be set in recognition of the workload. We also intend to let graduate students take the course up to two times.

These courses creations have been ratified by the Faculty in the School of Environmental Science.

If you require any further information, please don't hesitate to contact me.

Attachments:

- i. EVSC_645_Environmental_Data_Analysis_Feb_08_2022.pdf
- ii. EVSC_660_Ecogeomorphology_Feb_08_2022.pdf

Regards,

A handwritten signature in black ink, appearing to read "Jeremy Venditti". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

Dr. Jeremy G. Venditti

Director and Professor
School of Environmental Science
Simon Fraser University
Burnaby BC, Canada
Email: EVSC_Director@sfu.ca
www.sfu.ca/evsc.html

Professor
Department of Geography
Simon Fraser University
Burnaby BC, Canada
Email: jeremy_venditti@sfu.ca
www.sfu.ca/~jvenditt/

New Graduate Course Proposal

Course Subject (eg. PSYC) EVSC	Number (eg. 810) 645	Units (eg. 4) 4
Course title (max. 100 characters) Environmental Data Analysis		
Short title (for enrollment/transcript - max. 30 characters) Environmental Data Analysis		
Course description for SFU Calendar (course descriptions should be brief and should never begin with phrases such as "This course will..." or "The purpose of this course is..." If the grading basis is satisfactory/unsatisfactory include this in the description) Introduce environmental scientists to sampling, experimental design, and the analysis of qualitative data collected in the course of environmental monitoring, assessment and restoration programs.		
Rationale for introduction of this course The course is a bridge between the introductory statistics courses required by most undergraduate BSc programs, and the applied data analysis necessary for graduate projects and theses. Environmental Data Analysis fills this gap by covering modern data analysis methods.		
Term of initial offering (eg. Fall 2019) Spring 2023	Course delivery (eg. 3 hrs/week for 13 weeks) 2 hour LEC, 2 hour LAB	
Frequency of offerings/year 1	Estimated enrollment per offering 30	
Equivalent courses (courses that replicates the content of this course to such an extent that students should not receive credit for both courses) ENV 645 Statistics for Ecological Restoration		
Prerequisite and/or Corequisite Enrolment in the ER MSc program, or permission of the instructor.		
Criminal record check required? <input type="checkbox"/> Yes if yes is selected, add this as prerequisite		Additional course fees? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Campus where course will be taught <input checked="" type="checkbox"/> Burnaby <input type="checkbox"/> Surrey <input type="checkbox"/> Vancouver <input type="checkbox"/> Great Northern Way <input type="checkbox"/> Off campus		
Course Components * <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Independent <input type="checkbox"/> Capstone <input type="checkbox"/>		
Grading Basis <input checked="" type="checkbox"/> Letter grades <input type="checkbox"/> Satisfactory/ Unsatisfactory <input type="checkbox"/> In Progress / Complete		
Repeat for credit? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Total repeats allowed? _____	Repeat within a term? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Required course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Final exam required? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Capstone course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Combined with a undergrad course? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, identify which undergraduate course and the additional course requirements for graduate students: EVSC 445-4 in Environmental Data Analysis		

* See important definitions on the curriculum website.

RESOURCES

If additional resources are required to offer this course, provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course Dr. Ruth Joy
Additional faculty members, space, and/or specialized equipment required in order to offer this course

CONTACT PERSON

Academic Unit / Program Environmental Science	Name (typically, Graduate Program Chair) Jeremy Venditti	Email evsc_director@sfu.ca
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ACADEMIC UNIT APPROVAL

A course outline must be included.

Non-departmentalized faculties need not sign

Graduate Program Committee none	Signature	Date
Department Chair Jeremy Venditti	Signature <i>Jeremy Venditti</i>	Date feb 08, 2022

FACULTY APPROVAL

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content

Overlap check done? ☒ YES

This approval indicates that all the necessary course content and overlap concerns have been resolved. The Faculty/Academic Unit commits to providing the necessary resources.

