Course Descriptions Science Stream

The following are descriptions of the courses available to ESP students in the Science stream for the 2023-2024 academic year. Please read the descriptions carefully before selecting your course preferences on your *Course Selection Form*. Please note: All courses are subject to cancellation and/or change.

- All ESP students must register for one credit in a first year seminar (see Section A below).
- All ESP students must register in two Elective Courses (see descriptions below in Section B)
 - Students registered in the Science stream have set electives; according to requirements for this program (see your *Course Selection Form*).
 - Each elective will be supported by an ESP Workshop. See the *Course Schedule* for times.



Half-credit courses are marked with an asterisk (*) and are worth 0.5 credits and run during either the Fall or Winter semester. Full-credit courses are worth 1.0 credits and run during the entire Fall/Winter session.

Section A: First Year Seminars

All First Year Seminars are titled: "Selected Topics in the Study of Academic Discourse" but have different selected topics. See the descriptions below:

Selected Topic: Student Leadership & Mental Health FYSM 1900 A (1.0 Credit) Fall/Win Instructor: Teddy Dancy

Student leaders come in all shapes and sizes, with unique experiences that make them leaders in their own way. This course will provide a chance for you to reshape and define what leadership means to you, showcase your own skill sets, learn about your transferrable skills and define yourself as a student leader.

We will also explore how mental health fits into this picture. Every student experiences mental health in a way that impacts their post-secondary experience whether positive or negative, and in turn their ability to achieve their goals. Managing risk and protective factors is an important skill to have when determining what type of student you will be each step of the way. It contributes to your ability to take your experiences and transfer them to new opportunities to help you reach your desired outcomes.

This course will provide an opportunity for self-reflection, development, and growth as new post-secondary students. With opportunities to showcase your experiences through a new lens, introspective exercises, and exploration of the foundational theories that impact who you are and who you will become, this course will be a chance to further develop the core academic skills needed to be successful students.

Students who participate in Student Leadership & Mental Health First Year Seminar will be able to:

- Identify a personal definition of leadership and define leadership approaches relating to post-secondary education
- Develop an understanding of the mental health continuum, and how mental health impacts the student experience Define the key components of the foundational theories of student development and adult learning and how it relates to their own and others' post-secondary goals
- Flip their perspective on the risk and protective factors that impact student success

• Understand how to provide and respond to peer feedback

Students will achieve these outcomes through the completion of a cuPortfolio, presentation, series of discussion posts/in class small group discussions, and one short paper each term.

A bit about Teddy: With degrees in Social Work and in Education, and work experience in a variety of roles supporting leadership development and mental health, Teddy is a compassionate educator who strongly believes in empowering individuals to activate their potential.

Selected Topic: Privilege, Power, Difference and Communication: Creating Social Change FYSM 1900 C (1.0 Credit) Fall/Win Instructor: Beth Hughes

Where did social injustices come from, who created them, and why do they exist? How can you make sense of conflicting media messages to have an informed understanding of social issues? How can you make change! Unjust, oppressive social structures are created and reinforced by politicians, the wealthy, journalists, advertisers, news media and others with power. They bomb you constantly with conflicting messages about what society is, what it should be, and how you should participate—especially according to your identity, who you are as a person.

Part of the answer lies in understanding power, privilege, and difference. Our first "lit" class of the year examines slang and how it changes with social ideas. Other ideas covered include identity, racism, consent, addiction, disability, privilege, equity, power, and allyship. We will critique deeply racism, sexism, genderism, and ableism. Lastly, you get to choose a social issue of your choice: you get to analyze the power of individual action and social movements to communicate and create social change. Our class will go step-by-step, taking a thoughtful and planned approach to how all these ideas fit together.

So, join this class! The ideas are engaging and you will have many opportunities to understand and develop strong academic skills that are important for any university student:

- academic writing, revising and editing,
- critical thinking and making arguments,
- researching and reading to understand,
- time management, including procrastination,
- early career exploration, and much more.

As L. Hansberry wrote (1959), I didn't make this world. It was given to me this way! Even so, transformation happens with the understandings that come from education.

