SCIE 300 Communicating Science
January 2011

Dates and times:

Section 200: Monday, Wednesday and Friday 12:00 pm
Section 201: Monday 12:00 pm, Wednesday 1:00 pm, Friday 1:00 pm
Classes start Tuesday, Jan. 4; Classes end Thursday, April 7
Reading week is Feb. 14-18 (after week 6)

Credits and hours:

Credits: 3
Standing: 3rd- or 4th-year standing required
Co-requisite: One of BIOL 300, STAT 200, or STAT 241
Hours: Three hours of class time is scheduled each week. You should budget five additional hours per week for homework, assignments, and readings.
Calendar entry: SCIE 300

Location:

Mondays: FNH 60 (both sections together)
Wednesdays, Fridays: GEOG 147 (sections meet separately)

	Monday	Wednesday	Friday
Section 200	12:00 FNH 60	12:00 GEOG 147	12:00 GEOG 147
Section 201		1:00 GEOG 147	1:00 GEOG 147

Course description:

Welcome! You are part of a brand new course within the Faculty of Science at UBC. The overall goals of SCIE 300 are to illustrate the importance of science communication and provide you with some of the skills you need to become good science communicators. Wherever your career takes you, communication skills are highly valued, transferable, and arguably more important than even before.

SCIE 300 is an interactive course divided broadly into two main sections: communicating within the scientific community and communicating to broader non-expert audiences. Science communication in any form involves some type of writing. So, unsurprisingly, there will be a lot of writing in this course. But you will not be writing long essays. We will cover the structure of scientific papers and the peer-review process. You will have the chance to write reports on your own research, summarize other people's research, and apply methods you can use to present your data so that they are clear, support your arguments, and are not misleading. In addition, you will have three opportunities throughout the term to give presentations. A library session will focus on performing good literature searches and using online citation managers, such as RefWorks.

Course description (continued):

Thinking about reaching broader audiences, you will explore online science communication, contribute to a course blog, and write scripts for the audio and video pieces you will create. This part of the course will feature science journalism and storytelling. You read that correctly – there will be storytelling and you will get to read the news in a third-year university course. Could there be a better course? The catch – *you* will be telling the stories and writing the news. You will explore the similarities and differences between science and journalism and learn the basics of writing in journalistic style. Best practice examples of using audio and video to tell science stories will be discussed and your own creations will be shared on the course blog. With a little luck, SCIE 300 will make you famous. Well, maybe with a lot of luck, but it's important to set your goals high when communicating science.

Learning objectives:

By the end of this course a successful learner will be able to:

1. Identify the reasons scientists communicate (or *should* communicate) their work and discuss the methods used to communicate with each other and with broader non-expert audiences.
2. Recognize, discuss, and evaluate current issues and trends in science communication.
3. Create a clear proposal for a scientific research project that you will undertake.
4. Produce an effective outline for the first draft of a scientific report.
5. Use online research tools, such as scientific article databases, e-journals, and citation managers to locate, prioritize, and use scientific information from a variety of sources.
6. Create well-written, organized, and accurate documents that properly attribute information sources.
7. Eliminate excessive jargon and other complexities from your writing.
8. Design effective presentations both with and without visual aids.
9. Explain the peer-review process in scientific research.
10. Provide helpful and fair comments on the work of peers, including presentations and reports.
11. Appreciate common misconceptions in probability and statistics, and communicate explanations to resolve these misunderstandings.
12. Evaluate graphical representations of scientific information.
13. Collect, evaluate, and display original data meaningfully and accurately.
14. Debate the relationship between science and journalism.
15. Plan and execute an effective interview with a scientist.
16. Write a complete newspaper-style article intended for a non-expert audience about a scientific topic.
17. Translate recent scientific research into short audio and video pieces.
18. Create relevant, well-written, and convincing blog posts that make use of multimedia elements and are appropriately targeted for your audience.
19. Collaborate productively in a team working on a scientific project.

SCIE 300 is research:

The development of SCIE 300 was made possible by the Faculty of Science and some very generous folks who administer something called the Teaching and Learning Enhancement Fund. This is pilot project. That means it is a bit of an experiment and the instructors and development team are going to learn just as much as you throughout the term. In order to evaluate the success of this course, we will need your input. So, after getting your permission, we will ask you to complete surveys, participate in interviews and contribute to focus groups. We want to know if the course is meeting your expectations, if you have suggestions for improvements, and if there are topics you think should be included in future versions of the course. We will be in touch a few times throughout the term asking for your help.