Faculty Graduate Studies Committee Dongya Yang	Signature <i>Dongya Yang</i>	Date March 16, 2022
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A library review will be conducted. If additional funds are necessary, DGS will contact the academic unit prior to SGSC.

SENATE GRADUATE STUDIES COMMITTEE APPROVAL

Senate Graduate Studies Committee Jeff Derksen	Signature <i>Jeff Derksen</i>	Date April 12 2022
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ADMINISTRATIVE SECTION (for DGS office only)

Library Check: _____
Course Attribute: _____
Course Attribute Value: _____
Instruction Mode: _____
Attendance Type: _____

If different from regular units:
Academic Progress Units: _____
Financial Aid Progress Units: _____

EVSC 645: Environmental Data Analysis

Course Information

Course	EVSC 645 Environmental Data Analysis
Term	Spring 2022
Course Format	Lecture and Tutorial
Instructor	Dr Ruth Joy rjoy@sfu.ca cell: 604-215-4415
Office Hours	Monday 3:30 Or by appointment
Office	TASC2 Room 8901

Overview of Course

The content of EVSC 645 is intended to introduce environmental scientists to the statistical methods that will be useful for them in their work, and provide practical experience therein. This course covers the basic and most useful methods of sampling and experimental design, and the analysis of data collected in observational studies and designed experiments. Particular emphasis will be placed on practical aspects of sampling and experimentation in environmental applications. The course will also include some special topics including, for example, the statistics of environmental impact assessment and those of assessing site reclamation. Examples will be drawn from the literature, and from the instructors own experience. A lab tutorial accompanies the lectures that will include practical examples of the concepts presented in lectures and will give additional support for learning the **R** programming language.

Students will be introduced to the principles of statistics and the course aims to:

1. Motivate an intrinsic interest in statistical thinking and understand its importance in scientific research.
2. Learn to formulate statistical hypotheses, understand assumptions and build confidence in data analysis and interpretation.
3. Provide experience and support in learning the statistical programming language **R**.

Educational Goals

- Demonstrate the ability to apply fundamental concepts in exploratory data analysis.
- Design studies or experiments for obtaining data while avoiding common design flaws that incur bias, inefficiency and confounding.
- Demonstrate an understanding probability and random variables.
- Understand the concept of the sampling distribution of a statistic.
- Understand the foundations for confidence intervals and hypothesis testing.
- Interpret and analyse data using parametric methods and non-parametric methods.
- Apply and interpret simple and multiple linear regression models.
- Exposure to some special topics including, for example, the statistics of environmental impact assessment and those of assessing site reclamation.

Week	Lecture	Laboratory
1	Exploratory data analysis	Introduction to R and covid-19 analysis
2	Data summaries and statistics	Exploration of bird demographics
3	Probability and random variables	Application of ecological restoration: Nematodes on Tumbo Island
4	Environmental Sampling : Random, Systematic	Application of soil contamination in Ecuador
5	Environmental Sampling : Stratification	Forest and Range Evaluation Program
6	Distributions and Confidence intervals	Application of ecological restoration: Bioaccumulation in whale blubber
7	Hypothesis testing: t-tests	Application of cranes on BCs Central Coast
8	Hypothesis testing: 1-way ANOVAs	Application of greenhouse experiments
9	Correlation and Simple Regression	Application of ecological restoration: Stream ecology I
10	Multiple Regression	Stream ecology II
11	Multivariate Analysis	Principle Components and Non-metric dimensional scaling
12	Assessing ecological restoration projects	Project applications
13	Assessing ecological restoration projects	Project applications

Suggested Text

We will be using the textbook “Learning Statistics Using R” by Randall E. Schumacker. This is offered through SFU Library as an e-book. The course is based on several additional sources which will be assigned throughout the semester and added to the ENV 645 Canvas link as the course progresses.