A bit about Beth: She is a founding member of both the Centre for Initiatives in Education and the Enriched Support Program. She is a scholar of language and culture who has extensive experience teaching at Carleton and in Asia and a particular interest in how language expresses and shapes social relations of power. Her innovative and playful teaching motivates students to think critically and collaboratively about social justice.

Selected Topic: Communication and Cognition in Animals FYSM 1900 G (1.0 Credit) Fall/Win Instructor: Petra Watzlawik-Li

Humans are not alone in the capacity for communication and cognition. You will be surprised at the communicative abilities and cognitive processes of many other animals (such as dolphins, elephants, canines (wolf and dog), chimpanzees and other primates, birds (parrots and crows), octopuses, etc.). We will delve into the world of researchers (e.g. comparative psychologists, neuroscientists, psychobiologists, behavioural ecologists, linguists, primatologists) to discover the most current information on animal cognition, learning, problem solving, social relationships, and tool design/use.

Before we start looking at other animals, we will have a quick look at human language. What are considered to be the design features of human language? And how do humans acquire language (hint: it's not merely imitation)? We will review some of the cognitive processes, such as Theory of Mind (ToM) that go along with the stages of language acquisition and will also look at non-verbal communication such as body language and micro-expressions.

In this course you will get to practice the academic skills that you need to be successful at university (time management, summary writing, notetaking, video presentations, research, and essay writing). This video is me, telling you a bit about this course. J https://youtu.be/-DJrHw_uMgg Don't worry though, we will go through the steps for acquiring all of these skills and will be practicing them too!

Selected Topic: Academic Literacy: A Research Survival Course FYSM 1900 I (1.0 Credit) Fall/Win Instructor: Devron Colley

Some of the major challenges of science, social science, & business degrees in university can include reading dense texts, completing labs, complex math or problem-solving assignments, and understanding how to conduct research. A large component of your degree will be learning how to evaluate and organize the information from academic studies. We will launch you miles ahead by training you to be an effective student and eventual researcher. By the end of the course, you will be able to design and present a small study on a novel research topic of your choosing. This will be accomplished through a series of assignments including a research proposal, paper, and presentation. Other grading components include attendance, participation, analysis assignments, short reports, and quizzes.

You will learn to understand and apply the scientific method through exposure to peer-reviewed studies across physical, applied, and behavioural and social sciences. You will also learn basic methods for analysis in quantitative and qualitative research and get some practice with data analytics.

Topics include: summarizing and analyzing results; reporting findings; differentiating quantitative and qualitative methods and why they are used; the basics of research methodology and techniques; applying critical thinking to assess the effectiveness and limitations of research; and some of the ethical issues associated with conducting scientific and other research.

Our goal is to make research more interesting while developing skills you can apply in future studies and throughout your life!

A bit about Devron: Devron is a caring and skilled instructor with an MSc. in Chemistry and experience guiding students through challenging university studies. He takes an active approach to teaching and learning to make classes engaging and fun as well as informative.

Selected Topic: Power of Persuasion FYSM 1900 J (1.0 Credit) Fall/Win Instructor: Jennifer Gilbert

What do you think of when you hear the word 'argument'? People yelling at each other? Trolls online? It's true that arguments involve emotions, and those emotions can get out of hand. But that's not what makes something an argument.

A persuasive argument will always involve an appeal to emotions; however, at its core and argument consists of a claim. A claim is a position taken up by a speaker, which they then may attempt to advance and defend.

The arguments we are exposed to shape our opinions and beliefs, our social structures, and everyday decisions in our lives. Learning how to engage with arguments and how to disagree productively with others has many benefits, from assisting our own decisions about how to live and how to act, to broadening our understanding of the world and other people, and even - sometimes - changing our minds or changing the minds of others.

Understanding arguments critically is enhanced by understanding what arguments are, how to break them down, how they work, and what makes an argument persuasive. In this course, you will learn a toolkit for analyzing arguments, based on ancient and modern knowledge from the field of Rhetoric.