Instructors:

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Office hours summary (to be completed in January):

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00					
9:30					
10:00					
10:30					
11:00					
11:30					
12:00	Class FNH60		Class GEOG147		Class GEOG147
12:30	(both sections)		(section 200)		(section 200)
1:00			Class GEOG147		Class GEOG147
1:30			(section 201)		(section 201)
2:00					
2:30					
3:00					
3:30					
4:00					

Required book:

There is no *textbook* for the course because we didn't feel that any single text covered the breadth of topics SCIE 300 will cover. Materials will be used from a variety of sources instead. *However*, there is a required *handbook* for this course:

The Concise Canadian Writer's Handbook
William E. Messenger, Jan de Bruyn, Judy Brown and Ramona Montagnes
Oxford University Press
ISBN: 9780195430387

The writing handbook for SCIE 300 is a resource you will be able to use in other courses and throughout your career. Importantly, it is a *Canadian* writing handbook so you will not be irritated by missing u's in words like colour. SCIE 300 classes will make use of this handbook for both readings and exercises, so you will need a personal copy of this book. It is available at the UBC Bookstore, but feel free to shop around. If you visit the Oxford University Press website by following the above hyperlink, you can access online student resources that accompany the handbook.

This handbook is not specific to science, but a general writing handbook. We have placed three additional books on reserve in the UBC Library that are more specifically about science communication, but not as technical as the required handbook.

Escape from the ivory tower: a guide to making your science matter
Nancy Baron
(Woodward Library)

Am I making myself clear? A scientist's guide to talking to the public
Cornelia Dean
(I.K. Barber Learning Centre)

The craft of scientific communication
Joseph Harmon and Alan Gross
(I.K. Barber Learning Centre)

For further reading suggestions please visit the course blog where you will find a virtual bookshelf. The SCIE 300 library (aka Eric's office) has a number of titles that you are welcome to borrow. Eric also subscribes to *New Scientist*, *National Geographic* and *Canadian Geographic* magazines. You are welcome and encouraged to come by to browse and/or borrow copies.

Library visit:

We'll remind you again later, but please mark *Friday, January 28* in your calendars. On this day, the class will be held in the newly refurbished and very fancy *lower level computer lab of Woodward Library*.

Participation:

Your success in this course is highly dependent on your level of participation. Your colleagues' success and stress level are also dependent on your participation. A blog cannot work without everyone's input. Class discussions and group activities without group engagement will be unfulfilling. Peer assessment that is not handled professionally is unconstructive. So, please do your part for the course: attend class, participate, and do your fair share of group work.

We have not allocated a specific amount of your final grade for participation. But that does not mean it does not count. Your attendance and participation will be observed and recorded.

Professionalism:

Whether you are working with a publisher on a research paper or book, submitting an article to a newspaper or magazine, or contributing an abstract to a conference, deadlines are extremely important. Likewise for SCIE 300.

The two major assignments in SCIE 300 have many smaller components (steps) due before the final project deadlines (see details below). These assignments are designed in this manner so that you receive feedback during the process and to help keep you on track. The assignment steps have hard deadlines. They must be met or you will receive a mark of zero for that component of the project. You are still eligible for full points in the remainder of the project components. However, by failing to submit the earlier project steps you forfeit those points and valuable feedback from your peers, instructors, and TAs that will help you complete the subsequent steps.

Only final assignment submissions will be accepted late, but will carry a penalty of 10% reduction in mark per day, up to a maximum of five days.

Should you miss a class on which an assessment is made (for example, on one of your presentation days) or fail to meet one of the hard deadlines, you must have an acceptable excuse and supporting documentation (for example, a doctor's note) in order to obtain an extension without penalty. The only acceptable excuses are illness, serious family emergency, or a major religious holiday. Whenever possible, you should let the instructor and your group members know of your absence in advance.

Attendance is expected at all classes, team meetings, workshops and scheduled activities. Do not schedule interviews, meetings, or other events during class times. Finally, please arrive on time for every class.

Please see the separate document "Assessment Regulations, SCIE 300" for further details.

Academic integrity:

Plagiarism and other academic dishonesty will not be tolerated in SCIE 300. Present only your own ideas or, when presenting other people's ideas, cite the appropriate source. Course work must be completed independently or, in the case of group work, equally distributed among group members. The UBC Learning Commons has a wealth of information on academic integrity. Please visit this website and familiarize yourself with the difference between quoting and paraphrasing as well as the correct way to cite sources. There is also an entertaining and interactive animation you can watch.

http://learningcommons.ubc.ca/get-study-help/academic-integrity/

To test your knowledge, please complete this short quiz.

http://www.bio.ucalgary.ca/undergrad/plagiarismquiz.html

Plagiarism and dishonesty is not only something we think about at universities. Here is a real-world example of the trouble plagiarism can get you in.

http://www.gazette.com/articles/gazette-58112-stories-four.html

Blog:

SCIE 300 has a course blog! If you have not already registered on UBC Blogs and joined the SCIE 300 blog, please do so as soon as possible. Please refer to the separate document on the course WebCT Vista site for instructions on signing into the course blog, including the required password.