Course Format

This course will consist of a weekly 2-hour lecture and a 2-hour interactive software tutorial where students will apply the concepts learned in lectures.

Remote and In-Person Instruction if cleared by SFU Health, following Federal and Provincial Government Guidance

Lectures will be recorded and offered both synchronously and asynchronously for at least the first two weeks until SFU is back to in-person lectures. Laboratory exercises will all be done synchronously in person or on zoom according to SFUs health directives. All relevant course material will be posted to the ENV 645 Canvas link. Students are expected to be available online or in-person //at the scheduled times for the laboratory, and students will be expected to participate and follow along on a laptop or desktop computer.

Software

The course will require the widely-used programming language **R** for statistical computing and graphics. This will be required for both lab tutorials and for homework assignments. Students are expected to download and install R or RStudio onto their computer from this website:

<https://www.r-project.org/>

<https://rstudio.com/products/rstudio/>

Marking scheme

Homeworks	30%
Mini Project*	10%
Midterm 1 (open-book)	20%
Midterm 2 (open-book)	20%
Final	20%

* The mini-project is a graduate student specific requirement. The mini-project is an opportunity for the graduate student to analyse data that is specific to their field of research, and/or holds some specific interest to the student. Undergraduate students are not required to find and analyse their own dataset, but will be required to analyse data supplied through the course instructor.

New Graduate Course Proposal

Course Subject (eg. PSYC) EVSC	Number (eg. 810) 660	Units (eg. 4) 4
Course title (max. 100 characters) Ecogeomorphology		
Short title (for enrollment/transcript - max. 30 characters) Ecogeomorphology		
<p>Course description for SFU Calendar (course descriptions should be brief and should never begin with phrases such as "This course will..." or "The purpose of this course is..." If the grading basis is satisfactory/unsatisfactory include this in the description)</p> <p>Ecogeomorphology is the interdisciplinary study of watersheds that integrates geomorphology, hydrology and ecology to facilitate new understandings of landscapes and ecosystems by bridging dominant paradigms from the individual disciplines. This course explores how animals alter landscapes, as well as how physical habitat conditions influence the dynamics and resilience of biological populations.</p>		
<p>Rationale for introduction of this course</p> <p>SFU's graduate curriculum currently lacks a course that explicitly focuses on and explores the interactions between hydrogeomorphic and biological processes, and the methodologies necessary to model and interpret these coupled systems. This course will complement existing courses in the Environmental Science, Geography, Resource Environmental Management, and Biology departments, and will build upon and link concepts and ideas across disciplines.</p>		
Term of initial offering (e.g. Spring 2023)	Course delivery (eg. 3 hrs/week for 13 weeks) 2 hours LEC, 2 hours LAB	
Frequency of offerings/year every other year	Estimated enrollment per offering 10	
Equivalent courses (courses that replicates the content of this course to such an extent that students should not receive credit for both courses)		
Prerequisite and/or Corequisite Permission from the instructor. Undergraduate courses in both ecology and geomorphology are highly recommended.		
Criminal record check required? <input type="checkbox"/> Yes <input type="checkbox"/> No if yes is selected, add this as prerequisite		Additional course fees? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Campus where course will be taught <input checked="" type="checkbox"/> Burnaby <input type="checkbox"/> Surrey <input type="checkbox"/> Vancouver <input type="checkbox"/> Great Northern Way <input type="checkbox"/> Off campus		
Course Components * <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Independent <input type="checkbox"/> Capstone <input type="checkbox"/>		
Grading Basis <input checked="" type="checkbox"/> Letter grades <input type="checkbox"/> Satisfactory/ Unsatisfactory <input type="checkbox"/> In Progress / Complete		
Repeat for credit? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Total repeats allowed? _____	Repeat within a term? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Required course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Final exam required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Capstone course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Combined with a undergrad course? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, identify which undergraduate course and the additional course requirements for graduate students: EVSC 460		

* See important definitions on the curriculum website.