We will:

- analyze written and spoken arguments, and also everyday visuals such as memes, ads, and videos
- identify what claim is being made and analyze what types of appeal are presented
- map out argument structure in order to look at the reasons underlying an argument's claim, as well as the warrant for making the claim in the first place, and the evidence if any is provided that supports the reasons and warrant
- map out rhetorical situations to assess power and communication dynamics
- work in teams to debate issues
- you will develop and present your own arguments, and give feedback to others on their arguments

The knowledge and skills you gain from this course can make you a better and more persuasive speaker and writer. Most importantly, you can become a more analytical and critical thinker in a world increasingly flooded by misinformation.

In-class activities include lectures, discussions, and games. Assignments and evaluation include weekly quizzes, writing papers that incorporate research, as well as working in teams and individually to research issues and present arguments to the class.

A bit about Jen: She is an experienced university instructor in Rhetoric/Writing Studies and in Arts-Based Teaching and Learning. She specializes in strengthening students' communications abilities through awareness and practice, using game-based, creative approaches – and good old-fashioned fun!

Section B: Elective Courses

All elective courses listed below will be accompanied by a two hour/week **ESP Workshop** (this will appear on your schedule as ESPW 1000). Please see the **Class and Workshop Schedule** for day and time information; and read the **Student Guide** for a description of workshops.

General Chemistry I (Fall) CHEM 1001 A [0.5 credit] Prof. David Brock

This math-intensive course covers an introduction to solution chemistry, acids and bases, thermodynamics, and kinetics. Specialist course for students intending to take second year chemistry.

- Information on the course can be found on the Department of Chemistry website: <u>https://carleton.ca/chemistry/current-students/undergraduate/#courseinfo</u>
- Lectures/tutorials four hours a week, laboratory three hours every other week.

General Chemistry II (Winter) CHEM 1002 A [0.5 credit] Prof. David Brock

This math-intensive course covers introduction to periodicity, gas laws, equilibrium, bonding, electrochemistry, and organic chemistry. This is a specialist course for students intending to take second year chemistry.

- Information on the course can be found on the Department of Chemistry website: https://carleton.ca/chemistry/current-students/undergraduate/#courseinfo
- Lectures/tutorials four hours a week, laboratory three hours every other week.

*Please note that if you take CHEM 1002 A in the Winter, you <u>cannot</u> take NEUR 1203 B in the Winter

Neuroscience of Mental Health, and Neurological Diseases (Winter) NEUR 1203 B [0.5 credit]

Prof. Zachary Patterson

Clinical symptoms of neurological disease, including biological, developmental, experiential and environmental factors that contribute to disease. Topics may include stroke, multiple sclerosis, migraine, seizure disorder, Parkinson's disease, ALS, chronic pain, Alzheimer's disease and concussion.

- Information about the course can be found on the Neuroscience Department website: <u>https://carleton.ca/neuroscience/</u>
- Lectures three hours a week

*Please note that if you take NEUR 1203 B in the Winter you cannot take CHEM 1002 A in the Winter

Elementary Calculus I (Fall) MATH 1007 D [0.5 credit] Prof. Brandon Fodden

Limits. Differentiation of the elementary functions, including trigonometric functions. Rules of differentiation. Applications of differentiation: max-min problems, curve sketching, approximations. Introduction to integration: definite and indefinite integrals, areas under curves, fundamental theorem of calculus.

- An example of a course outline from Fall 2022: <u>https://carleton.ca/math/wp-content/uploads/MATH-1007A-F22.pdf</u>
 - Please note that this course outline is subject to change for the current academic year
- Lectures three hours a week, tutorial one hour a week.

Linear Algebra I (Winter) MATH 1107 A [0.5 credit]

Prof. Brett Stevens

This is an introductory course in linear algebra, with the focus on calculations and applications. It includes basic topics in linear algebra. The students will have the opportunity to develop their mathematical skills and their communication skills.

- An example of a course outline from Fall 2022: <u>https://carleton.ca/math/wp-content/uploads/MATH-1107E-F22.pdf</u>
 - Please note that this course outline is subject to change for the current academic year
- Lectures three hours a week, tutorial one hour a week.