* Please be sure to sign up for the correct section *

UBC Blogs is built on a WordPress platform. Members of WordPress blogs have different access levels. As a student in SCIE 300, you have "author" access to the SCIE 300 blog. This means

you can write and edit your own posts and comments but you cannot do anything to anyone else's posts or comments. Once you are on the blog, explore the Create and Explore areas. We have collected a lot of information relevant to communicating science, including some tutorials on getting started with WordPress.

Your posts and comments on the blog count towards your grade (see below for details). Remember that you can only post to the SCIE 300 blog when you are signed in to UBC Blogs and you can only be signed into UBC Blogs with your CWL. That means your posts are not anonymous. They are linked with your CWL. So, blog nicely! The Centre for Teaching, Learning and Technology has put together this website about "netiquette".

http://ctlt.ubc.ca/distance-learning/learner-support/communicating-online-netiquette/

WebCT Vista:

SCIE 300 has a WebCT Vista site. Vista is an online class management tool. It is your responsibility to check the Vista site for announcements. We will do our best to remind you in class, but checking Vista at least once per week is the best way to stay informed. The Vista site will serve as a repository for lecture notes, handouts, assignments, grading rubrics, and some other resources. Some of your assignments will be submitted on the Vista site using Turnitin. The discussion board and email can also be used within Vista.

If you have a general question about the course, we encourage you to use the discussion board because many other students probably have the same question. In addition, you may get a faster answer from your peers than from your instructors. If you have a question that is more personal, you are of course welcome to email the instructors.

Go to www.vista.ubc.ca, log in with your CWL, and look for SCIE 300 Communicating Science.

TurnItIn:

SCIE 300 will use the anti-plagiarism service called TurnItIn. You will upload some assignments directly to TurnItIn using the course Vista site. The service then compares your submission with an archive of documents, including Web pages, to check for plagiarism. For more information about UBC's use of TurnItIn please visit:
http://www.vpacademic.ubc.ca/integrity/turnitin/index.htm

Peer assessment:

One of the features of TurnItIn is called PeerMark. This gives classes the ability to use peer assessment – all online within the TurnItIn environment. Peer assessment must be performed in a constructive, respectful manner. Details on how this feature works and how it will be used in SCIE 300 will follow.

SCIE 300 assessment summary:

Short, individual presentations (5%)

- **January 5** (week 1, day 2): assigned, in class
- **January 7** (week 1, day 3): choose topic
- **January 12** (week 2, day 2): short presentations, part 1, in class (2% instructor evaluation, 1% peer evaluation, 1% your evaluation of peers, 1% self-assessment)
- **January 14** (week 2, day 3): short presentations, part 2, in class

Data collection project (30%)

- **January 17** (week 3, day 1): assigned, in class
- **January 21** (week 3, day 3): provide proposal template, in class
- **January 26** (week 4, day 2): proposal due (online) (2%), provide project outline template, in class
- **January 28** (week 4, day 3): feedback on proposals, online
- **February 7** (week 6, day 1): outline due, online (2%)
- **February 9** (week 6, day 2): group presentations, part 1 (10%), peer assessment and self-assessment (2%), in class
- **February 11** (week 6, day 3): group presentations, part 2, peer assessment and self-assessment, in class
- **February 11** (week 6, day 3): outline feedback, online
- **February 21** (week 7, day 1): draft project report due, online
- **February 23** (week 7, day 2): TurnItIn PeerMark review due, online (2%)
- **February 28** (week 8, day 1): final draft due, online (12%)

Interview project (35%)

- **February 11** (week 6, day 3): introduced, decide on topic over break
- **February 21** (week 7, day 1): papers selected, groups identified, online
- **March 4** (week 8, day 3): annotated bibliography, online (3%)
- **March 11** (week 9, day 3): proposed interview questions and at least first two paragraphs of the news article, online (2%)
- **Week 10** Perform interviews (schedule in advance)
- **March 21** (week 11, day 1): submit script for podcast and video, online (3%)
- **March 30** (week 12, day 2): group presentations, part 1, in class (12%)
- **April 1** (week 12, day 3): group presentations, part 1, in class
- **April 6** (week 13, day 2): final submission, online (15%)

Library research assignment (2%)

Blogging assignment (8%) (see separate document for complete details)

- Minimum four posts and four comments related to course content throughout the term

Exam (20%)

Class schedule:

The class schedule is subject to minor changes based on how the course progresses, current developments, and student feedback.

Week 1 (Jan 4): Intro and review of writing skills

Monday: No class. Happy New Year!

Wednesday: Course introduction
Introduction to science communication
Why do scientists communicate their work?
Checking the meaning of your writing (is that *really* what you meant to say?)