RESOURCES

If additional resources are required to offer this course, provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course

Dr. Brendan Murphy

Additional faculty members, space, and/or specialized equipment required in order to offer this course

CONTACT PERSON

Academic Unit / Program

Environmental Science

Name (typically, Graduate Program Chair)

Jeremy Venditti

Email

evsc_director@sfu.ca

ACADEMIC UNIT APPROVAL

A course outline must be included.

Non-departmentalized faculties need not sign

Graduate Program Committee None	Signature	Date
Department Chair Jeremy Venditti	Signature <i>jeremy venditti</i>	Date Feb 08/2022

FACULTY APPROVAL

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content

Overlap check done? ☒ YES

This approval indicates that all the necessary course content and overlap concerns have been resolved. The Faculty/Academic Unit commits to providing the necessary resources.

Faculty Graduate Studies Committee Dongya Yang	<i>Dongya Yang</i>	Date March 16, 2022
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A library review will be conducted. If additional funds are necessary, DGS will contact the academic unit prior to SGSC.

SENATE GRADUATE STUDIES COMMITTEE APPROVAL

Senate Graduate Studies Committee Jeff Derksen	Signature <i>Jeff Derksen</i>	Date April 12 2022
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ADMINISTRATIVE SECTION (for DGS office only)

Library Check: _____

Course Attribute: _____

Course Attribute Value: _____

Instruction Mode: _____

Attendance Type: _____

If different from regular units:

Academic Progress Units: _____

Financial Aid Progress Units: _____

EVSC 660	ECOGEOMORPHOLOGY
INSTRUCTOR:	Dr. Brendan Murphy
CLASSROOM:	
OFFICE HOURS:	
CONTACT:	brendan_murphy@sfu.ca
COURSE WEBSITE:	

What is Ecogeomorphology?

Ecogeomorphology is an interdisciplinary study of watersheds that integrates geomorphology, hydrology and ecology. This area of research facilitates new understandings of both landscapes and ecosystems by bridging dominant paradigms from individual disciplines while also spanning spatial and temporal scales. While this course will explore how animals can alter and shape their physical surroundings, we will also explore approaches we can use to start understanding how the physical conditions within an ecosystem may influence the resilience and dynamics of biological populations.

Course Overview:

No single textbook adequately covers the diverse range of topics we will discuss in this course, so over the semester, we will focus on reading and evaluating relevant primary scientific literature. Weekly, student-led literature discussions will be combined with lectures that help to summarize the overarching concepts and ideas of each weeks topics. In addition to exploring the myriad feedbacks between physical and biological systems, you will also learn computer coding so that we can work with and design models. Students will ultimately develop their own modeling experiment, then write up and present their findings as part of a final project.

This course will be taught along with EVSC460. Graduate students will be expected to contribute more substantially to weekly literature discussions, particularly those they are responsible for leading, while still encouraging and providing space for the inclusion of their undergraduate counterparts. Additionally, the grading weight and expectations, with respect to both the quality and depth of analysis and outputs, are higher for final projects in EVSC660.

Course Format:

This course will meet twice per week. In most weeks, the first day will be literature discussions and lectures, and the second day will be tutorials focused on coding and computer modeling. The final week of the semester will be reserved for final project presentations.

Course Objectives:

1. Understand and be able to identify the myriad processes and feedbacks that exist between physical and biological systems
2. Develop the skills to read, interpret and discuss primary scientific literature
3. Learn fundamental coding skills necessary to design and implement habitat-based metapopulation models that incorporate spatially explicit disturbance
4. Communicate ecogeomorphology issues clearly and effectively and be able to present your work and ideas to an audience of your peers

Required Materials:

Hardware: a personal computer (either Mac or Windows OS) with:

- internet access,
- microphone & camera
- Minimum of 15 GB of free memory

Software:

- Internet browser
- Adobe Reader
- MATLAB (we will install this together in class)

Course Assessment:

Class Participation	10%
Literature Discussions	20%
Activities & Assignments	40%
Term Presentation & Paper	30%

Course Evaluation:

≥ 95%	A+
90-94%	A
85-89%	A-
80-84%	B+
75-79%	B
70-74%	B-
67-69%	C+
63-66%	C
60-62%	C-
50-59%	D
<50%	F

Useful Textbooks:

- Caswell, H. (1989) *Matrix Population Models: Construction, Analysis and Interpretation*, Sinauer Associates, Inc., Sunderland, Massachusetts, 328p.
- Morris, W.F. and D.F. Doak (2002) *Quantitative Conservation Biology: Theory and practice of population viability analysis*, Sinauer Associates, Inc., Sunderland, Massachusetts, 480p.
- Anderson, R.S. & S.P. Anderson (2010) *Geomorphology: The Mechanics and Chemistry of Landscapes*, Cambridge University Press, 637p.

Course Schedule*:

	Date	Topic	Readings
Week 1		What is Ecogeomorphology? Introductions, Class Policies/Expectations, Syllabus, How to Read & Discuss Papers	
		Lab 1: MATLAB Installation & Set Up	
Week 2		Biological Controls on Physical Systems I: <i>Veg. influences on river systems</i>	Hicken 1984; Braudrick et al., 2009; Wohl, 2017
		Lab 2: Basic Commands, Finding Help, Managing Workspace & Creating Scripts	
Week 3		Biological Controls on Physical Systems II: <i>Animal influences on river systems</i>	Hassan et al., 2008; Johnson et al., 2008; Naiman et al., 1988
		Lab 3: Creating Functions, Data Types & Structures, Creating & Saving Variables, Loading Input Data	
Week 4		Biological Controls on Physical Systems III: <i>Bioturbation & beavers</i>	Black & Montgomery, 1991; Fairfax & Small, 2018; Fremier et al., 2018
		Lab 4: Indexing/Concatenating, Element-wise Math, Array Manipulation & Basic Plotting	
Week 5		Physical Controls on Biological Systems I: <i>Effects of beaver dams on fish</i>	Bouwes et al., 2016; Lokeff et al., 2013; Pollock et al., 2004
		Lab 5: Loops, Conditional Statements, Advanced Plotting & Matrix Operations	
Week 6		Physical Controls on Biological Systems II: <i>Hydrogeomorphic influences on fish</i>	Goode et al., 2013; May et al., 2017; McElroy et al., 2012
		Lab 6: Linear Algebra (Matrix Math)	

Week 7		Physical Controls on Biological Systems III: <i>Ecological effects of physical disturbance</i>	Rempel & Church, 2009; Roghair et al., 2002; Rixen et al., 2007
		Lab 7: Developing Simple Physical & Ecological Models - Mass Balance & Lotka Volterra	
Week 8		Population Dynamics I: <i>Wildfire impacts on fish populations</i>	Gresswell, 1999; Beakes et al., 2014; Neville et al., 2009
		Lab 8: Matrix Projection & Population Growth Rates	
Week 9		Population Dynamics II: <i>Habitat Suitability</i>	Heggenes e al., 1990; McHugh & Budy, 2004; Rosenfeld et al., 2016
		Lab 9: Modeling Dispersal & Metapopulation Dynamics	
Week 10		Population Dynamics III: <i>Habitat connectivity & biodiversity</i>	Fordham et al., 2014; McCluney et al., 2014; Moore, 2015
		Lab 10: DyHDER model Part 1	
Week 11		Ecogeomorphology Modeling: <i>Habitat disturbance & ecological resilience</i>	Murphy et al., 2020
		Lab 11: DyHDER model Part 2	
Week 12		Final Project Development	
		Group work	
Week 13		Group Presentations – Day 1	
		Group Presentations – Day 2	