Friday: Writing skills
Simplifying phrases and removing "nothing" verbs
Paragraph structure and writing paragraphs
Punctuation and capitalization

Week 2 (Jan 10): Presentations

Monday: Presentation skills overview
Presenting to an audience
Eye contact, audibility, clarity, preparedness, structure
Topic clearly identified, outline provided, main point highlighted at conclusion
Using metaphors and jokes

Wednesday: Individual presentations Day 1
Three-minute presentation on a science topic in the news. No visual aids allowed other than blackboard.

Friday: Individual presentations Day 2
Three-minute presentation on a science topic in the news. No visual aids allowed other than blackboard.

Week 3 (Jan 17): Scientific papers

Monday: Structure of a scientific paper and the peer review process
Recap presentations from last week
How and why scientists publish their work; the publication process and peer review
Examine the components of a scientific article and discuss how they have changed over time (history of science writing, scientific writing as storytelling)
Preparing an outline for a scientific paper

Wednesday: Structure of a scientific paper
Review of scientific method
Correctly order the sections of a scientific paper.
Clear and concise writing in science, identifying and minimizing jargon

Friday: Structure of a scientific paper
Correctly order the paragraphs of a scientific paper
Scientific style (units, numbers, etc.)
Writing a project proposal

Week 4 (Jan 24): Communicating data; researching

Monday: Visually representing data
Communicating data, different means of visually representing data

Wednesday: Visually representing data
Presenting information in tables and graphs
Preparing an outline for a paper

Friday: Library skills (Note: class at Woodward Library)
Research tools, effective database searches, and citation management

Week 5 (Jan 31): Researching, organizing and writing scientific papers

Monday: Outlines, summaries, plagiarism
Outlines (recap)
Note-taking and summarizing articles
Plagiarism

Wednesday: Summarizing articles
Summarizing articles (hands-on)
Examples of good summaries and bad summaries; the characteristics of each

Friday: Non-expert summaries
Writing summaries of scientific papers in language non-experts can understand (e.g. in the style of a PLoS author summary or Science Brevia).

Week 6 (Feb 7): Critiquing, data collection project presentations

Monday: Providing peer feedback
Guidelines on providing peer feedback and revising documents (recap peer review journals)
Checklist for giving feedback
Specific resources for life, physical and mathematical sciences on the web for reference

Wednesday: Data collection project presentations Day 1
Group presentations of data collection projects
Non-expert summary and critiquing (recap)

Friday: Data collection project presentations Day 2
Group presentations of data collection projects

Week 7 (Feb 21): Audiences and conceptions of science

Monday: Knowing your audience
Knowing and reaching your audience
Importance of science outreach
Accuracy vs. precision (in the context of science communication)
Metaphors and similes

Wednesday: Popular press
Using articles from the popular press explore difficulties in communicating ideas to general audiences
Metaphors activities
Visualization

Friday: Misconceptions of science
Public misconceptions about science, common fallacies, what impedes understanding of scientific issues?
What is science? What is the public's definition of science?

Week 8 (Feb 28): Science journalism

Monday: Science vs. journalism
Science and journalism – similarities and differences
The structure of a news story, inverted pyramid, the five Ws
What is news and how is science news different from other news?

Wednesday: Science journalist visit
Ordering a news story
Compare coverage in different media

Friday: Writing in journalistic style
Draft the opening of a short newspaper story based on a scientific
Identify who you would interview for the story
List the questions you would ask them

Week 9 (Mar 7): Storytelling and interviewing

Monday: Science documentaries
Special guest

Wednesday: Interviewing
Interviewing skills, both how a journalist should prepare and how a scientist should prepare

Friday: Storytelling
Special guest Kathryn Gretsinger (UBC School of Journalism, CBC)

Week 10 (Mar 14): Understanding and communicating probability, risk and statistical inference

Monday: Commonly held fallacies in probability, and their impact on the public, including Meadow's law, the prosecutor's fallacy, faulty conditioning. Uses and abuses of statistical inference, including issues such as inferring causation from correlation, problems with multiple testing, flawed sampling schemes and bad designs.

Wednesday: Exploring misunderstandings involving independence, conditional probabilities and risk.

Friday: Uses and abuses of statistical inference in scientific research.

Week 11 (Mar 21): New media; judging scientific information; public engagement

Monday: New media
New media guest lecture
Digital Tattoo
The changing media landscape and what it means for science communicators

Wednesday: Critical thinking skills
Critique of online material such as videos, blogs, web sites, news articles for vested interests, slant, omission, distortion, vagueness, ambiguity, generalization, cause and effect

Friday: Public engagement
Public engagement with science
Press releases

Week 12 (Mar 28): Science communication in other fields

Monday: Special guests
Discussions with guests from public affairs, law, and public policy

Wednesday: Group presentations Part 1
Group presentations of final projects

Friday: Group presentations Part 2
Group presentations of final projects

Week 13 (Apr 4): Presentation recap and course review

Monday: Final project presentation recap

Wednesday: Course review