**Schedule subject to changes at discretion of the instructor*

New Graduate Course Proposal

Course Subject (eg. PSYC) EVSC	Number (eg. 810) 691	Units (eg. 4) Variable 1-4
Course title (max. 100 characters) Directed Study in Environmental Science		
Short title (for enrollment/transcript - max. 30 characters) Directed Study in EVSC		
Course description for SFU Calendar (course descriptions should be brief and should never begin with phrases such as "This course will..." or "The purpose of this course is..." If the grading basis is satisfactory/unsatisfactory include this in the description) Independent study on environmental topics selected in consultation with the supervising instructor.		
Rationale for introduction of this course There is also a growing cohort of graduate students supervised by Environmental Science faculty, but enrolled elsewhere (e.g. Biology, REM, Earth Sciences, Geography). This directed readings will allow Environmental Science faculty to offer individualized, guided reading courses for those students.		
Term of initial offering (eg. Fall 2019) Spring 2023	Course delivery (eg. 3 hrs/week for 13 weeks) 1-4 hours per week for 13 weeks	
Frequency of offerings/year 3	Estimated enrollment per offering 1-3	
Equivalent courses (courses that replicates the content of this course to such an extent that students should not receive credit for both courses) None		
Prerequisite and/or Corequisite None		
Criminal record check required? <input type="checkbox"/> Yes if yes is selected, add this as prerequisite		Additional course fees? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Campus where course will be taught <input checked="" type="checkbox"/> Burnaby <input type="checkbox"/> Surrey <input type="checkbox"/> Vancouver <input type="checkbox"/> Great Northern Way <input type="checkbox"/> Off campus		
Course Components * <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Independent <input type="checkbox"/> Capstone <input type="checkbox"/>		
Grading Basis <input checked="" type="checkbox"/> Letter grades <input type="checkbox"/> Satisfactory/ Unsatisfactory <input type="checkbox"/> In Progress / Complete		
Repeat for credit? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Total repeats allowed? 1	Repeat within a term? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Required course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Final exam required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Capstone course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Combined with a undergrad course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, identify which undergraduate course and the additional course requirements for graduate students: This will typically not be combined with an undergraduate course, but may follow along the same content.		

* See important definitions on the curriculum website.

RESOURCES

If additional resources are required to offer this course, provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course

Shawn Chartrand, Karen Kohfeld, Chelsea Little, Brendan Murphy, Margaret Schmidt, Jeremy Venditti

Additional faculty members, space, and/or specialized equipment required in order to offer this course

None

CONTACT PERSON

Academic Unit / Program

EVSC

Name (typically, Graduate Program Chair)

Jeremy Venditti

Email

evsc_director@sfu.ca

ACADEMIC UNIT APPROVAL

A course outline must be included.

Non-departmentalized faculties need not sign

Graduate Program Committee	Signature	Date
Department Chair Jeremy Venditti	Signature <i>jeremy venditti</i>	Date Feb 08/2022

FACULTY APPROVAL

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content

Overlap check done? ☒ YES

This approval indicates that all the necessary course content and overlap concerns have been resolved. The Faculty/Academic Unit commits to providing the necessary resources.

Faculty Graduate Studies Committee Dongya Yang	Signature <i>Dongya Yang</i>	Date March 16, 2022
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A library review will be conducted. If additional funds are necessary, DGS will contact the academic unit prior to SGSC.

SENATE GRADUATE STUDIES COMMITTEE APPROVAL

Senate Graduate Studies Committee Jeff Derksen	Signature <i>Jeff Derksen</i>	Date April 12 2022
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ADMINISTRATIVE SECTION (for DGS office only)

Library Check: _____

Course Attribute: _____

Course Attribute Value: _____

Instruction Mode: _____

Attendance Type: _____

If different from regular units:

Academic Progress Units: _____

Financial Aid Progress Units: _____